MXPro DV

User Guide

VIDEONICS®

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.

Should this product prove defective in workmanship or material, the consumer's sole remedies shall be such repair or replacement as provided by the terms of this warranty. Under no circumstances shall Videonics, Inc. be liable for any loss or damage, direct, consequential, or incidental, arising out of the use of or inability to use this product. Some states do not allow limitations on how long an implied warranty lasts or the exclusions or limitations of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

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

Television screens are simulated and subject to change without notice. This device is not to be used for the unauthorized copying of copyrighted material.

TRADEMARKS

MXPro, MXProDV, the Videonics logo, Thumbs Up, MX-1, and Videonics Video TitleMaker are trademarks or registered trademarks of Videonics, Inc. Hi8 and i.LINK are trademarks of Sony Corporation. FireWire is a registered trademark of Apple Computer. VHS is a registered trademark of JVC. Other product and brand names might be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

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.

Declaration of Conformity

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

Standards to which conformity is declared ..... EN60950, EN55022 Class A, AN50082-1

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 DV

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

Serial No. .....

Year of Manufacture 1999

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

Place ..... Campbell, California, USA

Date ..... March 25, 1998

(Signature)

Parminder Gillon

Full Name

Test Engineer

Position

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Appendixes & Back Matter

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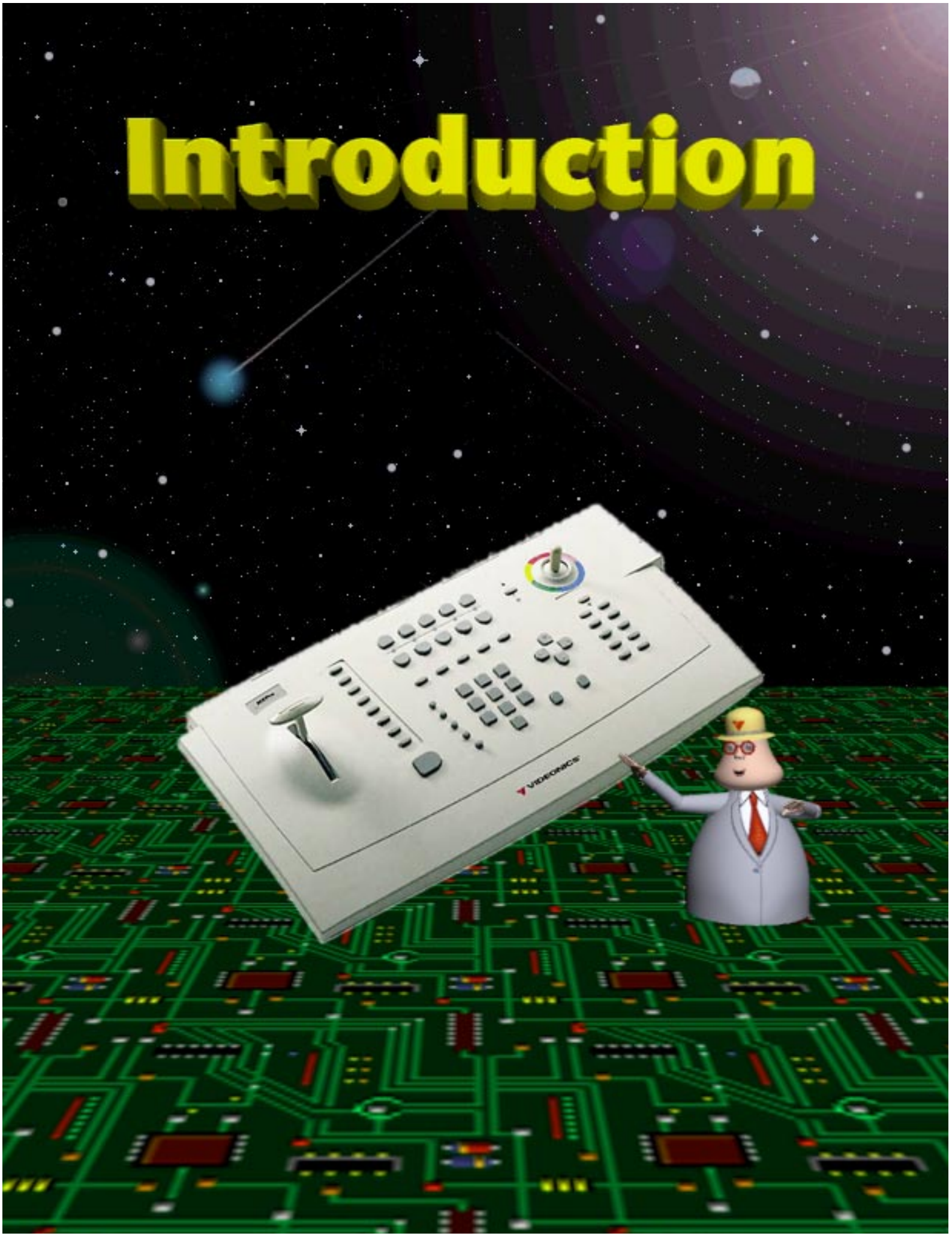
Introduction



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CHAPTER 1

INTRODUCTION

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

This chapter contains:

- Brief descriptions of major MXProDV features
- Typical uses for the MXProDV
- 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 MXProDV benefits.

Major Features

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

FireWire™ In and Out — MXProDV has three FireWire (1394, i.LINK™) connectors, two for DV (Digital Video) input and one for DV output. Each FireWire connection carries both audio and video data simultaneously. DV audio inputs can be either 32 kHz or 48 kHz: 44.1 kHz audio is not supported.

Fast Cuts —With two DV and two analog inputs, MXProDV can cut from one source to another almost instantly.

Superb Video Quality — To ensure highest video quality, MXProDV uses 10-bit (4:2:2) video technology for Y/C applications, and 8-bit 4:2:2 for composite applications. DV inputs and outputs conform to the DV standard at 4:1:1 (NTSC) and 4:2:0 (PAL).

Four Input Synchronized Switcher — MXProDV provides four input channels and can mix DV and analog sources. This makes MXProDV useful in live production settings where up to four cameras or other sources might be in use. MXProDV synchronizes the inputs, so picture disruptions do not occur when switching between sources.

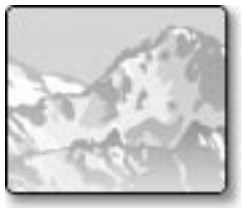
Picture-in-Picture (PIPs) — PIP allows multiple pictures to share the screen in various configurations. For example, one source might take the entire background while another image appears inside a separate, smaller window, both sharing the screen at the same time. You can use up to 16 images in a PIP 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) — MXProDV automatically corrects the output's time base. MXProDV stabilizes the output signal even when the input sources are not stable.

Chromakey — Keying replaces parts of one picture with another, based on their color. Here the solid background behind Kong is replaced by the picture of the bridge. The chromakey 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 — MXProDV 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 — MXProDV provides sophisticated 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.

Four-Channel DV Audio — MXProDV lets you input and output two-channel or four-channel DV audio.

CD Quality Audio — With two-channel output MXProDV's DV audio is 48 kHz, 16-bit audio; four-channel audio is 32 kHz, 12-bit audio.

Connectivity — MXProDV provides multiple video/audio outputs, including one FireWire output, two Y/C Program outputs, two composite Program outputs, one composite Preview output, two sets 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 chromakey 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.

Common Uses for MXProDV

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

You determine what is sent to the output. While the original inputs play, you can switch between any of MXProDV'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 chromakey to enhance the production.

Single-Source Use — MXProDV supports A/A roll, a method for creating interesting transitions with a single source. Its digital effects (such as picture freeze, posterization, and mosaic) give added life to productions. You can use MXProDV 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 VCRs.

Live Video — In live production setups, MXProDV processes events as they occur. Good coverage requires seeing the events from different vantage points—which means you need multiple input sources. MXProDV 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 MXProDV you can easily switch between the sources whenever necessary.

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

MXPRODV PACKAGE CONTENTS

The MXProDV package contains the items shown below. Check your package against the illustration.

USER GUIDE
Product registration card and other information

POWER ADAPTER AND CORD

If your package doesn't contain all of the items shown here, contact the dealer where you purchased the MXProDV for the necessary replacements.

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 MXProDV features, description of package contents, description of manual.
Chapter 2 **Quick Start**	Brief steps to setting up MXProDV with your equipment. Provided for people quite familiar with connecting video equipment.
Chapter 3 **Installing MXProDV**	Instructions for setting up MXProDV to work with your video equipment.
Chapter 4 **Basic Operations**	Explains most common procedures and functions used with MXProDV.
Chapter 5 **Transitions**	Complete description of and instructions for using MXProDV 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 MXProDV'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 **Chromakey**	Instructions for creating chromakey 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 MXProDV's Learn Mode for "recording" your mixing steps then playing them back.
Chapter 12 **Working with Audio**	How to use audio sources (tapes, CDs, and so forth) with MXProDV.
Chapter 13 **Advanced Operations**	Descriptions of operations used infrequently, but still of substantial use for mixing video programs.
Appendix A **Transitions List**	Complete list of transitions available with MXProDV, along with their assigned code numbers and descriptions.

Table 1: User Guide Contents (continued)

CHAPTER	DESCRIPTION
Appendix B **Time Base Corrector**	Explains the time-base corrector feature built into MXProDV.
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**	MXProDV product specifications.
Appendix E **MXProDV Differences**	Summarizes operational differences between MXProDV, MXPro, and Videonics MX-1 Video Mixers.
Glossary	Definitions of terms frequently used in conjunction with MXProDV 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.

MXProDV Buttons

When referencing the various buttons (keys) and other controls on the MXProDV 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** to start MultiPIP mode. 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 MXProDV video signal path. 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.

CONTACTING VIDEONICS

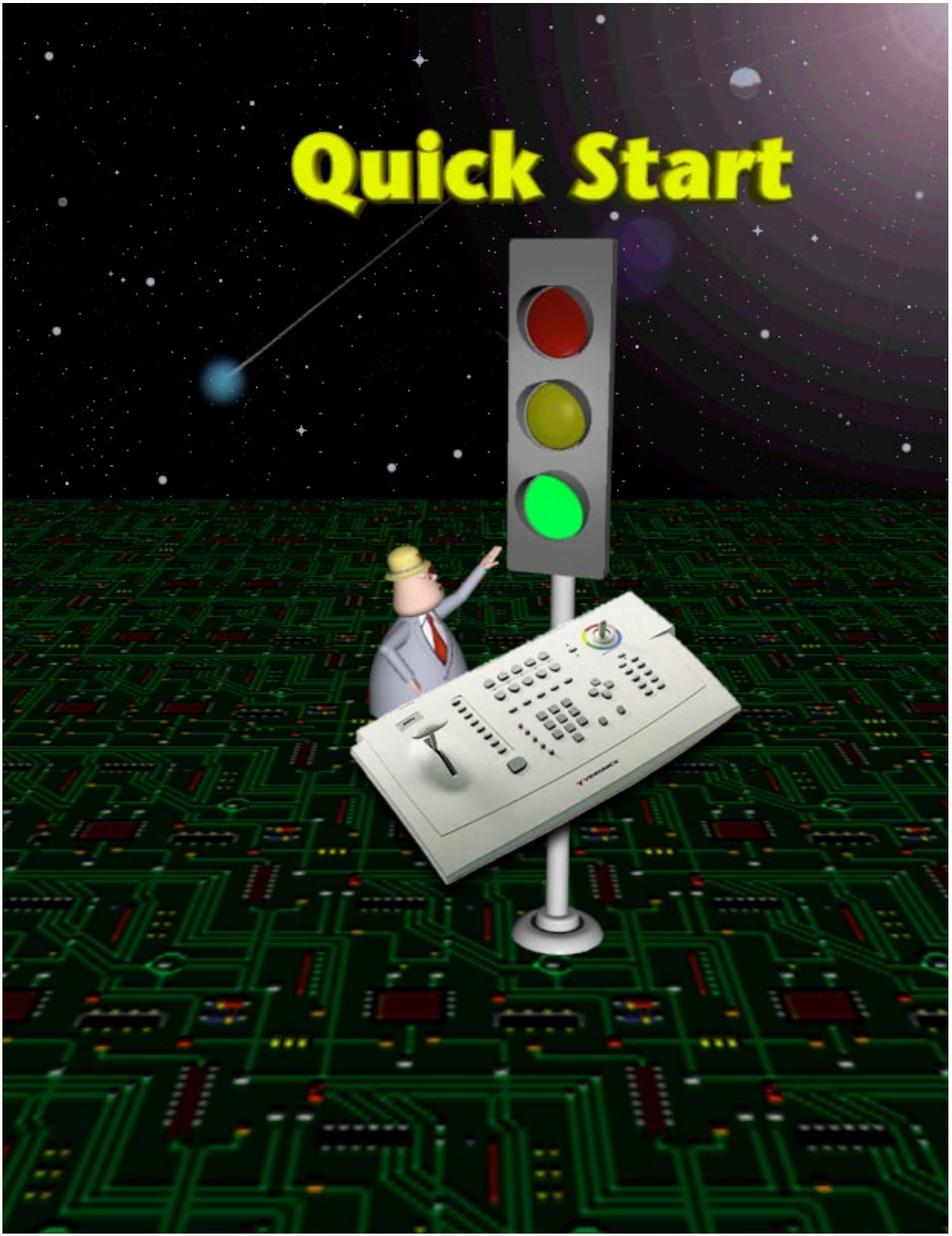
Videonics provides technical and general support for all of its products. The following table provides information for contacting us with your suggestions, questions, and problems.

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, North America	(408) 370-9963
Technical Support via E-Mail, N.A.	helpline@videonics.com
Internet World Wide Web	http://www.videonics.com
International Offices	Contact Videonics for your local distributor
International Support	Contact Videonics for your local distributor

NOTES

Quick Start



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CHAPTER 2

QUICK START

This chapter contains brief instructions for setting up MXProDV 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 MXPro or MX-1, see Appendix E, *MXProDV Differences*, for helpful information in setting up your MXProDV.

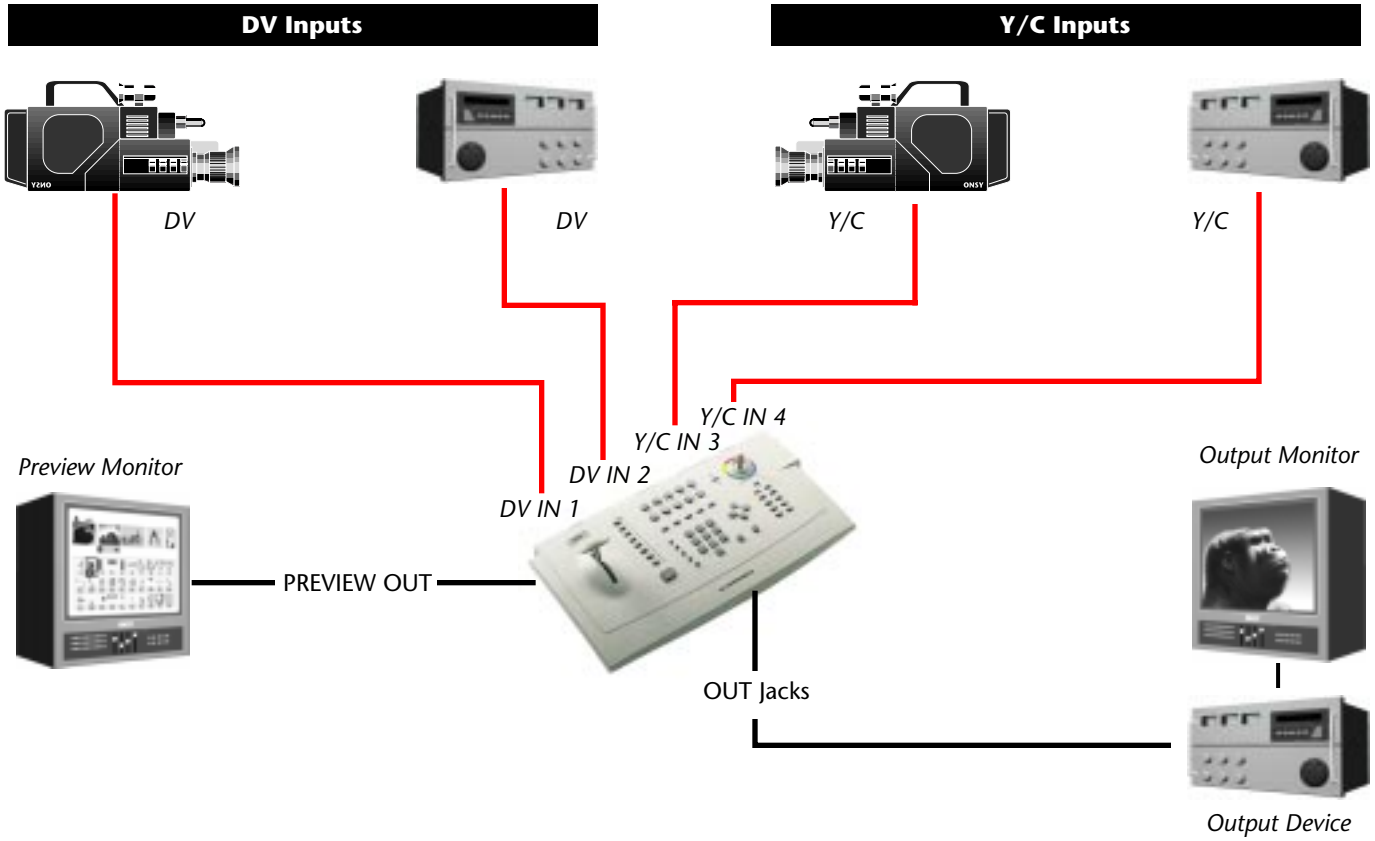
Skim the instructions in this chapter. If you have any questions about any of the steps, turn to Chapter 3, *Installing MXProDV*, and follow the detailed instructions for setting up your equipment.

Quick Start Steps

Setting Up

This is a fairly typical MXProDV setup.

This setup has two FireWire (DV) inputs and two Y/C inputs.



- **Connect a COMPOSITE-type monitor to MXProDV's PREVIEW OUT jack.**
- **Connect a DV input device to MXProDV's DV IN 1 jack.**
- **To use a second DV input device, connect it to MXProDV's DV IN 2 jack.**
- **To use a Y/C input device, connect it to MXProDV's Y/C IN 3 jack.**
- **To use a second Y/C input device, connect it to MXProDV's Y/C IN 4 jack.**

  MXProDV is set up, by default, to expect DV devices to be connected to the DVIN1 and DVIN2 input jacks, and S-Video (Y/C) devices to be connected to the IN 1 and IN 2 input jacks. If you connect a different assortment of input devices, you must tell MXProDV this fact. See "Route" beginning on page 92 after completing the following steps.
- **Connect an output device to the OUT jacks on the MXProDV rear panel. This is the device where you record the program.**

Remember, a DV connector carries the audio signal as well as the video signal. It is, therefore, unnecessary to make separate connections for these signals when using a DV device as output.

- **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).**

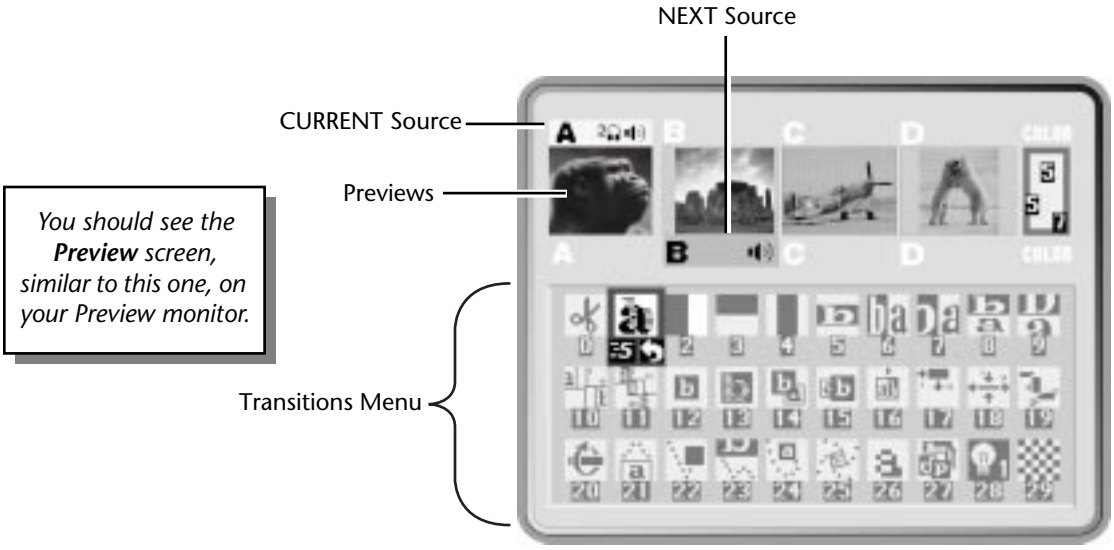
NOTE

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

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

For more detailed information about setting up your equipment, see Chapter 3, *Installing MXProDV*.

The Preview Screen



MXProDV 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. MXProDV 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. MXProDV highlights the NEXT source in green.

Transitions Menu — Rows and columns of icons representing some of the transitions available. MXProDV 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 uses numbers to indicate the current background color, border color, and border style.

For more detailed information about controlling the content of the Preview screen, see "Using the Preview Screen" beginning on page 46.

Running the Demo

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

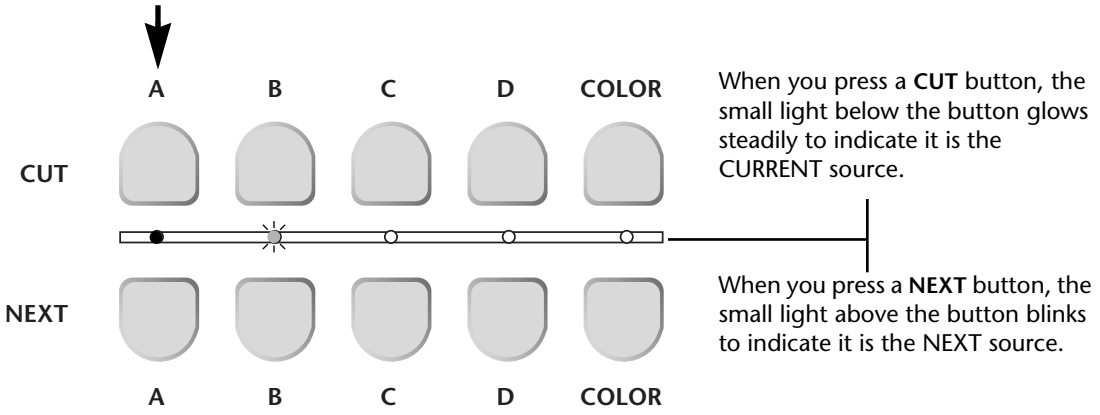
- **Press SHIFT+DEMO.**

  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.**

Cutting Between Sources

- **Press CUT/A.**



  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.

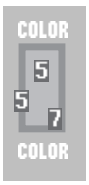
- **Press CUT/B.**

  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.**

See "Selecting Sources" beginning on page 51 for detailed information.

Borders and Solid Color Backgrounds



- **Press CUT/COLOR.**

  MXProDV 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.**

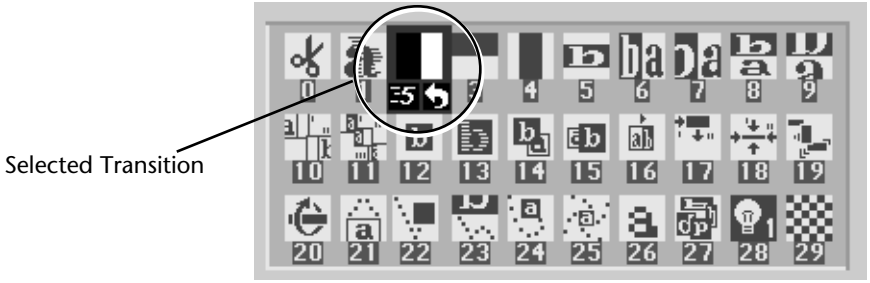
See "Color Selector" on page 48 for more information.

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. MXProDV 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 ARROWS** to move the selection horizontally. Use **UP** and **DOWN ARROWS** to move the selection vertically: or, press **2** then **OK** to select the transition by number.



The screen shows the desired effect—the horizontal wipe.

Running Transitions

You can run transitions automatically or manually.

Automatic Transitions

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

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


PLAY

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.**


Speed

- **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.**

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 MXProDV 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 – MXProDV 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, MXProDV 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 X to highlight the transition icon.**

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

- **Press PLAY or use the T-BAR to perform transition.**

Using Transition Categories

MXProDV 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 17) 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. See "User Transitions Category" on page 65 and "Changing User Transitions Menu" beginning on page 66 for detailed information.

See Chapter 5, *Transitions*, to learn more about using transitions.

Other Features

Refer to the rest of this User Guide to learn about the many additional MXProDV 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 chromakey 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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CHAPTER 3

INSTALLING MXPRODV

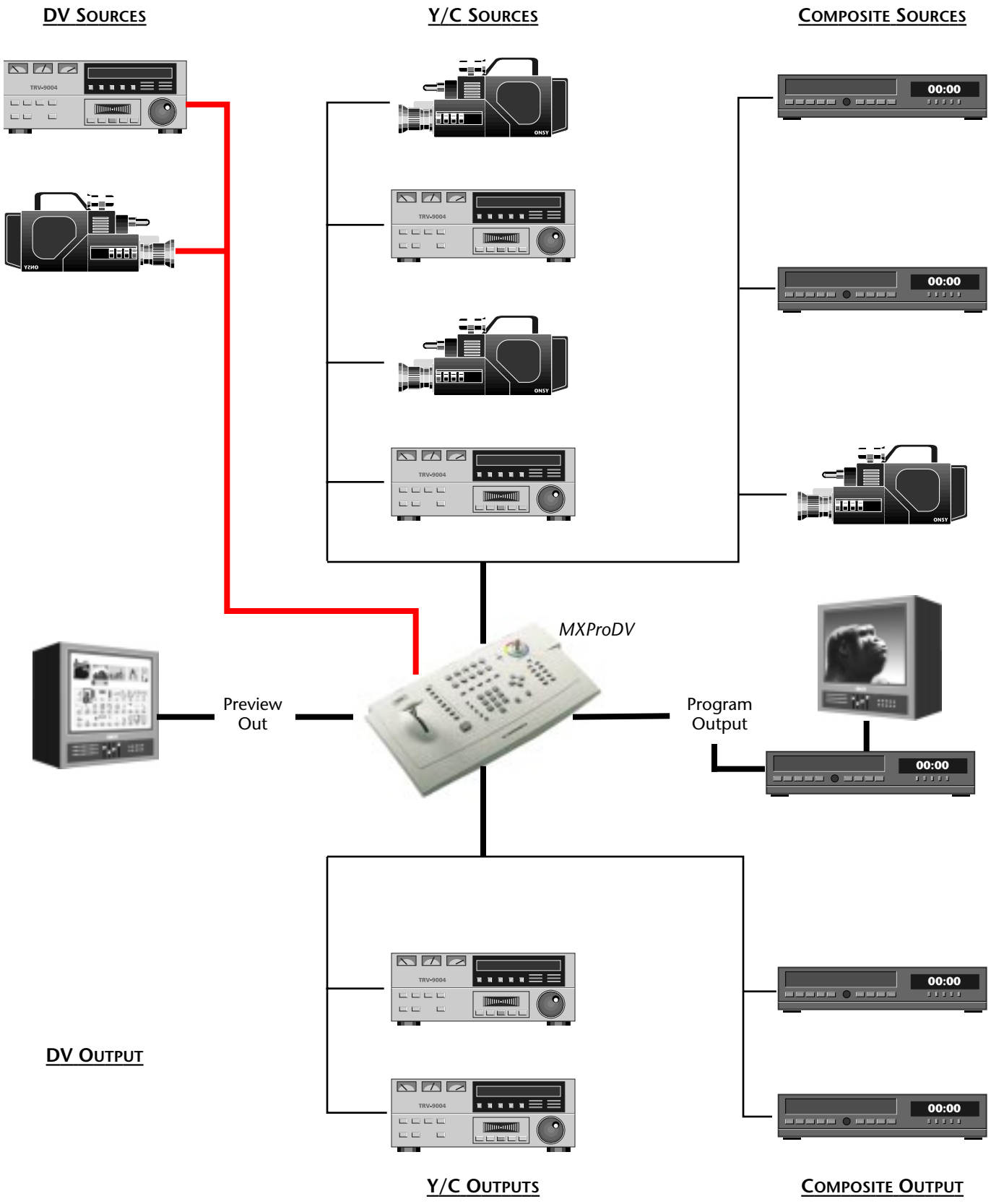
This chapter explains how to install (or, set up) MXProDV to use with other equipment. Major topics include:

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

If you have experience with the Videonics MXPro or MX-1, see Appendix E, *MXProDV Differences*, for information that will be helpful setting up your equipment.

Sources and Output

Source and *Output* refer to the way you use devices with MXProDV.



Source — A source is an input device. Each source provides a video signal, audio signal, or both. You use MXProDV to combine these signals. Sources can be DV (Digital Video), Y/C (S-Video) or composite video devices.

The preceding illustration shows that you can connect up to 10 input sources to MXProDV at the same time. However, you can only use four input devices at any given time.

Using the MXProDV Route function (see "Route" beginning on page 92) you can select the input sources to use in a given situation. You can even use the Learn mode to have MXProDV remember various configurations for you. When you want to use a particular configuration, use the Learn function to select the one you want.

DV Sources — DV Sources can be camcorders, VCRs and some computer cards. The camcorders and VCRs can be DV, miniDV, DVCAM, DVCPRO or Digital 8 devices that output standard 25 Mb/s DV 4:1:1 (NTSC) or 4:2:2 (PAL). Digital-S, DVCPRO50 and other devices using 4:2:2 or 50 Mb/s sampling can NOT be used.

DV audio is delivered along with the video via a FireWire cable. DV audio inputs can be 2-channel or 4-channel, 32 kHz audio or 2-channel, 48 kHz audio. 32 kHZ audio may be called 12-bit audio in your camcorder/VCR documentation; 48 kHz audio may be called 16-bit audio. 44.1 kHz audio cannot be used.

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 MXProDV from one or more sources. The output device might be a VCR with an optional monitor attached, or it might be a live broadcast.

The preceding illustration shows that you can connect up to five output devices to MXProDV at the same time. You can use all of these devices simultaneously for video output; audio output will be limited to DV plus one or two analog devices, depending on how you set the 2-channel audio output parameter in the Setup function.

DV Output vs. DV Sources — In the Setup function, select whether you want your audio output to be 4-channel (default) or 2-channel. For DV, 4-channel audio is output at 32 kHz, 12-bit samples; 2-channel is output at 48 kHz, 16-bit samples. If you select 2-channel output, your DV audio inputs must also be 48 kHz audio; 32 kHz inputs will be muted or distorted. If you select 4-channel output, your DV audio inputs can be 32 kHz or 48 kHz audio.

Preview and Program Monitors

MXProDV designates monitors as either *Preview* or *Program* to indicate how it's used.

*We use these pictures to distinguish between the **Preview** and **Program** 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 VCRs 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 46.

CAUTION

The preview monitor must be a composite device with A/V inputs (separate audio and video connectors). Do not attempt to connect any other type of monitor to the PREVIEW OUT jack on the MXProDV 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 a Digital Video, composite, or S-Video device.

Number of Monitors

You can operate MXProDV 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.

UNDERSTANDING MXPRODV CONNECTORS

To properly setup MXProDV, you need to know how and where to connect external components – such as VCRs, camcorders, and so forth. You use cables to connect video devices to MXProDV's rear panel. See "Cables and Adapters" on page 31.

Remove MXProDV from its package and position it so you can see the rear panel. Refer to the panel and the illustration on page 30 while reading this section.

The MXProDV rear panel has numerous connectors and they vary by type. You can connect input sources in any combination – up to a maximum of ten – but you can use a maximum of four devices at any given time. You can process just the video signal from a device, just the audio signal, or both.

You can connect up to five output devices to MXProDV. You might, for example, direct one output to a recording device and another to a live broadcast.

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

POWER — An electrical power connector. Use the power cord and adapter in the MXProDV 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.

DV IN — Connect Digital Video sources to these connectors. Both the audio and video signal are sent through these connections.

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 32.

MXProDV provides six output connectors — one Preview, one Digital Video, two composite, and two S-Video.

PREVIEW OUT — Connect a **composite** video monitor's video input to this jack—you cannot use an S-Video monitor as Preview. This monitor serves as your visual "interface" with MXProDV. It's where you do most of your work.

DV OUT — Connect a Digital Video output device. You record productions on this device, use it to display a live broadcast signal, or both. Both the audio and video signal are sent through this connector.

OUT Y/C — Connect an S-Video output device. Same as above, but use this connector if your output device is S-Video (Y/C).

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

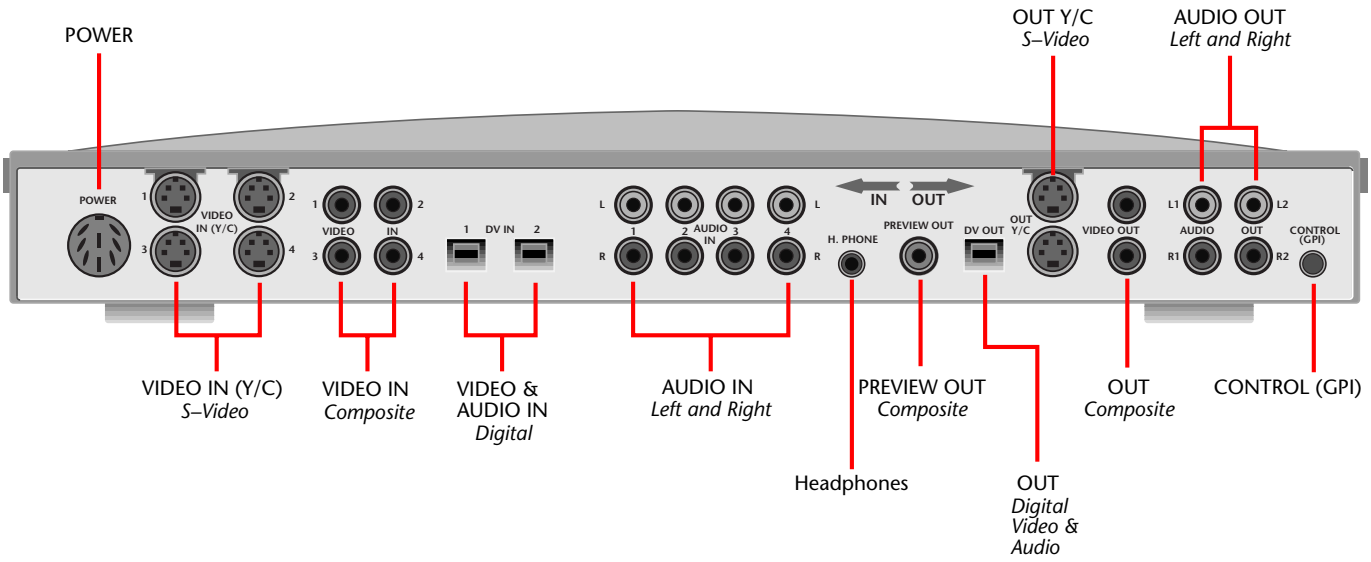
AUDIO OUT — Connect a suitable audio cable or cables from these jacks to the audio inputs on your output device. See Chapter 12, *Working with Audio*, for a discussion of the dual audio output features.

HEADPHONES — See "Using Headphones" on page 34.

CONTROL (GPI) — Connect a General Purpose Interface (GPI) device to this jack to control the MXProDV from an external device or remote location. See "Using a GPI Device" beginning on page 152.

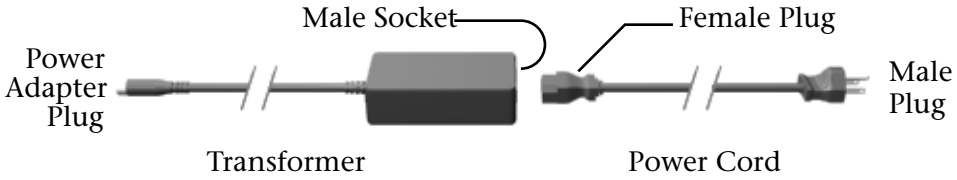
MXProDV Rear Panel

Please take a few moments to familiarize yourself with the connections on the MXProDV Rear Panel before you begin setting up your equipment.



Power Connector

The MXProDV 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.

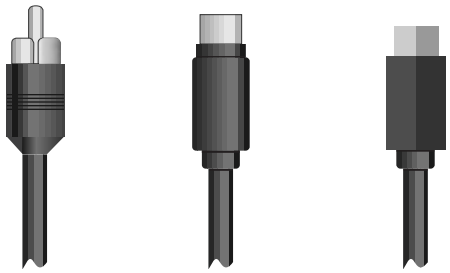
To connect the power cord and transformer:

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 MXProDV rear panel.
4. Turn the MXProDV power switch (located on the right side of the unit) to the ON position.

CABLES AND ADAPTERS

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

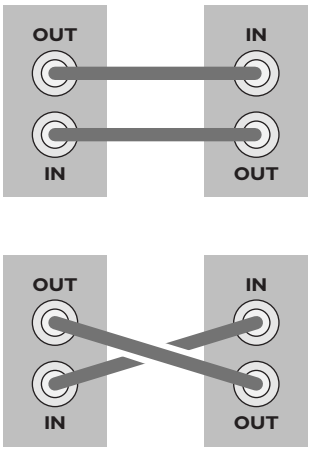
Look closely at the jacks on the MXProDV rear panel and note that they accept RCA Composite, S-Video, or Digital Video (DV) cables.



RCA Composite | S-Video (Y/C) | Digital Video Connector

Each type of device (composite, S-Video, or Digital Video) has its own, unique type of jack at the end of the cable

Before connecting any device to the MXProDV, 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

DV cables carry both an audio and video signal. Composite and S-Video cables carry only video signals.

DV camcorders and VCRs normally have 4-wire connectors. Likewise, MXProDV has 4-wire connectors.

A computer with a DV FireWire card can serve as an input source to MXProDV. Some DV FireWire cards use a 6-wire connector.

Microphones

You can connect a microphone to any MXProDV input jack, but you may 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. See “Using a Microphone with MXProDV” on page 40 for further details.

Audio Connectors

To connect a stereophonic audio device to MXProDV, you need two separate audio cables — one for the left channel and one for the right.

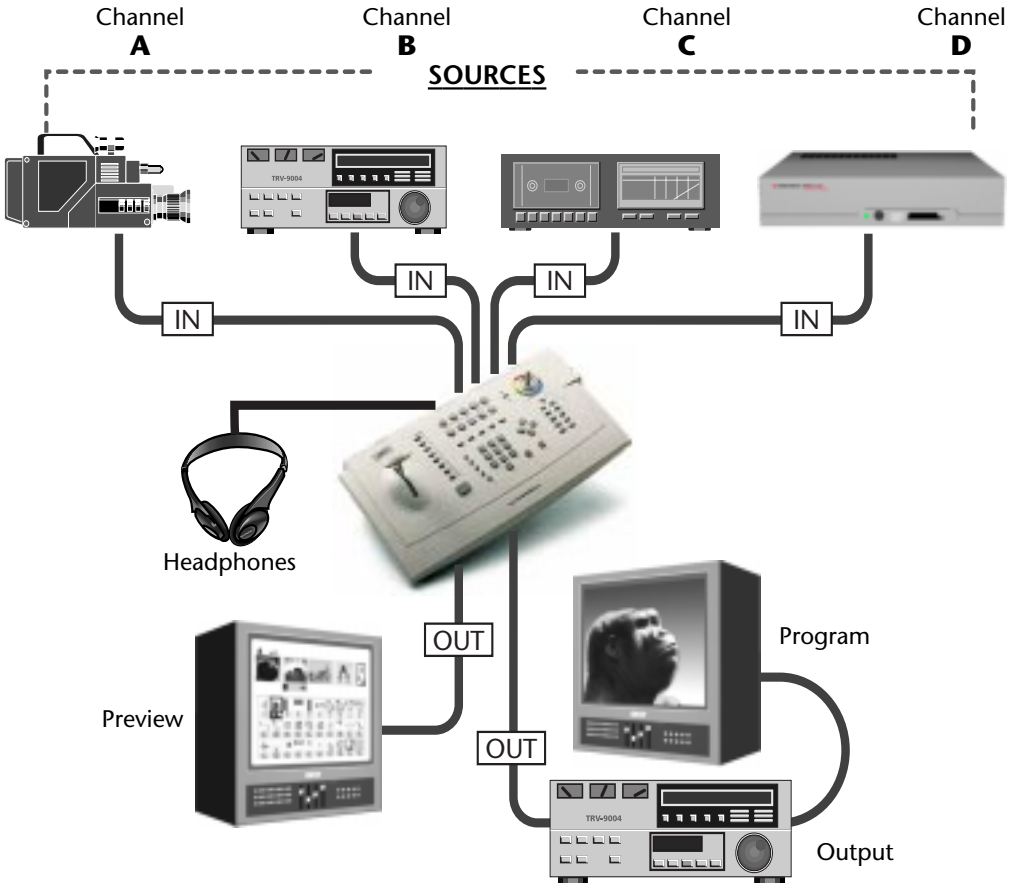
To connect a monaural audio device you need a Y-adapter cable (like the one shown at the left). Connect the single end of the adapter to the line input or output on the device. Connect the two remaining ends to the left and right channel inputs or outputs on the MXProDV rear panel.

The Y-adapter cable does not provide stereophonic audio. It simply directs the mono signal to or from both MXProDV 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 the left MXProDV channel connector using the IN 3 or IN 4 set of inputs (only IN 3 and IN 4 can be configured for mono). Once connected, use the MXProDV ROUTE function to specify which connector (left or right) you used. See “Route” beginning on page 92.

INSTALLATION EXAMPLES

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



This diagram illustrates the overall concept for installing equipment with MXProDV. Please study it before you begin installing your own equipment.

You can have up to four separate audio/video input sources active at any given time. MXProDV 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 MXProDV devices. For example, you can use VCRs, VTR's, 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).

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

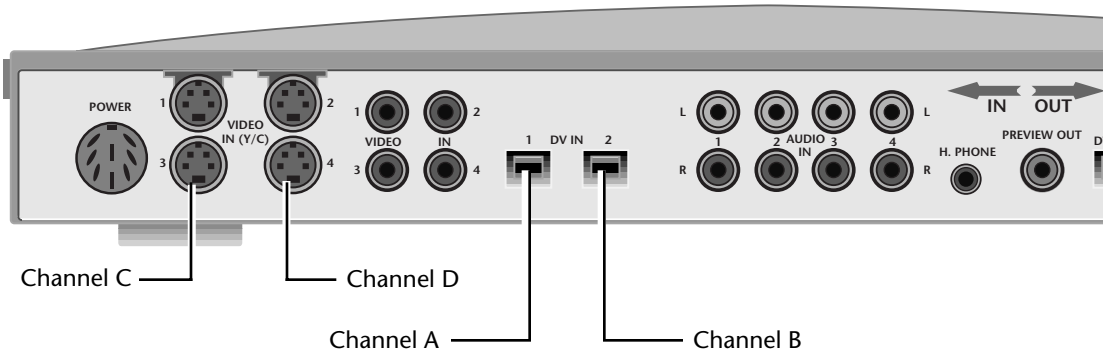
A second monitor, Preview, is used to display preview images of all input sources. The Preview monitor also displays the on-screen controls you use to operate MXProDV.

Correlating Inputs to MXProDV Jacks

IMPORTANT INFORMATION

As stated above, MXProDV designates your input sources as A, B, C, and D. However, as you learned earlier, you can connect up to ten different devices to use an input sources. On the MXProDV rear panel, you find four jacks for Y/C (S-Video) inputs, four jacks for composite inputs, and two DV inputs. The Y/C and composite jacks are numbered 1 through 4, and the DV jacks are numbered 1 and 2.

MXProDV is configured at the factory to expect specific types of devices to be attached to certain rear panel connectors. This is known as the *default* configuration and it provides a starting point for setting up your own equipment. The following illustration of the rear panel shows the MXProDV default configuration.



The DV 1 jack corresponds to MXProDV Channel A, DV 2 corresponds to Channel B, Y/C 3 corresponds to Channel C, and Y/C 4 corresponds to Channel D.

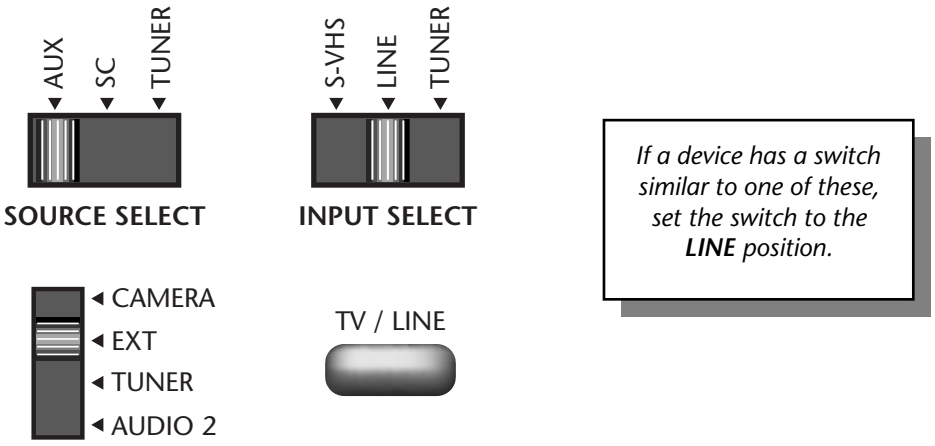
What this means, in practice, is that if you connect ten different input devices to MXProDV then turn the unit on, the unit routes the signal coming through the DV 1 jack to channel A, the signal coming through DV 2 routes to channel B, and so forth. If you want, instead, to have a device connected to the composite video 1 jack routed through channel A, you have to change the default routing. For more information, see "Route" beginning on page 92.

Using Headphones

To use headphones, connect them to the Headphone jack (**H.PHONE**), which is located on the rear panel. The jack accepts standard stereo headphones with a miniature plug. If your headphones have a large plug, you need an adapter to switch it to a miniature plug.

VCR Selector Switches

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



See the manual for your RECORD VCR for details.

Some VCRs 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 MXProDV.

General Notes

When connecting video and audio outputs from source devices, most of the time you'll probably connect to corresponding jacks on the MXProDV 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.

Remember, DV devices carry the audio and video signal (as well as a machine control signal) on the same connection.

Post Production Configuration

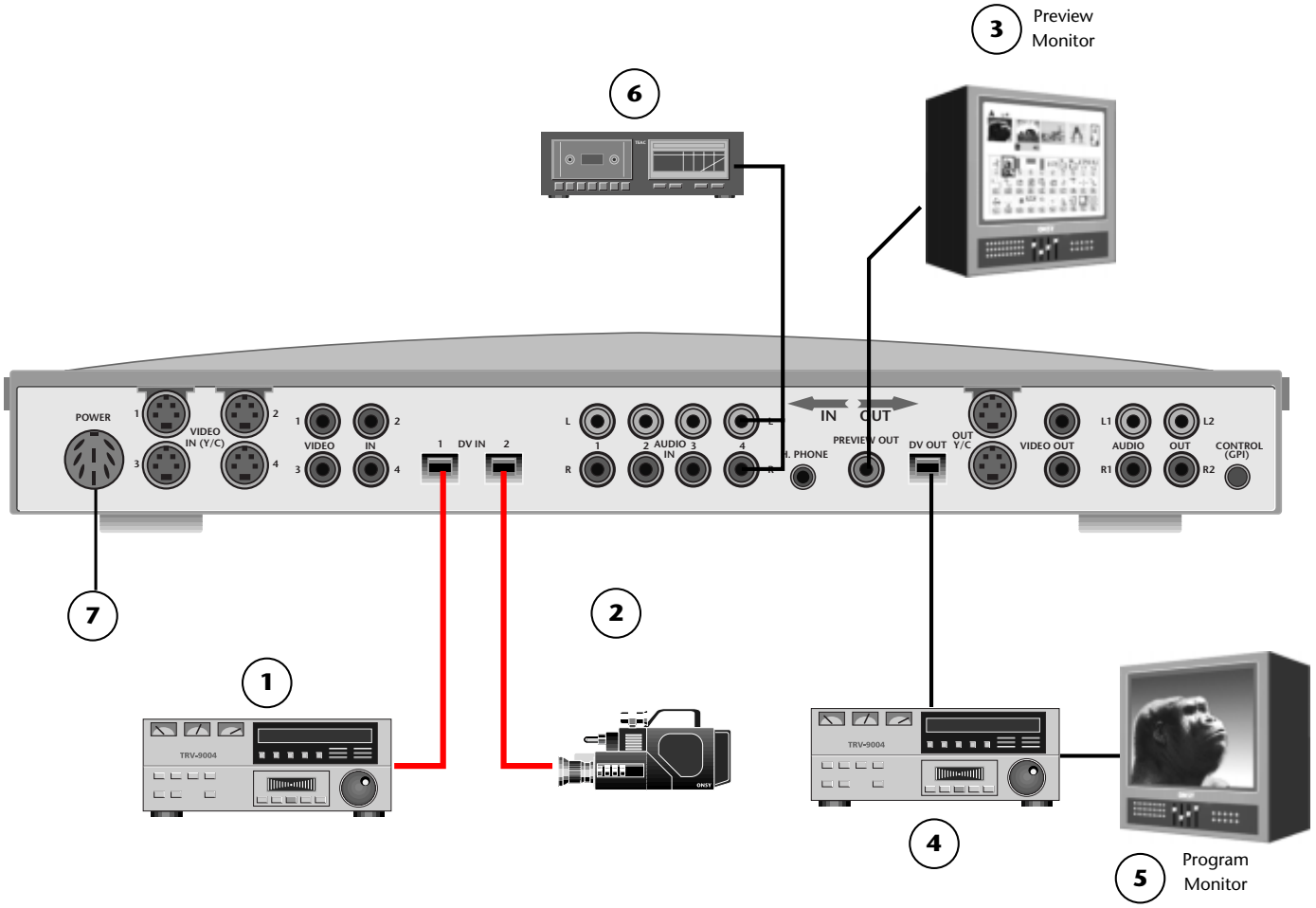
The configuration described in this section is useful in a **Post-Production** environment—where you mix two or more programs together.

This installation example shows the use of DV equipment in combination with analog equipment.

1. Connect the Output from a DV VCR to DV IN 1 on the MXProDV rear panel.
2. Connect the Output from a DV Camcorder to DV IN 2 on the MXProDV rear panel.
3. Connect a Composite-type monitor to the PREVIEW OUT jack on the rear panel.
4. Connect a DV recording VCR to the DV OUT jack on the rear panel.
5. Connect an Output Monitor to the recording VCR so you can see the signal being recorded.
6. **OPTIONAL** – Connect an audio source (CD player, tape deck, or microphone) to AUDIO IN 4 on the MXProDV rear panel.
7. Connect the power cord and transformer to the MXProDV rear panel. See “Power Connector” on page 31 for instructions.

Use the Route function (“Route” beginning on page 92) to make sure your devices are directed to the correct MXProDV channels.

POST PRODUCTION CONFIGURATION



Live Broadcast Configuration

The configuration described in this section is useful in a **Live Broadcast** environment. This installation example shows the use of analog equipment only.

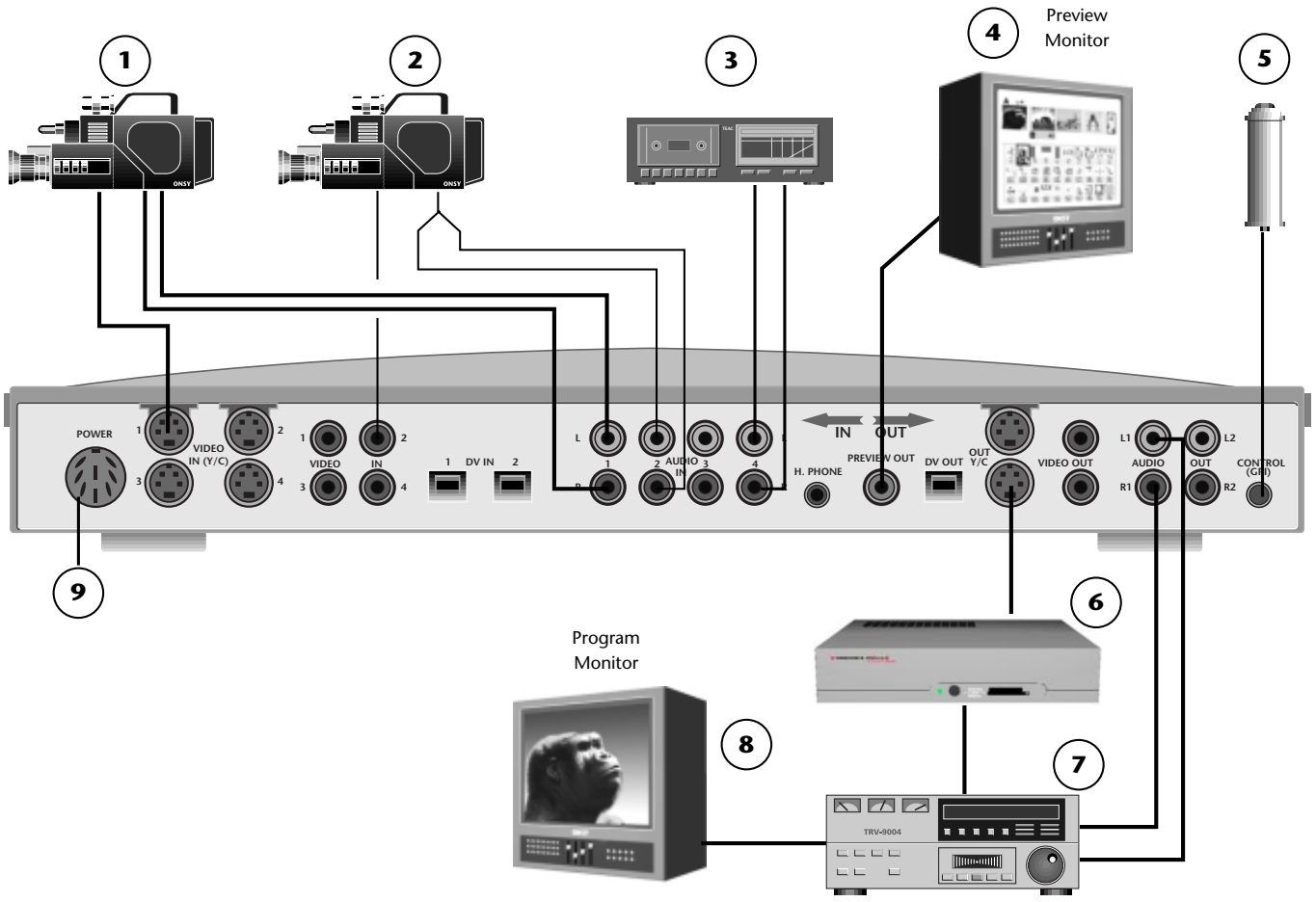
1. Connect the VIDEO OUT from Camera 1 to VIDEO IN 1 (Y/C) on the MXProDV rear panel. Connect the AUDIO OUTs from Camera 1 to AUDIO IN 1 on the rear panel.
2. Connect the VIDEO OUT from Camera 2 to VIDEO IN 2 on the MXProDV rear panel. Connect the AUDIO OUTs from Camera 2 to AUDIO IN 2 on the rear panel.
3. **OPTIONAL** – Connect an audio source (CD player, tape deck, or microphone) to AUDIO IN 4 on the MXProDV 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 MXProDV rear panel.
6. **OPTIONAL** – Connect a character generator (such as a Videonics TitleMaker or PowerScript) to the OUT Y/C jack on the rear panel.

   With this configuration you can superimpose titles from the character generator atop the output signal.
7. *Optional:* Connect a recording VCR to the OUT Y/C jack on the rear panel.

   If you are using the optional character generator (described above), connect the output from this device to the VCR input.
8. Connect an Output Monitor to the recording VCR so you can see the signal being recorded.
9. Connect the Power Cord and Transformer to the MXProDV rear panel. See “Power Connector” on page 31 for instructions.

Use the Route function (see page 92) to make sure your devices are directed to the correct MXProDV channels.

LIVE BROADCAST CONFIGURATION



Using a Microphone with MXProDV

This section explains how to connect a microphone to MXProDV. You'll need the equipment listed below…

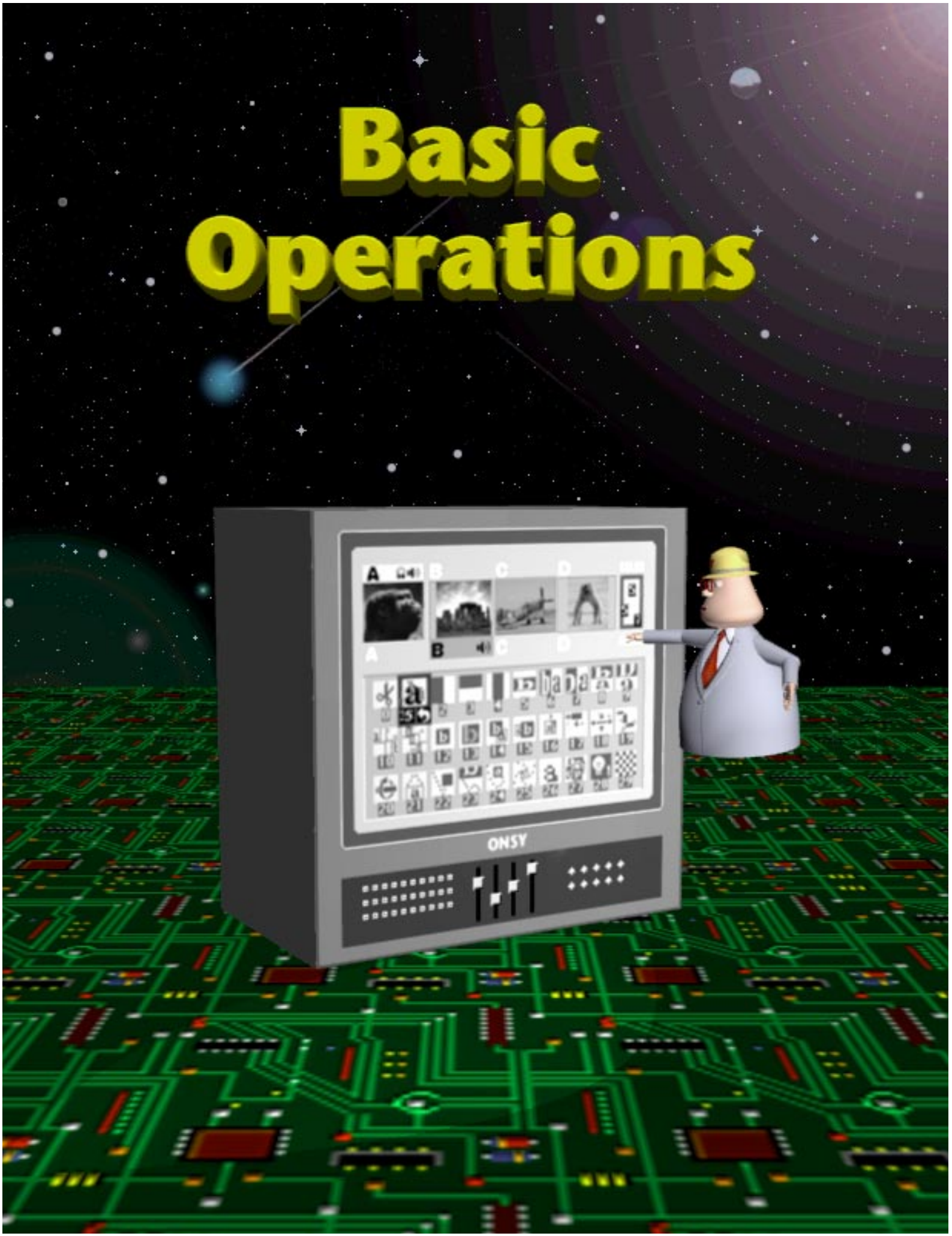
- Microphone
- Microphone cable (male-XLR to female-XLR connectors)
- An audio direct box (which you can purchase from any professional audio equipment dealer)
- A 1/4 inch (phone jack) to RCA cable
- A female RCA to dual-male RCA "Y" Adapter

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 MXProDV rear panel. Connecting to this channel allows you to use the microphone as a background source, if desired.

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 141).

Basic Operations



VIDEONICS

CHAPTER 4

BASIC OPERATIONS

This chapter describes several basic MXProDV operations, including:

- Starting and stopping MXProDV
- Using the MXProDV 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

Starting and Stopping MXProDV

Press the Power switch to start or stop MXProDV. The switch, located on the right-end of the unit, is a rocker-type switch.

Understanding the Keyboard

Use the MXProDV keyboard to control how the unit operates.

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, tile size in PIP mode, and audio levels in the Audio Mixer. See Chapter 5, *Transitions*, Chapter 8, *PIPs*, and Chapter 12, *Working with Audio*, respectively.

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 MXProDV 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 49.) Use the **COLOR** buttons to create solid colored backgrounds and other effects. (See "Working with Colors" beginning on page 53.)

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 51.

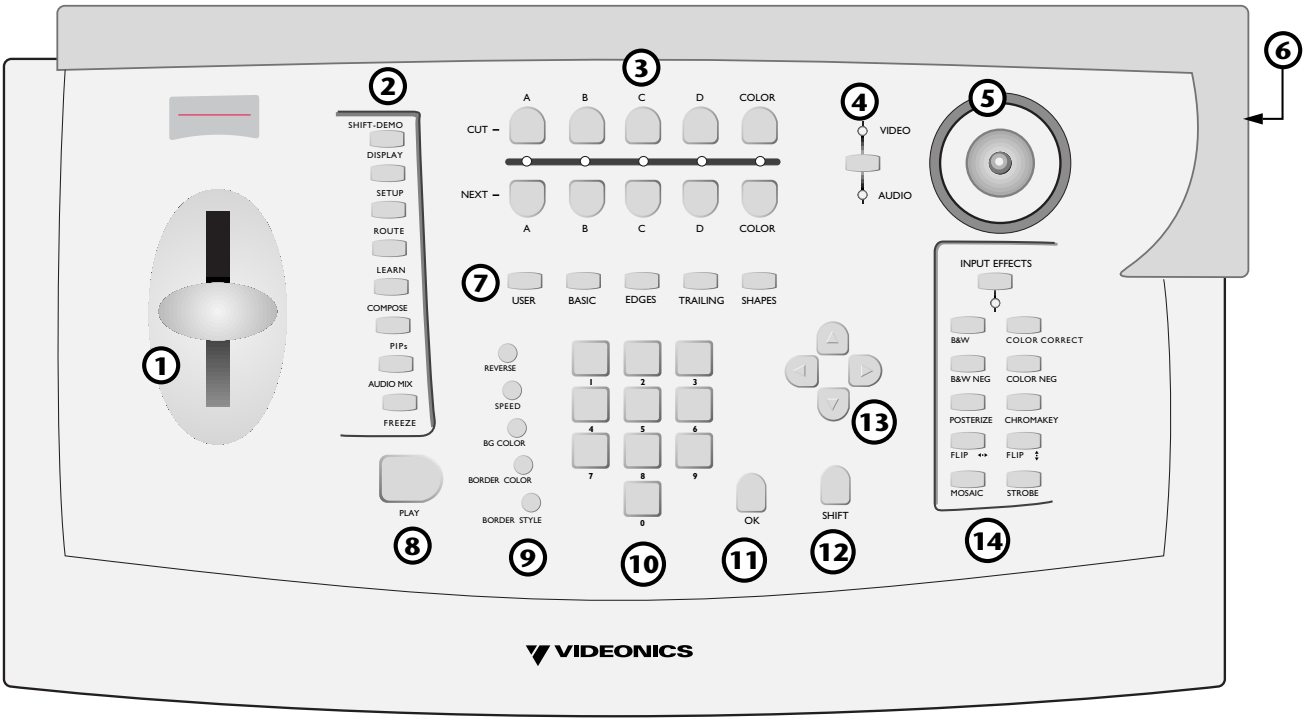
5 **Joystick** — Provides an easy way to make fine adjustments to various components. For example, when using PIPs, the joystick positions the various picture elements on the screen. When using color correction, the joystick adjusts the color. The joystick has other uses you'll learn about in later chapters.

6 **Power Switch** — This component is 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.

7 **Transition Category Buttons** — Gives you immediate access to the five, major categories of transitions, including **USER**, **BASIC**, **EDGES**, **TRAILING**, and **SHAPES**. All MXProDV 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 64.

8 **Play Button** — Press to perform the cut or transition you have set up. In other words, set up your CURRENT and NEXT sources, select a transition, then press **PLAY** at the moment you want MXProDV to perform the step.

MXPRODV KEYBOARD



9 Transition 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 MXProDV that you have completed some operation and want the unit to prepare for or perform it accordingly.

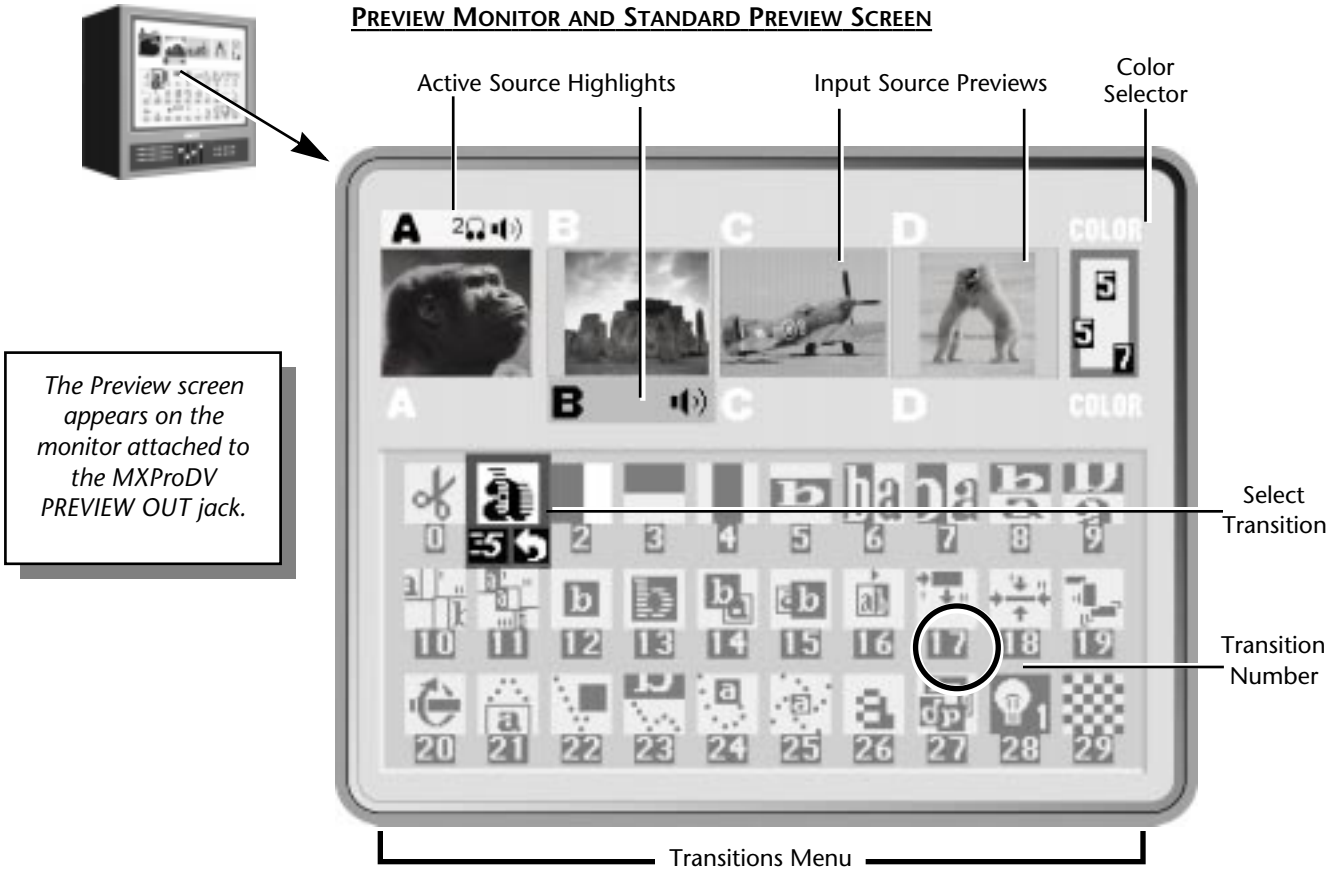
12 Shift Button — A modifier key that invokes special functions when used in conjunction with other keyboard keys.

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 MXProDV is in Input Effects mode. See Chapter 6, *Input Effects*, for more information.

Using the Preview Screen

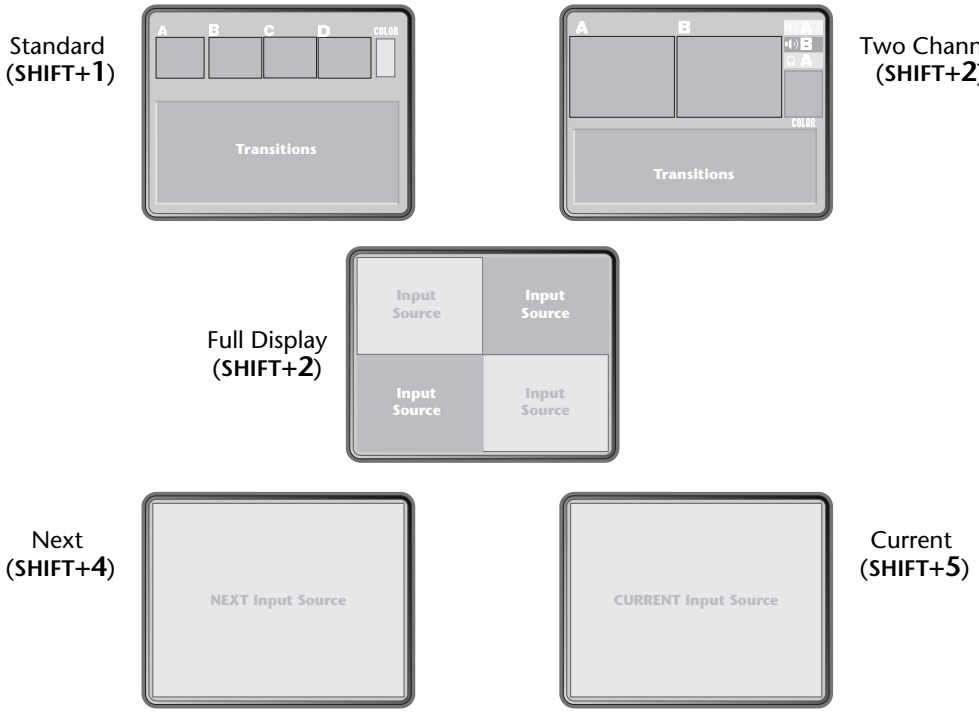
The Preview Screen is your control center for MXProDV operations. This section describes individual items on the Preview screen.



MXProDV always processes the output at the highest possible quality. The Input Source Previews, however, appear in reduced quality because MXProDV must reduce the images to fit the smaller window. 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** — (**SHIFT+1**) Shows preview images for all four input sources and up to 30 different transition options.
- **Two Channel** — (**SHIFT+2**) Shows only enlarged CURRENT and NEXT input source Previews and two rows of the Transitions menu.
- **Full** – (**SHIFT+3**) Displays only the input source Preview windows, each in a larger size. Transitions menu not displayed.
- **Next** — (**SHIFT+4**) Displays full-screen image of the NEXT input source. Transitions menu not displayed.
- **Current** — (**SHIFT+5**) Displays full-screen image of the CURRENT input source. Transitions menu not displayed.

See “Display” beginning on page 87 for more information. 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. MXProDV 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.

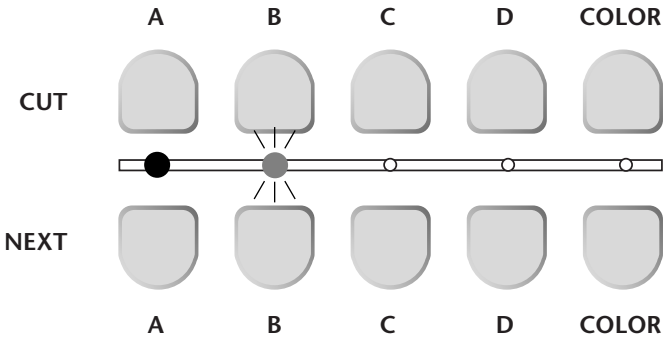
Colored highlights help identify one video source from another. Yellow highlights the CURRENT video source (above the preview image), and green highlights the NEXT video source (below it).

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. If 4-channel audio output is selected, the icon is preceded by a 1 or a 2 to indicate which pair is being played.

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

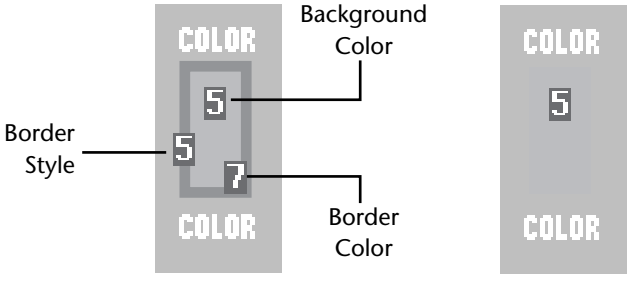
A steady light identifies the CURRENT video source. A blinking light identifies the NEXT video source.



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

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 53.

Transitions Menu

The Transitions menu shows up to 30 transitions at a time. MXProDV groups the 500+ available transitions into categories. To access any transition category, press the appropriate transition category button.

See "Transition Categories and Menus" beginning on page 64 and Appendix A, *Transitions List*, for detailed 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, MXProDV 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 70.

USING CURRENT AND NEXT SOURCES

The concept of CURRENT and NEXT sources is fundamental to MXProDV 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.

To identify the CURRENT and NEXT sources:

1. Begin with the footage of Kong. 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 68 for additional methods of selecting transitions.

4 Roll the CURRENT source to the spot where the transition should run, then press **PLAY**.

Immediately upon completion of the transition, MXProDV 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.

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

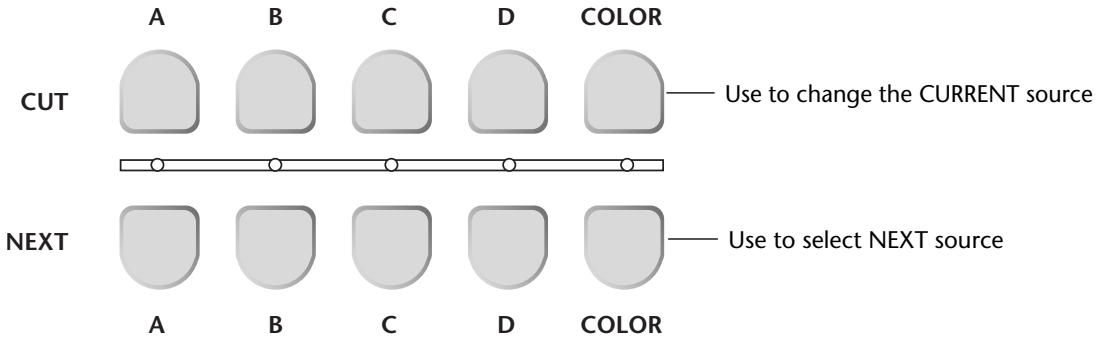
6 Select a transition to use this time to switch from CURRENT to NEXT source, such as a slow dissolve. The CURRENT source (the fighter plane) continues running, and continues to appear on the output device.

7 To transition to Stonehenge, hold down the **SHIFT** button and move the **T-BAR** to the bottom of its slot, release the **SHIFT** key, then swing the **T-BAR** upwards 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

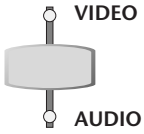
Now that you understand the distinction between the CURRENT and NEXT source, you need to know how to select sources for each. Use the **CUT** and **NEXT** buttons on the MXProDV keyboard to select sources.



Use the **CUT** buttons to cut to a new source. The four buttons labeled **A**, **B**, **C**, and **D** correspond directly to the Input Source Previews on the Preview Screen (see page 47) and to MXProDV'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 54). When you press any **CUT** button, the output video cuts to the new source and the indicator light *below* the **CUT** button glows steadily.

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. The output does not change until you use **PLAY** or the **T-BAR** to transition to the **NEXT** source.

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. Video light only is illuminated.

AUDIO – Audio changes, video does not. Audio light only is illuminated.

both – Audio and Video both change. Both the video and audio lights are illuminated.

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 use video from channels A and B, and audio from Channel C. Using the **VIDEO/AUDIO** *selector you can process only the video from the VCRs and combine it with the audio from an audio tape containing the voice-over material.*

To do this type of mixing:

1. Route the VCRs to Channels A and B.
2. Route the audio to Channel C.
3. Press the **VIDEO/AUDIO** selector until only the **AUDIO** light is on
4. Press **CUT/C** to make channel C source for audio.
5. Press the **VIDEO/AUDIO** selector until only the **VIDEO** light is on.
6. Press **CUT/A** to make it the CURRENT source, then press **NEXT/B** to make it the NEXT source.
7. Start all the input devices rolling.
8. Press **PLAY** to change video from Channel A to Channel B. The audio remains on Channel C.

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**. MXProDV 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 53 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 **(SHIFT+2)** *for the Preview screen. See "Display" beginning on page 87.*

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. Press **OK**.

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, MXProDV 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.

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.

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

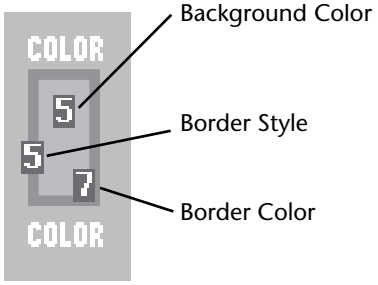
Table 3: Default Colors and Numbers

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 MXProDV palette is ten. You can change nine of the ten colors. You cannot change color 0 (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.

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.

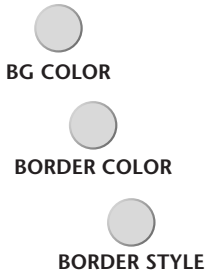
To make the selection:

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.*

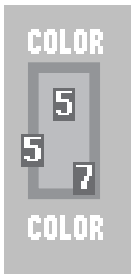
If you already know the color number of the color you want to assign:

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.

Creating Custom Colors

You can change any color *other than color 0 (black)* (see Table 3 on page 53) 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 MXProDV 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.



To create a custom color:

1 Press **BG COLOR** or **BORDER COLOR** until the color you want to change appears in the Color Selector.

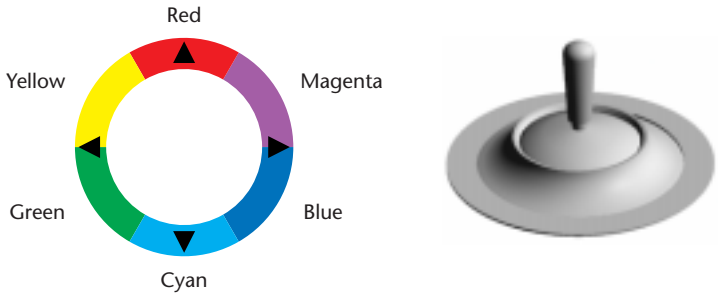
2 Press **LEARN+BG COLOR** or **LEARN+BORDER COLOR** (depending on which one you want to change).

These key combinations activate Learn Color mode. MXProDV 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** to adjust color.



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. MXProDV restores the original color and exits from Learn Color mode (the **VIDEO/AUDIO** lights cease blinking).

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.

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.

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 width. **LEARN+UP/DOWN ARROW** keys soften the border.
7-9	Drop Shadow Border	**LEARN+ARROW** keys reposition drop shadow.

Changing Border Styles

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

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 the preceding table.
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 cycle between 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," on page 57, below) to specify what you want to change – width, softness, or position.
6. Return the **T-BAR** to its full up or full down position.

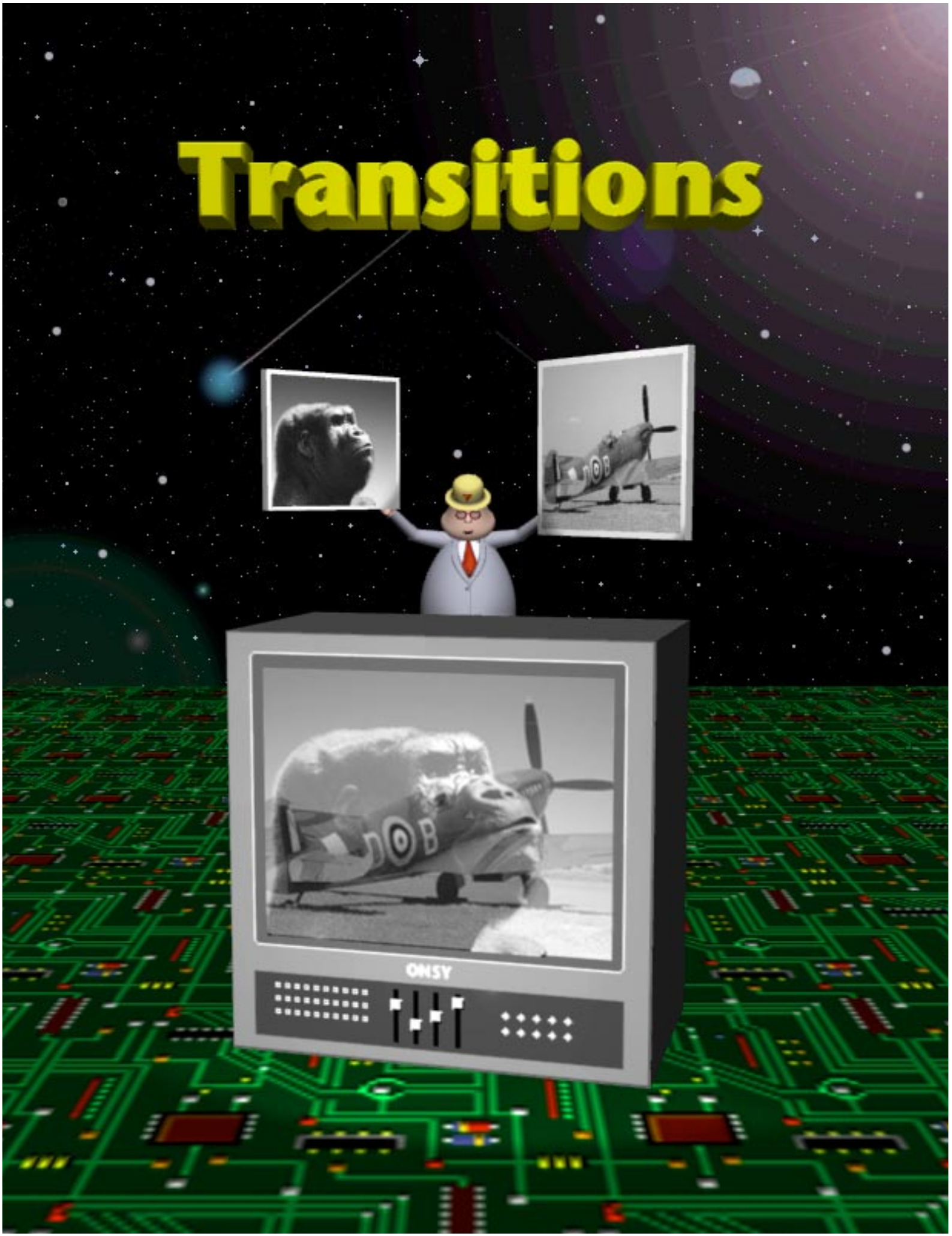
MXProDV automatically stores the border style so that it is available until and unless you change it again.

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 thickness	LEARN+RIGHT ARROW
Decrease border thickness	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.

NOTES



VIDEONICS

CHAPTER 5

TRANSITIONS

MXProDV 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.

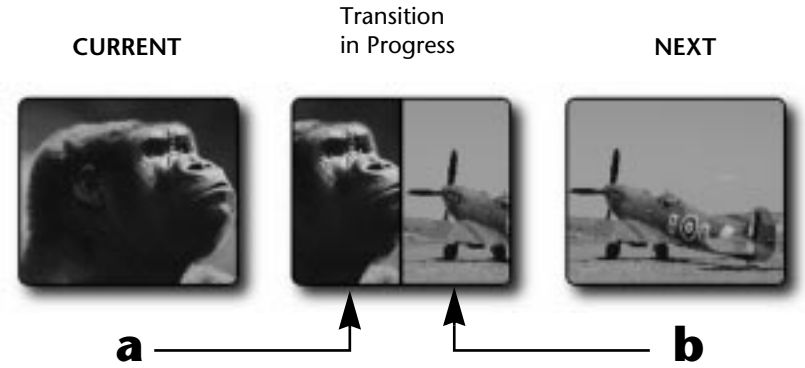
Transitions artistically switch from one scene to the next in a production. MXProDV transitions range from simple cuts, dissolves, and wipes to sophisticated zooms, fly-ins, and flips. You can change the speed (either manually or automatically) at which transitions run, and run them in reverse. Combine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

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.



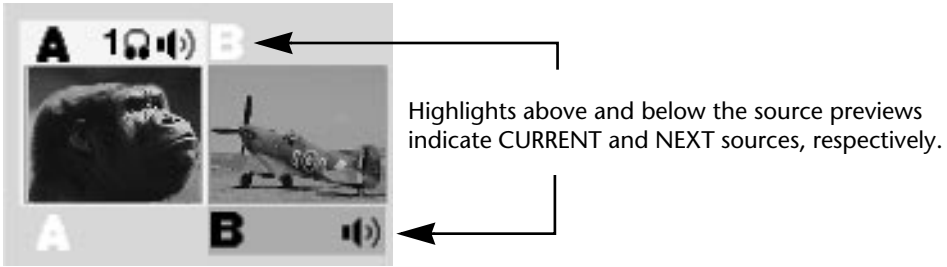
NOTE

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 MXProDV channels.

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

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.

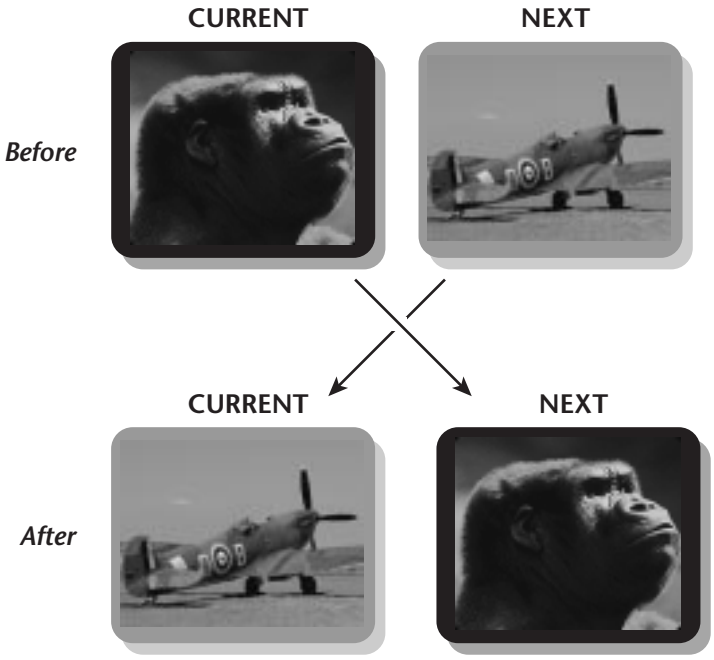


3. Select a transition to use. For example, press the **BASIC** Transition Category button, then select a wipe transition from the menu.
4. Prepare the sources (such as VCRs and camcorders) and let them roll.
5. At the right moment, use either the **T-BAR** or the **PLAY** button to run the transition.

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:

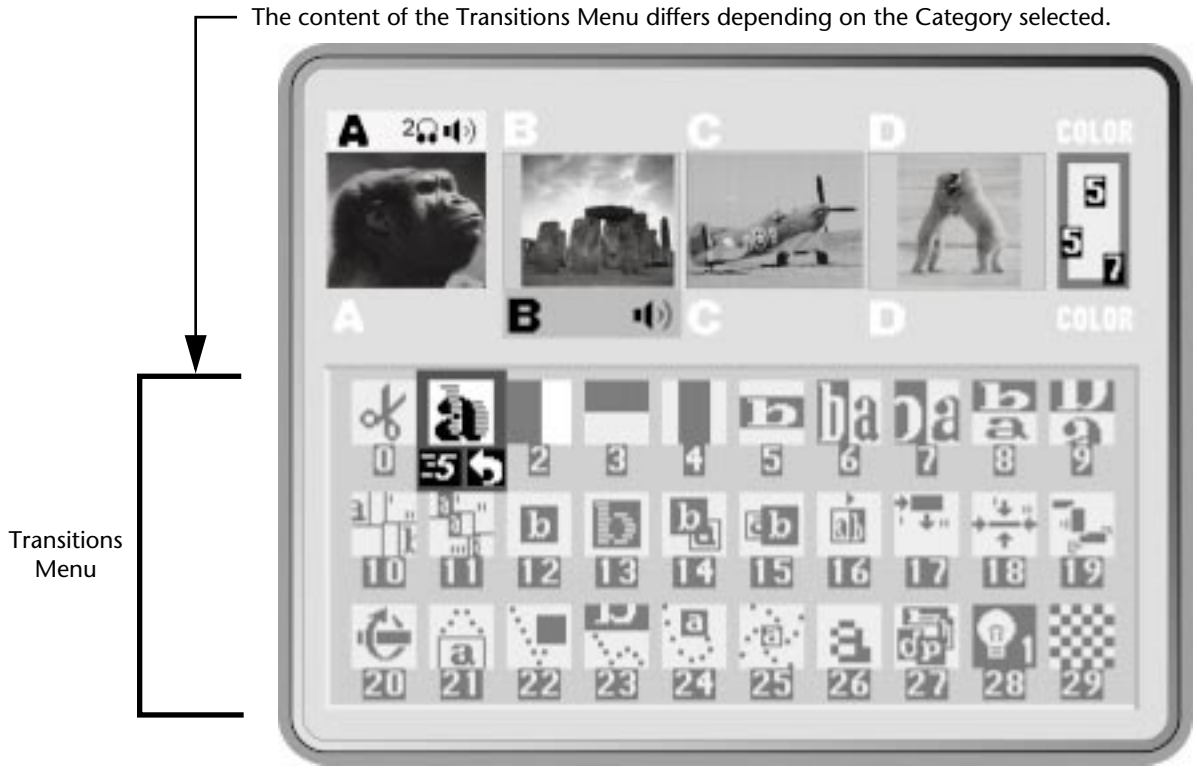
- Leave the CURRENT and NEXT sources as they are and switch back and forth between them; or,
- Select a new NEXT source and, optionally, a new transition, then repeat the process.

Transition Categories and Menus

To help manage the 500+ transitions, MXProDV 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, MXProDV 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.



NOTE

The Transitions Menu does *not* appear when you work with the Full, Current, or Next Preview screen. See "Display" beginning on page 87 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.

MXProDV color codes the transition icons in the menu:

Basic	White
Edges	Blue
Trailing	Yellow
Shapes	Red

Basic Transitions Category

This category includes common transitions, such as wipes and dissolves. The transitions in this category are color coded white. See page 160 for samples.

MX-1 Compatibility

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

MXProDV 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 MXProDV 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/Bounces (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 167 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 168 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, and so forth. Transitions are color coded red. See page 169.

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, MXProDV makes it easy for you to access your favorite transitions by creating your own personal menu — the User menu. MXProDV comes with a default set, but you can add and remove them to tailor the User menu to your preferences and needs.

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 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 MXProDV 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.

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), MXProDV does not display the Transitions Menu. See “Display” beginning on page 87.
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.

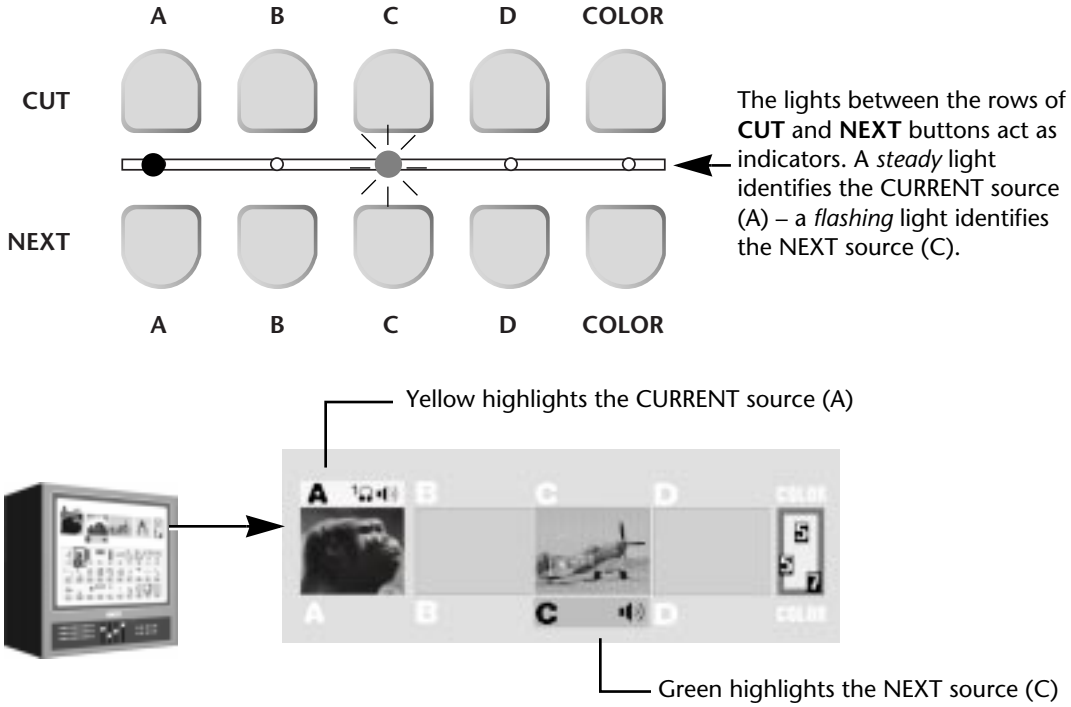
To restore the default set of transition to the User menu:

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.

SELECTING TRANSITION SOURCES

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. MXProDV provides feedback in a couple of different ways to confirm your choices.

Selecting Sources and Getting Feedback



MXProDV 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 63). 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.

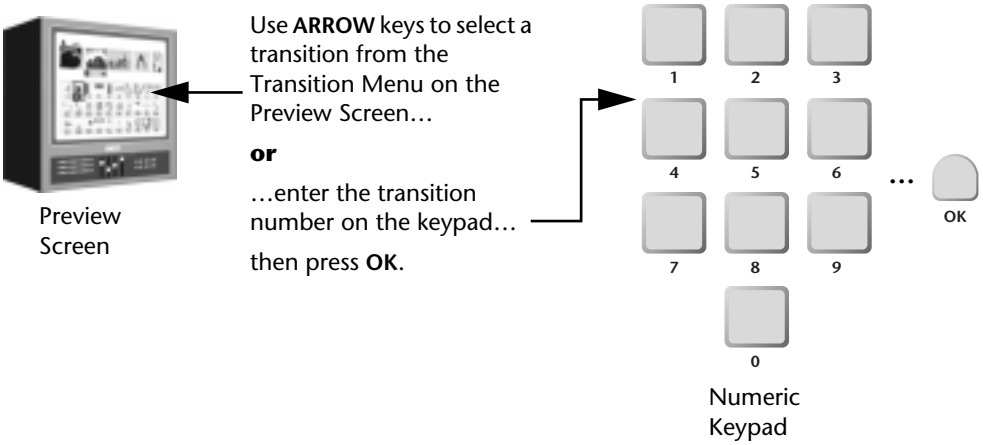
Setting the NEXT Source

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

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 MXProDV numeric keypad, then press **OK**.

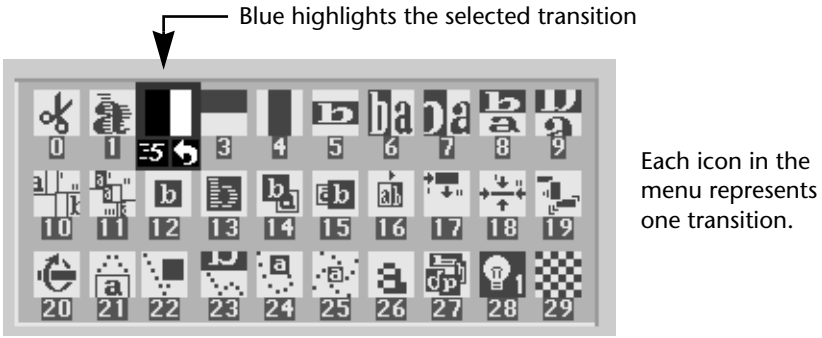


NOTE

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 87 for more information about Preview modes).



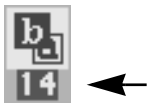
To select a transition from the Transitions Menu:

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. Do one of the following:
   a. Press **PLAY** to select and play the current transition, or
   b. 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

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.

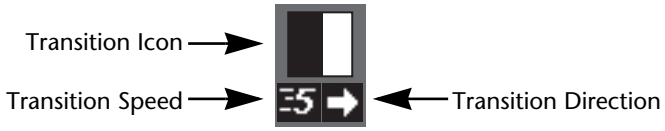
If you make a mistake entering a number, press **OK**, enter the number correctly, then press **OK** again.

NOTE

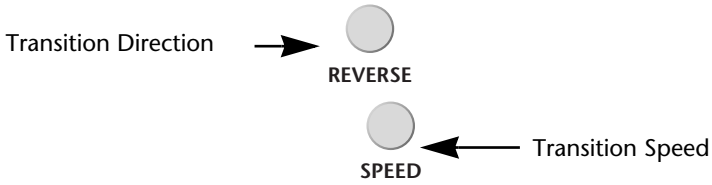
When you highlight a transition in a Transitions menu, the highlighting obscures the transition number. The number below the transition icon represents the speed at which the transition plays. The following section, “Adjusting Transitions” discusses this.

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).

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.

MXProDV 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.*

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.

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.

MXProDV 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.

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* position to the *down* position, MXProDV performs a simple dissolve (transition 160).

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, MXProDV 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.

To invoke the Auto-Reverse feature:

➔ Enter **SHIFT+REVERSE**.

With Auto-Reverse activated, MXProDV 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.

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, MXProDV automatically turns it off while the transition runs (see "Strobe" on page 81).

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


PLAY

To run a transition automatically at a predetermined speed:

➔ 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" beginning on page 97), which freezes the entire picture, transition, and video image.

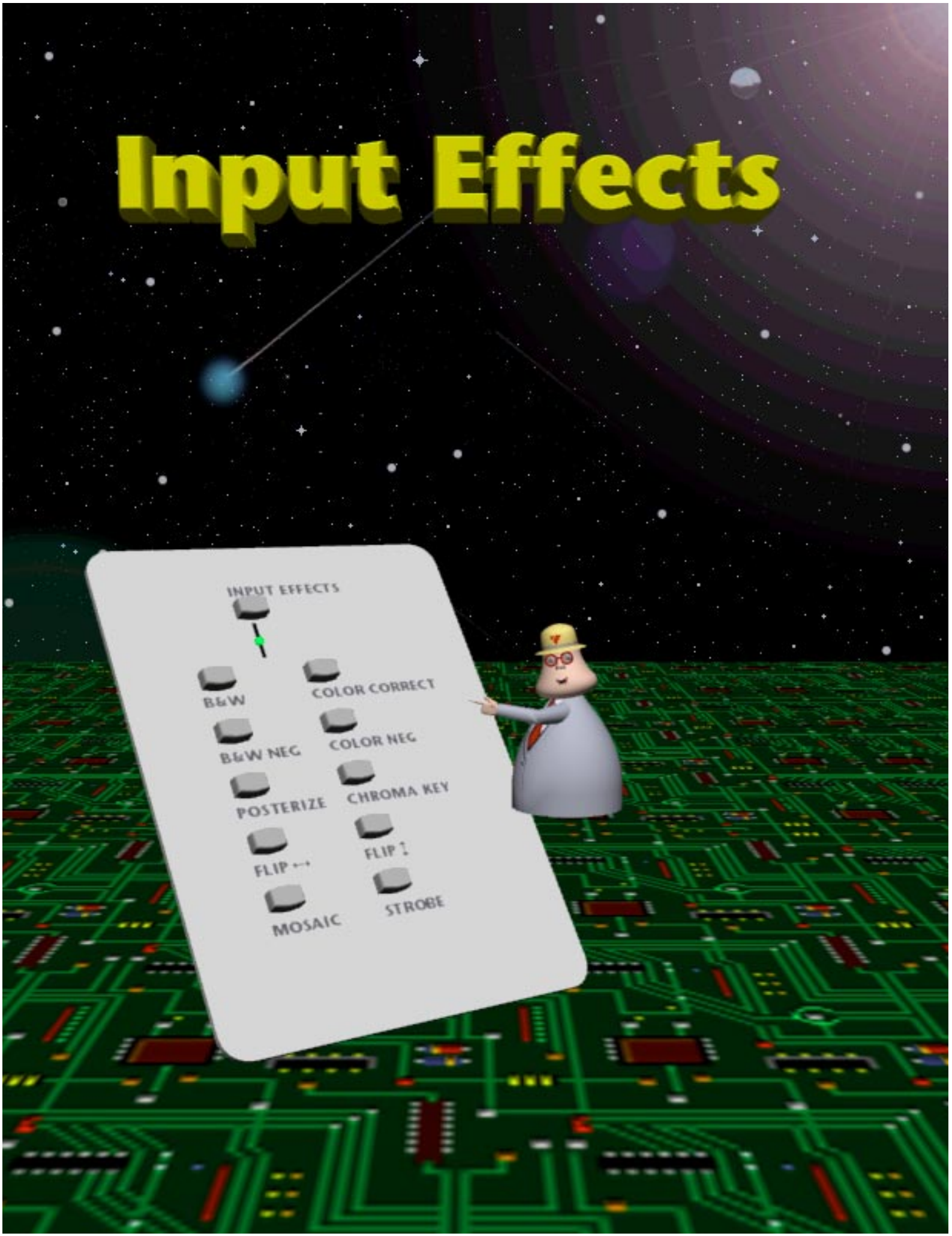
Running Transitions Manually

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.

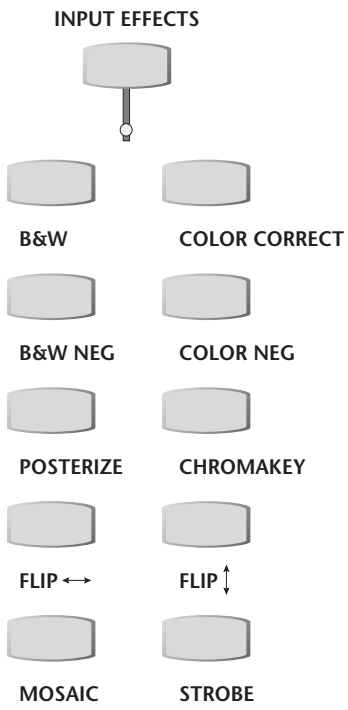


VIDEONICS

CHAPTER 6

INPUT EFFECTS

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



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

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

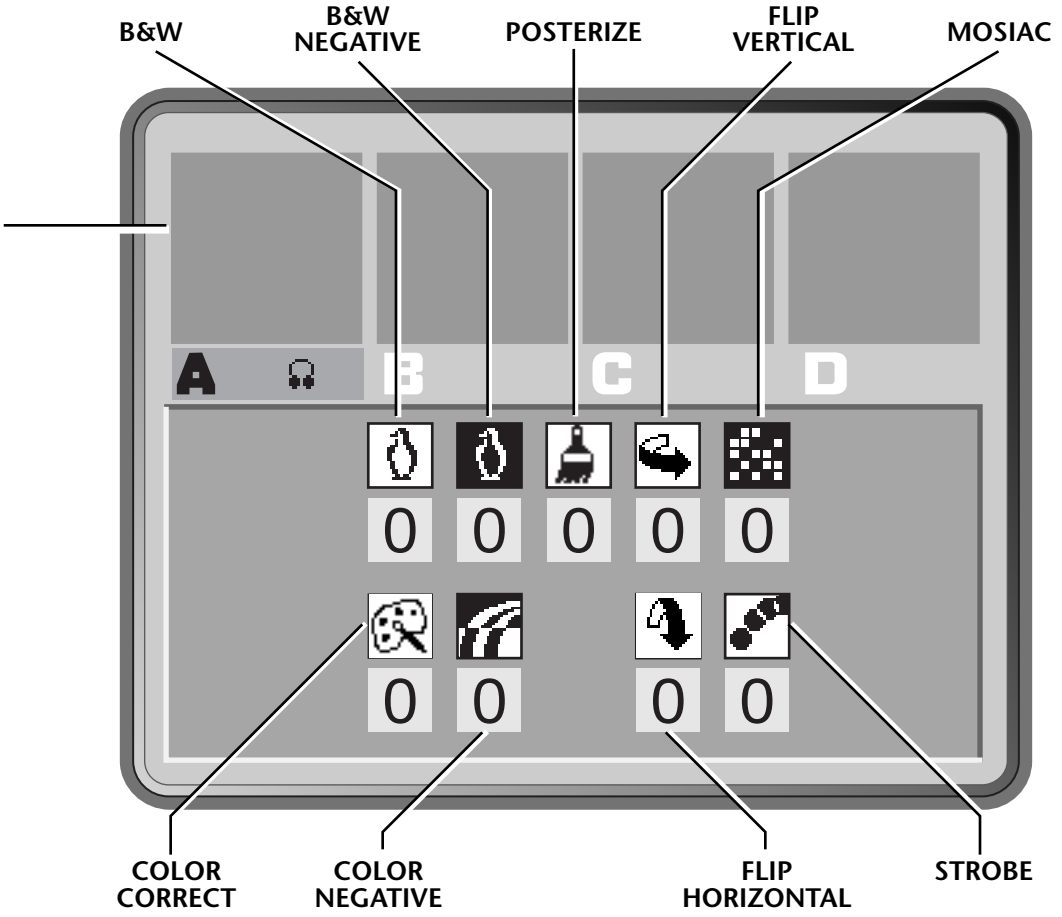
You ***cannot*** use Input Effects:

- With trailing transitions.
- With multi-PIPs.
- In compose mode.
- On the key source in a chromakey.

Input Effects Menu

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

MXProDV does NOT update the preview images to show Input Effects when you set the Preview mode to Display Next.



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

NOTE

The menu does *not* contain an icon or settings for the chromakey option. When you press the **CHROMAKEY** button, MXProDV takes you directly to the chromakey screen. See Chapter 10, *Chromakey*, for details.

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 or **OK**	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 and re-enables Input Effects from being sent to Program out. See the following paragraph.

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

When you use the **SHIFT+INPUT EFFECTS** key combination to *disable* Input Effects, MXProDV 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.

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 87); 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, chromakey, and compose.
- MXPro color correction turns off during transitions if it is enabled on more than one channel. See "Color Correct" on page 80 for more information.
- MXProDV turns off Strobe during transitions.
- MXProDV turns off all Input Effects during trailing transitions.

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 7 or 0 to 9. The Color Correction option also works a little differently: see "Color Correct" on page 80.

NOTE

Although the chromakey button is included in the Input Effects group, it is not an input effect.

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 desired Input Effect.
3. Use one of the **NEXT** buttons to select the source to which you wan to apply the effect. For example, press **NEXT/B** to apply the effect to channel B.
4. Type the parameter value on the MXProDV numeric keypad, or continue pressing the corresponding effects key until the parameter value you want appears in the menu.
5. Press **OK** or **INPUT EFFECTS** to exit from Input Effects mode.

MXProDV 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.

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

TIP

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

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 MXProDV implements color correction, the program output might be affected temporarily.

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

TIP

Color creation is applied to only one channel at a time. If both the current and next sources are color corrected, the next source is not corrected during transitions. For this reason you should use cuts only if both channels are color corrected.

COLOR NEG

Inverts all colors in the image.

Parameter Values — Zero or one.

0 = Off: **1** = On

CHROMAKEY

Chromakey 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, *Chromakey*, for complete details.

FLIP VERTICAL

Flips picture top-to-bottom.

Parameter Values — Zero or one.

0 = Off: **1** = On

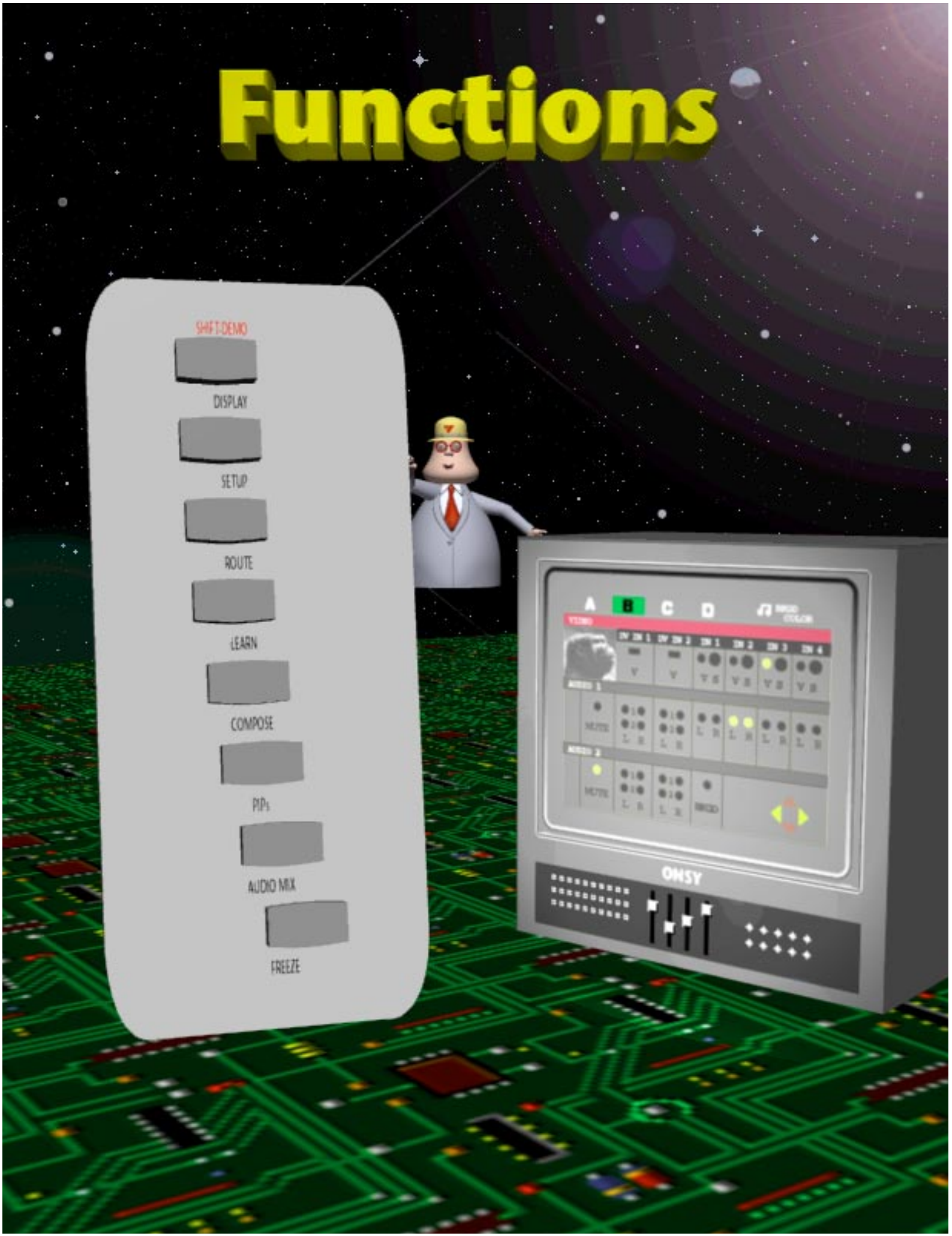
STROBE

Slows down the picture's video frame rate. Motion appears halting, or jerky — like that produced by a strobe light. MXProDV automatically disables all strobe settings during transitions.

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. Strobe is disabled during transitions.

NOTES

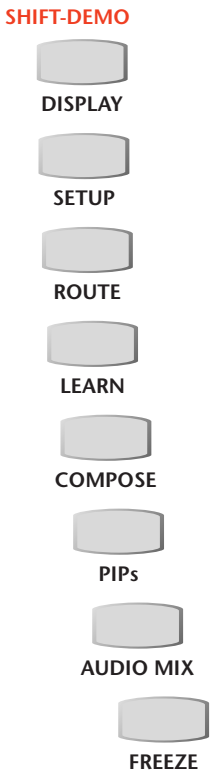


VIDEONICS

CHAPTER 7

FUNCTIONS

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



These buttons give you access to several different built-in functions.

Demo

Press **SHIFT+DEMO** to run a demonstration of several MXProDV 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 MXProDV.

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

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.

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.

To run the demo in Locked mode:

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 **LEARN+DISPLAY** to start the demo.

3. To exit from the locked demo, press **LEARN+DISPLAY** again.

DISPLAY

To control what appears on the Preview monitor, use the **DISPLAY** function. Press **DISPLAY** or use the shortcut keys described here 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 (press **SHIFT+1)–** 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 (press **SHIFT+2) –** Displays preview images for the CURRENT and NEXT sources. Preview images increase in size, but the Transitions Menu shows only 20 transitions.

Full (press **SHIFT+3) –** Divides preview screen into four sections. Each section shows a preview image of the currently active input sources. The Transitions Menu is not available.

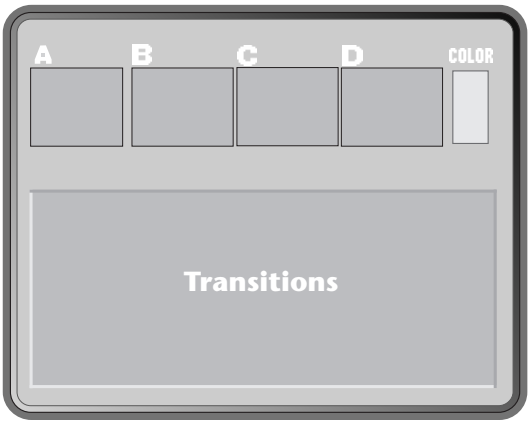
Next (press **SHIFT+4) –** Displays only a full-screen preview image of the NEXT source.

Current (press **SHIFT+5) –** Displays only a full-screen preview image of the CURRENT source.

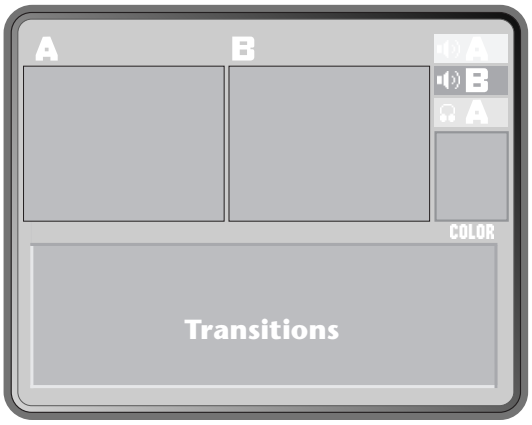
When you run a transition, the Preview screen shows a full-screen image, running at full frame-rate — the same as the signal going through the output channel.

DISPLAY Configurations

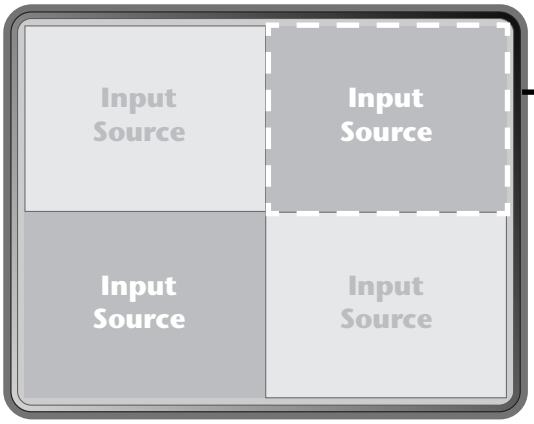
Standard – SHIFT+1



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

*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.*

*Use the shortcut keys or press **DISPLAY** to cycle through the display options.*

SETUP

The Setup functions control various aspects of the way MXProDV operates, including Force Field Freeze, GPI Out Mode, Comb Filter, 2-channel Audio Output, and Black Level.

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

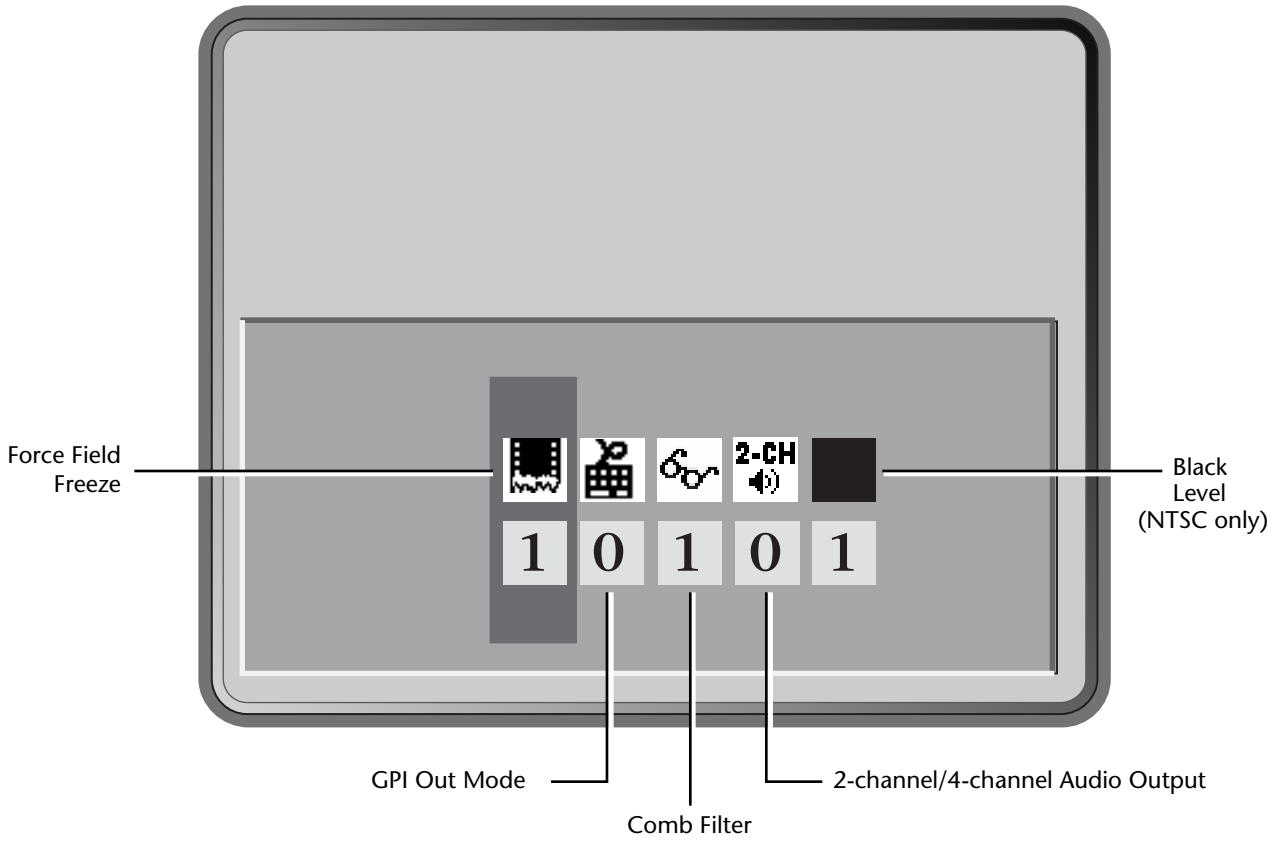


Table 9: Setup Menu Navigation Keys

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, MXProDV sets to nearest valid value.
Restore setup values to factory defaults.	**SHIFT+0**	
Exit from Setup menu	**OK**	

Force Field Freeze

The Force Field Freeze option lets you specify whether you want MXProDV to perform a frame or field freeze. This option works in conjunction with the Freeze feature (see "Freeze" on page 97).

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 – MXProDV 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 – MXProDV 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 MXProDV 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 MXProDV. Set the value to **0** (zero) to use MXProDV 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

MXProDV 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 152 for relevant information.

Comb Filter

This option can be used in some cases to affect the quality of the video coming from an 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.

2/4-Channel Audio Output

Specifies whether the audio output of MXProDV will be 4-channel or 2-channel. The default is 4-channel (field value = 0). To select 2-channel audio output, change the field value to 1 (one).

For DV, 2-channel audio output provides the highest quality output (48 kHz, 16 bits). However, if you select 2-channel output, your DV audio sources must be 48 kHz, too; 32 kHz DV audio sources cannot be used. Any analog audio inputs can be used. If you select 2-channel output, you get two pairs of analog audio outputs on the MXProDV rear panel: L1 + R1 and L2 + R2.

Selecting 4-channel audio output provides high quality DV audio (32 kHz, 12 bits) and lets you use both 32 kHz and 48 kHz DV audio inputs. Any analog audio input can be used. The analog audio outputs on the rear panel of MXProDV will play channels 1 and 2 on the L1 + R1 jacks and channels 3 and 4 on the L2 + R2 jacks.

Select 2-channel or 4-channel output based on your recorder capabilities and on your quality needs. The choice you make for this option affects several other MXProDV choices/displays:

Table 10: MXProDV Audio Channel Options

FEATURE	PARAMETER VALUE = 0	PARAMETER VALUE = 1
2-channel / 4-channel Output	4-channel output	2-channel output
DV Audio Output	32 kHz, 12-bit samples	48 kHz, 16-bit samples
Analog Audio Output	Provides one 4-channel output (Output jacks L1+R1= pair 1; L2+R2=pair 2).	Provides two pairs of outputs (Output jacks L1+R1 and L2+R2 each carry the same pair of signals)
Usable Audio Input	Input can be analog audio (IN1-4) or 32 kHz DV or 48 kHz DV. 44.1 kHz DV audio can NOT be used; it will be either muted or distorted.	Input can be analog input (IN1-4) or 48 kHz DV. 32 kHz and 44.1 kHz DV audio can NOT be used. If used, the audio will be muted or distorted.
Route Menu	The Audio 2 section of the Route menu is enabled. This is where you select the audio to be routed to channels 3 and 4 (pair 2).	The Audio 2 section of the Route menu is disabled (since channels 3 and 4 are not used).
Audio Mixer	The volume sliders are segmented. Left segment adjusts volume for channels 1&2; right side adjusts channels 3&4; middle adjusts all four channels.	The volume slider is not segmented. Channels 1&2 are adjusted to the same level.
Headphone audio and icons	Toggling the headphones (**SHIFT+AUDIO/VIDEO**) alternates the headphone audio between current audio (channels 1&2), current audio (channels 3&4), next audio (channels 1&2) and next audio (channels 3&4). The headphone icon is preceded by a 1 or a 2 to indicate whether you are listening to pair 1 (channels 1&2) or pair 2 (channels 3&4): 1 , 2	Toggling the headphones (**SHIFT+AUDIO/VIDEO**) alternates the headphone audio between the current and next audio sources.

Black Level

NTSC Video equipment commonly uses one of two black level settings:

- **7.5 IRE** – The traditional black, which is the MXProDV default setting.
- **0 IRE** – A darker black level used in Japan.

To use the darker black (0 IRE) for the MXProDV 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 is 0 IRE in PAL systems; there is no 7.5 IRE choice.

Route

The Route function determines which audio and video inputs are connected to which channels of MXProDV.

MXProDV has four audio/video channels (A, B, C and D), a color channel and a background audio channel. You can route any of your audio/video inputs to any audio/video channel, and you can route any audio input to the color and background audio channels.

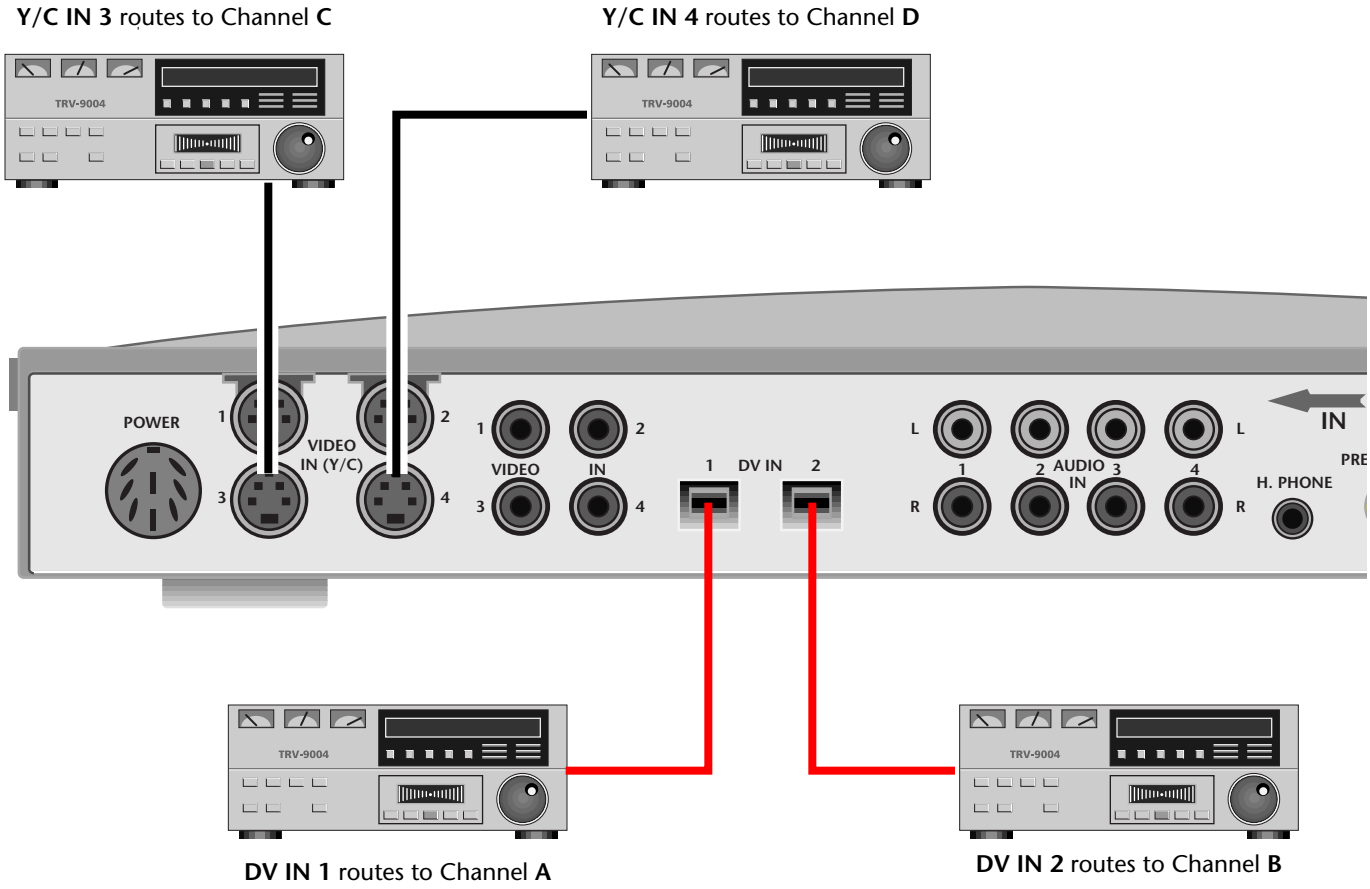
Defaults

MXProDV ships from the factory with the following defaults (see the illustration on page 93):

- DV IN 1's video and audio (channels 1 and 2) are routed to channel A.
- DV IN 2's video and audio (channels 1 and 2) are routed to channel B.
- Video IN (Y/C) 3's video and analog Audio IN 3 are routed to channel C.
- Video IN (Y/C) 4's video and analog Audio IN 4 are routed to channel D.
- No audio is routed to the Color channel (mute selected).
- Audio IN 4's analog audio is routed to the background audio channel.

Unless your VCRs and camcorders are connected as described above, you may not see any video on the preview or output screens. If this occurs, or if you want to change which sources are routed to which channels, you will need to change the default routing.

DEFAULT SETTINGS FOR ROUTE FUNCTION



Changing the Routing

To change the routing,

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

The MXProDV has four internal channels: A, B, C and D. The route menu lets you select which of the ten inputs are connected to each of the four channels.

Audio sources can be routed to the same four channels (A, B, C and D) and in addition, can be routed to the color channel or the background audio channel (see Chapter 12, *Working with Audio*, for more information.)

2 Select the channel (A,B,C or D) you want to change by pressing **NEXT/A**, **NEXT/B**, **NEXT/C**, **NEXT/D**, **NEXT/COLOR**, or **SHIFT+NEXT/COLOR** (for Background Audio). The currently selected channel is highlighted.

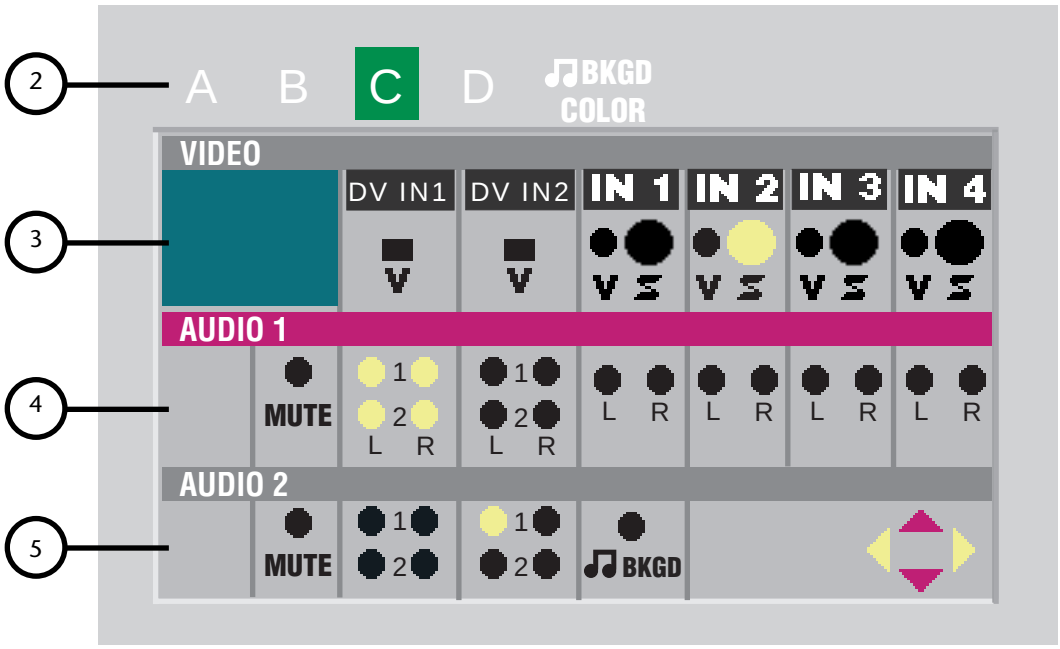
3 Select the Video you want to display for this channel. Use the **UP ARROW/DOWN ARROW** keys to move to the Video row, then use the **LEFT ARROW/RIGHT ARROW** keys to select a video source.

a The first two choices are the DV sources (DV IN1 and 2).

b The remaining choices are the composite (V) and Y/C (S) sources attached to Video IN 1 through 4.

c Video from the selected source displays in the small window on the left end of the Video row.

d The video row is not used when the Color or Background Audio channels are being routed.



4 Select the Audio 1 source to use for this channel. Use the **UP ARROW/DOWN ARROW** keys to highlight the Audio 1 row, then use the **LEFT ARROW/RIGHT ARROW** keys to select an audio source.

a Audio 1 is usually a stereo pair (left + right, or channels 1 & 2) of inputs from a DV source or from analog inputs IN 1, 2, 3 or 4.

b Audio 1 is output on DV audio channels 1 and 2, on analog outputs L1 and R1, and also on analog outputs L2 and R2 if 2-channel audio output is selected in Setup.

c IN3 and IN4 can be either mono or stereo sources: you can select the left input, the right input, or both.

d DV sources can have two or four channels of audio input. If 4-channel sources are used and 4-channel output is selected in the Setup menu, you can select L1, R1, L1+R1, L2, R2, L2+R2 or L1+ R1+ L2+R2 as the source for the audio. In this last case, L1 and L2 are combined on the left output of audio pair 1 and R1 and R2 are combined on the right output.

e If 2-channel Audio Output is selected in the Setup menu, you can select L1, R1 or L1+R1 only.

f Select **MUTE** if you do not want audio routed to this channel.

5 Select the Audio 2 source: If 2-channel Audio Output is NOT selected in the Setup menu, you can route audio to channel 3 and 4 by using the Audio 2 section of the Route menu. Use the **UP ARROW/DOWN ARROW** keys to highlight the Audio 2 row, then use the **LEFT ARROW/RIGHT ARROW** keys to select an audio 2 source.

a Audio 2 is usually the second stereo pair (R2 and L2) from a DV input, but can be any available choice from the DV inputs, or it can be the Audio routed to the Background Audio channel. (Background Audio can come from an Audio 1 source only.)

b Audio 2 is output on DV audio channels 3 and 4 and on analog outputs L2 and R2 if 2-channel audio output is selected in Setup.

6 Repeat Steps 2 through 5 for any other channels you want to change.

7 Press **OK** or **ROUTE** to exit the Route menu.

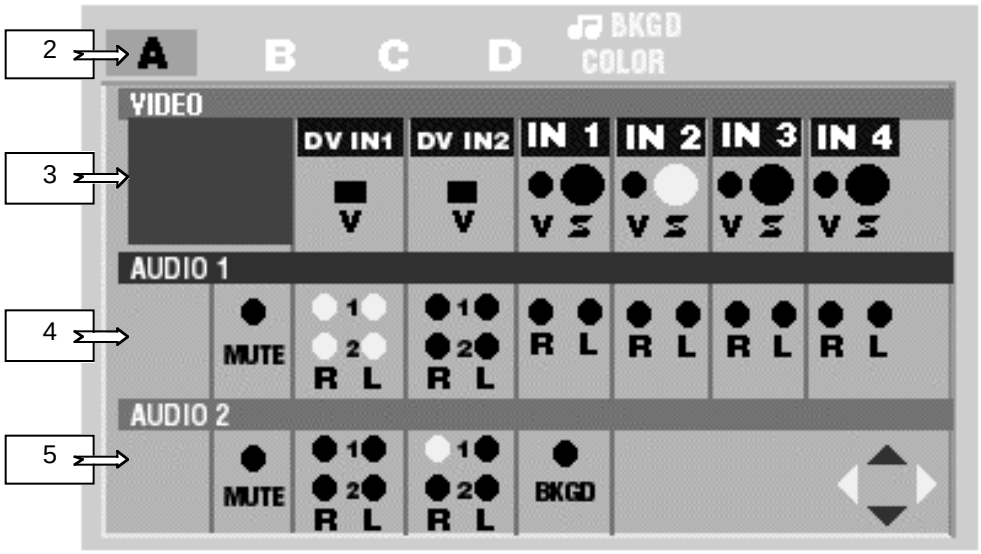
Example: Changing the Routing

Change the Routing for Channel C. Make video come from DV IN1, make AUDIO1 come from L1 and R1 of DV IN1, and make Audio 2 mute.

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

2 Select the channel by pressing **NEXT/C**. Verify that channel C is highlighted.

3 Select the Video. Use the **UP ARROW/DOWN ARROW** keys to move the red highlight bar to the Video row, then use the **LEFT ARROW/RIGHT ARROW** keys to select DV IN1.



4 Select the Audio 1 source. Use the **UP ARROW/DOWN ARROW** keys to move to the Audio 1 row, then use the **LEFT ARROW/RIGHT ARROW** keys to select DV IN 1 R1 + L1.

5 Select the Audio 2 source: If 2-channel Audio Output is selected in the Setup menu, you cannot access Audio 2 (because it is used to select the audio source for channels 3 & 4). If 4-channel audio is available, use the **UP ARROW/DOWN ARROW** keys to move to the Audio 2 row, then use the **LEFT ARROW/RIGHT ARROW** keys to select MUTE.

Routing Audio Through Color or Background Channels

Don't forget that you can route audio through the Color and Background Channels. These are useful for fading to colors while maintaining the same audio source or mixing words with a music background.

To route audio through the Color or Background Channels:

1 Press **NEXT/COLOR** to select Color or **SHIFT+NEXT/COLOR** to select Background Audio.

2 Use the **LEFT ARROW/RIGHT ARROW** keys to select the audio to use from the Audio 1 row.

If 4-channel audio output is selected in the Setup menu, you can select Audio2 for the Color Channel. Background audio comes from Audio 1 only.

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

See Chapter 11, *Learn Mode*, for complete 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 and Kong) placed atop solid colored rectangles and a solid colored background. With a character generator (such as the Videonics Title Maker), you can also add text elements to composed screens. 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 or you can select the multiPIP function (**SHIFT+PIP**). See Chapter 8, *PIPs*.

Audio Mix

Use Audio Mix to adjust audio levels for any channel and use **SHIFT+AUDIO MIX** to access the Analog Audio Adjustment screen. See Chapter 12, *Working with Audio*.

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 MXProDV'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 image.

MXProDV captures using Frame Freeze, by default. See "Force Field Freeze" on page 90 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.

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+FREEZE**, 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**.
- To start a freeze during a transition, press **FREEZE**.

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.

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+FREEZE** 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.

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 from one to four sources.

To create a still montage:

1. Route a 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+FREEZE** 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.

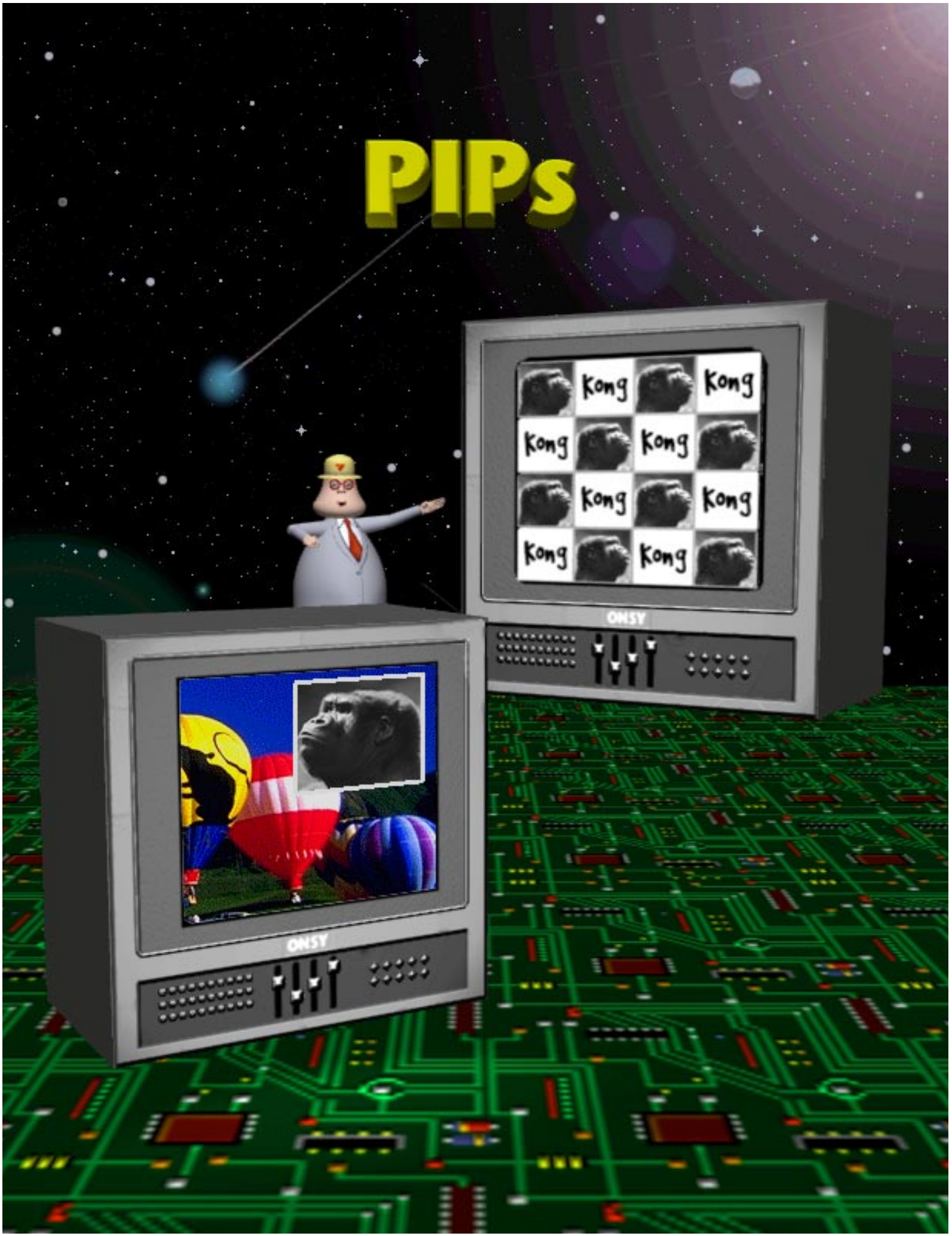
To transition to other still images, repeat steps 8 through 10.

Freeze and Transitions

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

- MXProDV cannot perform a Trailing-type transition **to** a frozen image. It releases the NEXT source prior to running the transition.
- MXProDV can perform a Trailing-type transition **from** a frozen source to a moving source. However, it loses the freeze once the transition finishes.
- MXProDV cannot compress frozen images. If you select a compression effect, MXProDV 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.

NOTES



VIDEONICS

CHAPTER 8

PIPs

With MXProDV you can easily produce single and multiple Picture-in-Picture displays.

Single PIP

Multi-PIP

With **PIPs** (**P**icture-**I**n-**P**icture), you can 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. This is **single PIP**.

With **multi-PIP,** up to sixteen images can appear on the screen at the same time.

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

Single PIP and multi-PIP work in slightly different ways, as you'll learn in this chapter.

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.

The "mask" is the shape that includes the floating picture, along with any border, shadow, or other element.

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

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.

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 54 to learn how to select colors.

2. Assume the image of the Stonehenge originates on input C. Press **NEXT/C** to make source C the NEXT source. It serves as the foreground tile.

3. Press **PIPS** to enter PIP mode. The Preview screen shows the background video with the foreground video inset in a small tile.

4. Press **NEXT/A**, **NEXT/B**, **NEXT/C**, **NEXT/D**, or **NEXT/COLOR** to change the image in the PIP window.

5. Press **PLAY** to display the PIP on the Output.

6. Press **PLAY** again to remove the PIP from the output.

7. To exit PIP mode, press **PIPS**.

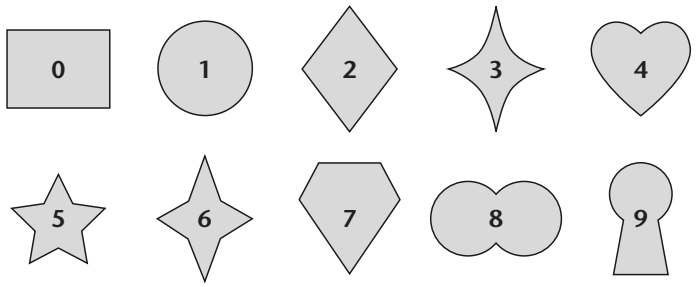
Manipulating the Foreground Tile

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 11: Manipulating PIPs Tiles

TO CHANGE TILE...	USE OR PRESS...	NOTES...
Position		
	JOYSTICK	Moves tile around screen.
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.

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 discussed in this section.

Table 12: 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 any except color correct to the 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 97) 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, MXProDV removes the freeze effect from the foreground source.

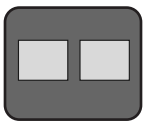
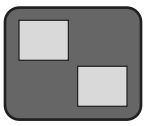
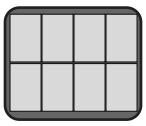
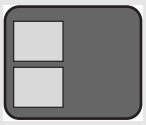
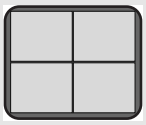
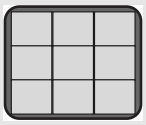
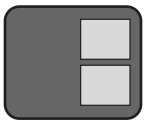
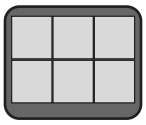
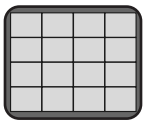
MULTI-PIP

*In Multi-PIP, as many as 16 separate images can share the screen at the same time. Each image appears 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 13: 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.

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 54 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 13, "Multi-PIP Screen Configurations," on page 107, at the beginning of this section.) MXProDV 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

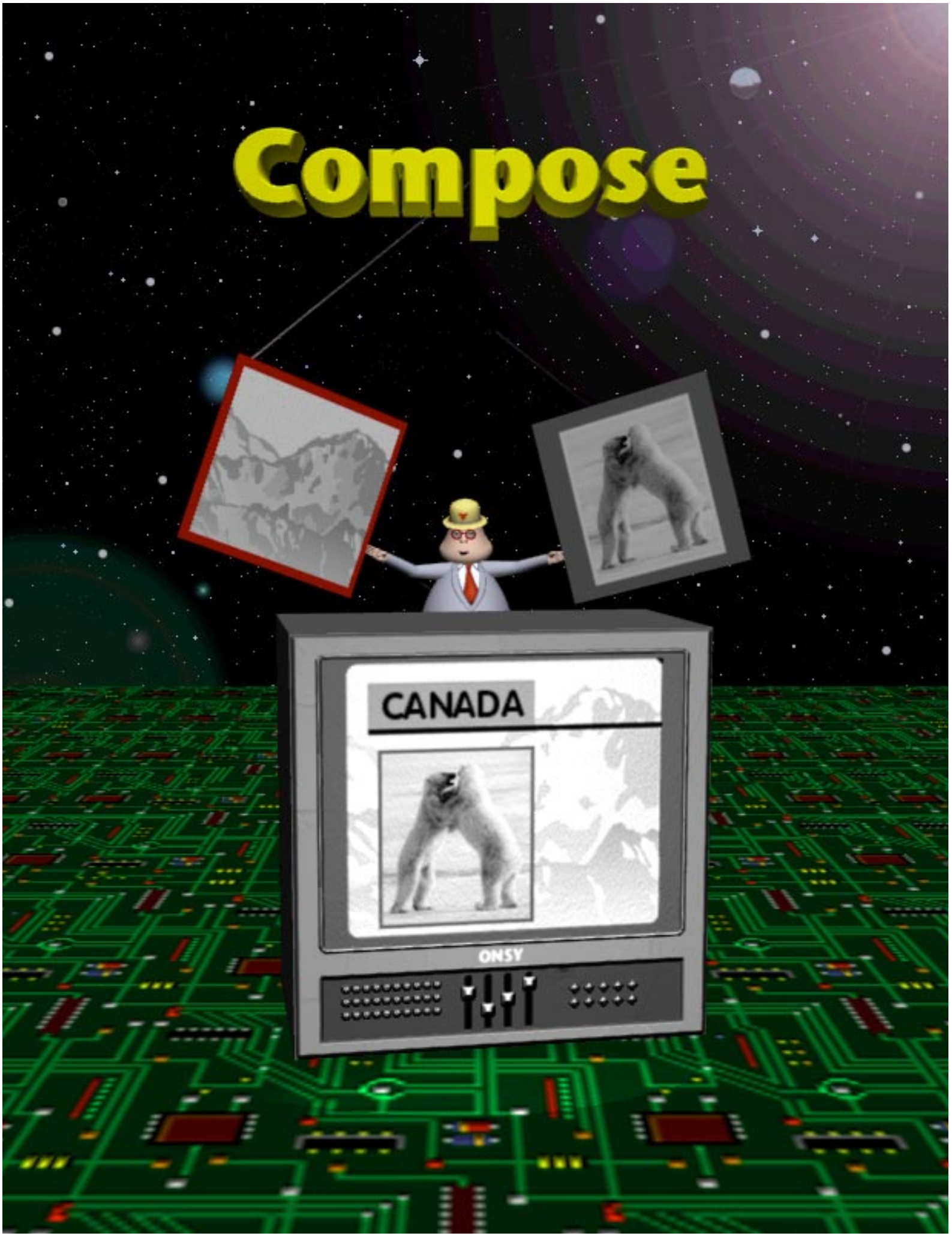
You can apply the Freeze effect (see "Freeze" on page 97) to any Multi-PIP tile.

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.



VIDEONICS

CHAPTER 9

COMPOSE

Compositions consist 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.

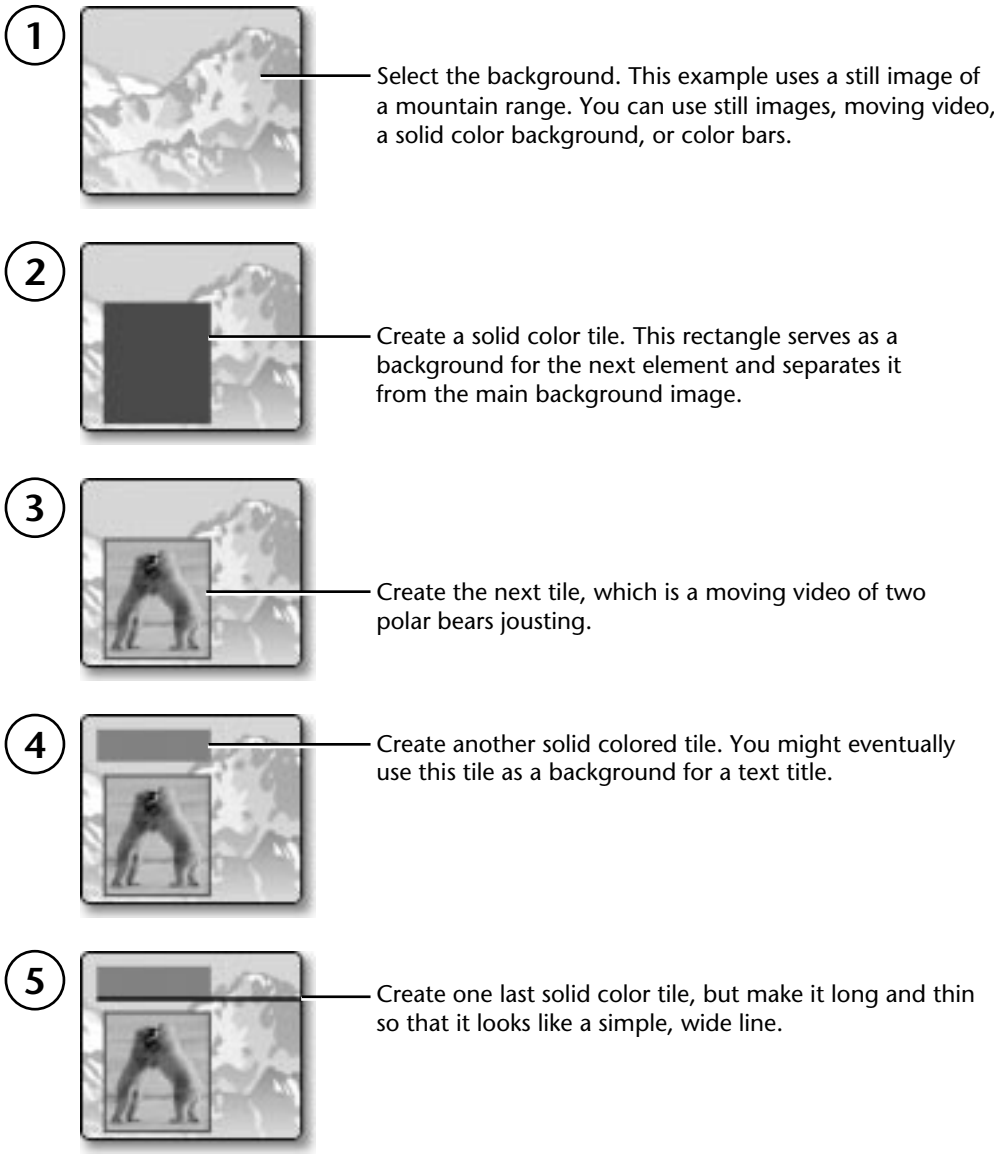
IMPORTANT INFORMATION

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.

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

Basic Composition Steps

This sequence shows how the composition at the beginning of this chapter was produced. More detailed descriptions of the steps follow.



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.

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.

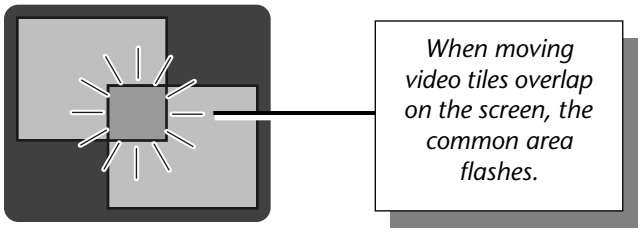
Creating Moving Video Tiles

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

The tile can be a rectangle of any size. MXProDV 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.



Creating Still Image Tiles

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

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.

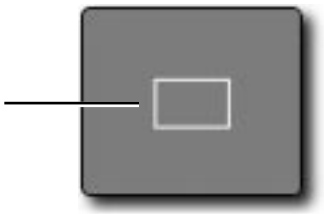
IMPORTANT INFORMATION

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, MXProDV shows your choice of background on both the Preview and Output monitors. MXProDV 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

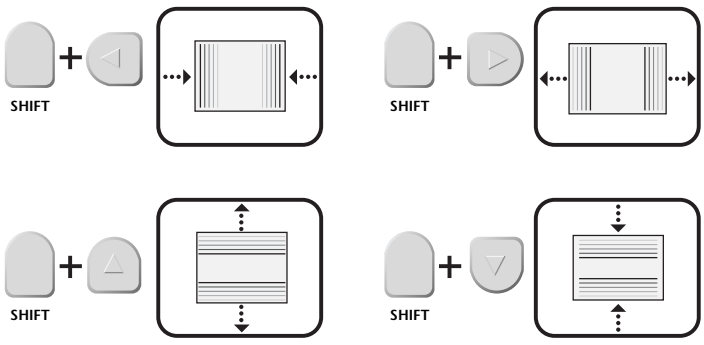
Use the **JOYSTICK** to move the Compose cursor where you want it on the screen. You can also use the **ARROW** keys to make fine adjustments.

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.

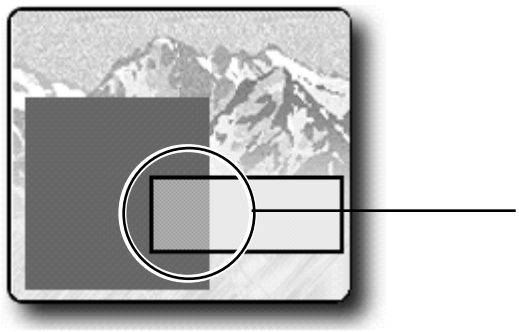


Enter **SHIFT+FLIP**↔ to reproportion the tile based on its current width. Enter **SHIFT+FLIP**↕ to reproportion the tile based on its current height.

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.

CREATING A COMPOSED IMAGE

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 the background source before entering Compose mode. Input Effects can only be applied to the background source.

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.

NOTE

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

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 output.

Playing the Composition

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.

To reposition the **T-BAR**, hold down **SHIFT** while moving it. Holding down the **SHIFT** button temporarily disables the **T-BAR**.

NOTE

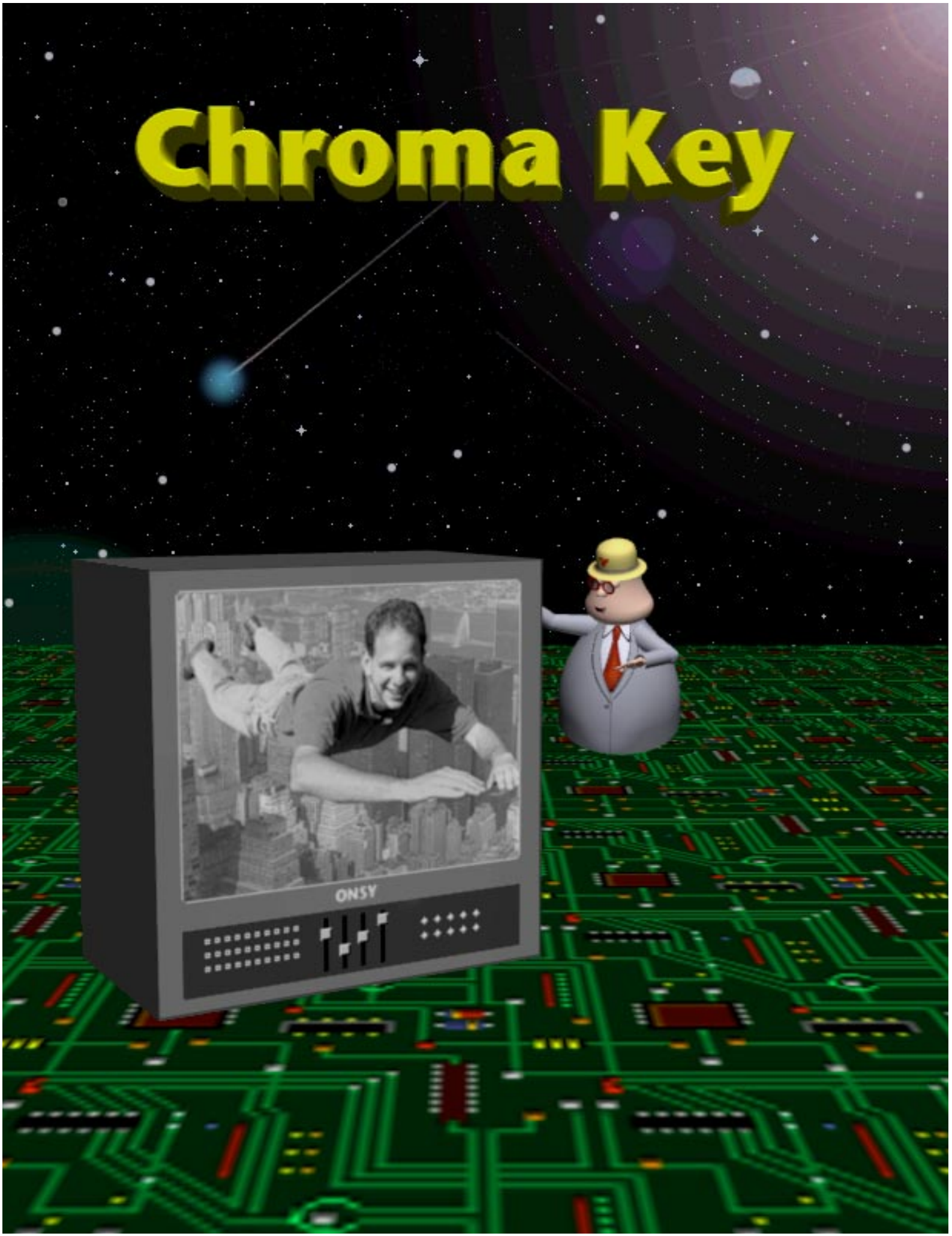
If you cut to any source or exit from Compose mode, your composed screen will be lost and cannot be recovered.

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**.

NOTES



VIDEONICS

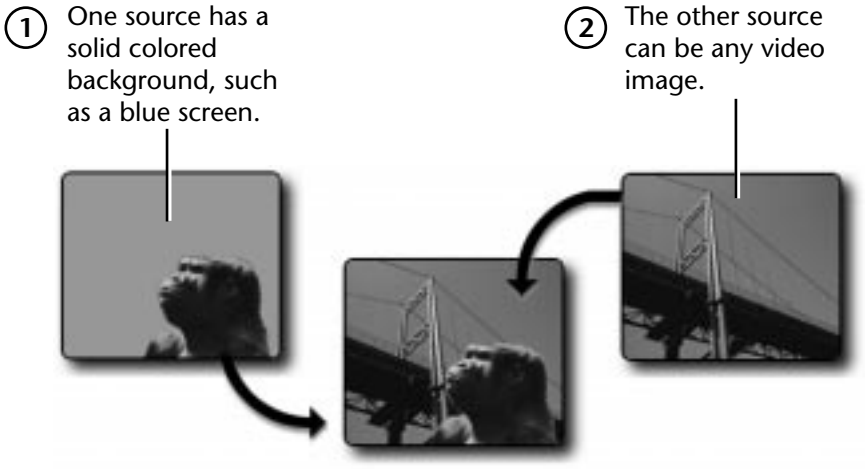
CHAPTER 10

CHROMAKEY

Using Chromakey 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 chromakey 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.

Chromakey combines two sources to create a composite image.



3 The chromakey 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.

Chromakey 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 chromakey 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. MXProDV's chromakey 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 chromakey feature. Of course, screen images appear in grayscale in this book.

Background Footage

Chromakey Footage

Keyed 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 **Chromakey** footage is the result of combining the background footage and keyed footage using the MXProDV chromakey 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 chromakey.

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. Professional studios generally use a bright green or blue screen in place of the colored fabric.
- 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 chromakeys 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 chromakey 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.

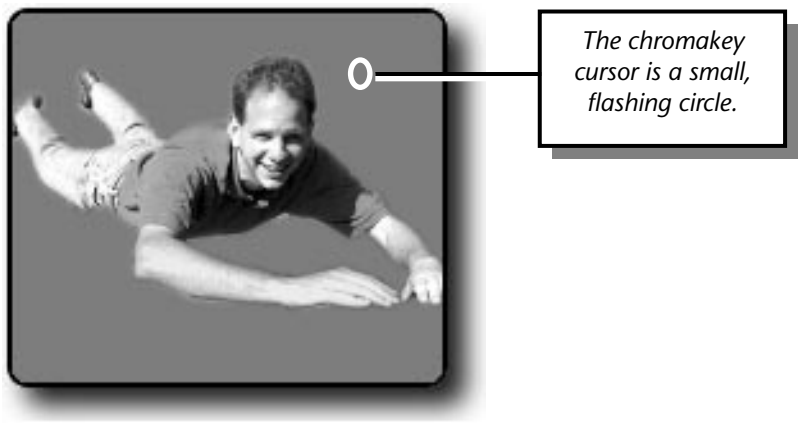
PREPARING THE CHROMAKEY FOOTAGE

With the background footage and keyed footage recorded and available, you're ready to combine them into the chromakey 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).

To prepare the chromakey footage:

1. If necessary, turn on MXProDV 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**.
5. Press **CHROMAKEY** or **SHIFT+CHROMAKEY** to activate the effect. **CHROMAKEY** starts it and uses the last chromakey setting you created; **SHIFT+CHROMAKEY** starts with a new chromakey setting.

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 Chromakey it stays in effect until you specifically deactivate it (which you'll learn to do later in this procedure).

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 steps 6 and 7. 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 remove all keyed colors, enter **SHIFT+CHROMAKEY**.

d 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 chromakey selections made thus far by pressing **SHIFT+CHROMAKEY**, as explained above.

PERFORMING THE CHROMAKEY

When the preview screen shows the desired chromakey results:

➔ Press **PLAY**. The output monitor shows the chromakey image. Press **PLAY** again to cut back to the background source.

You can also dissolve between the background footage and the chromakey 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 **CHROMAKEY** or **SHIFT+CHROMAKEY**.
- To apply any of the other Input Effects, apply them to the CURRENT source *before* pressing **CHROMAKEY**. MXProDV ignores effects applied to the NEXT source during chromakey.

Fine-Tuning Key Colors

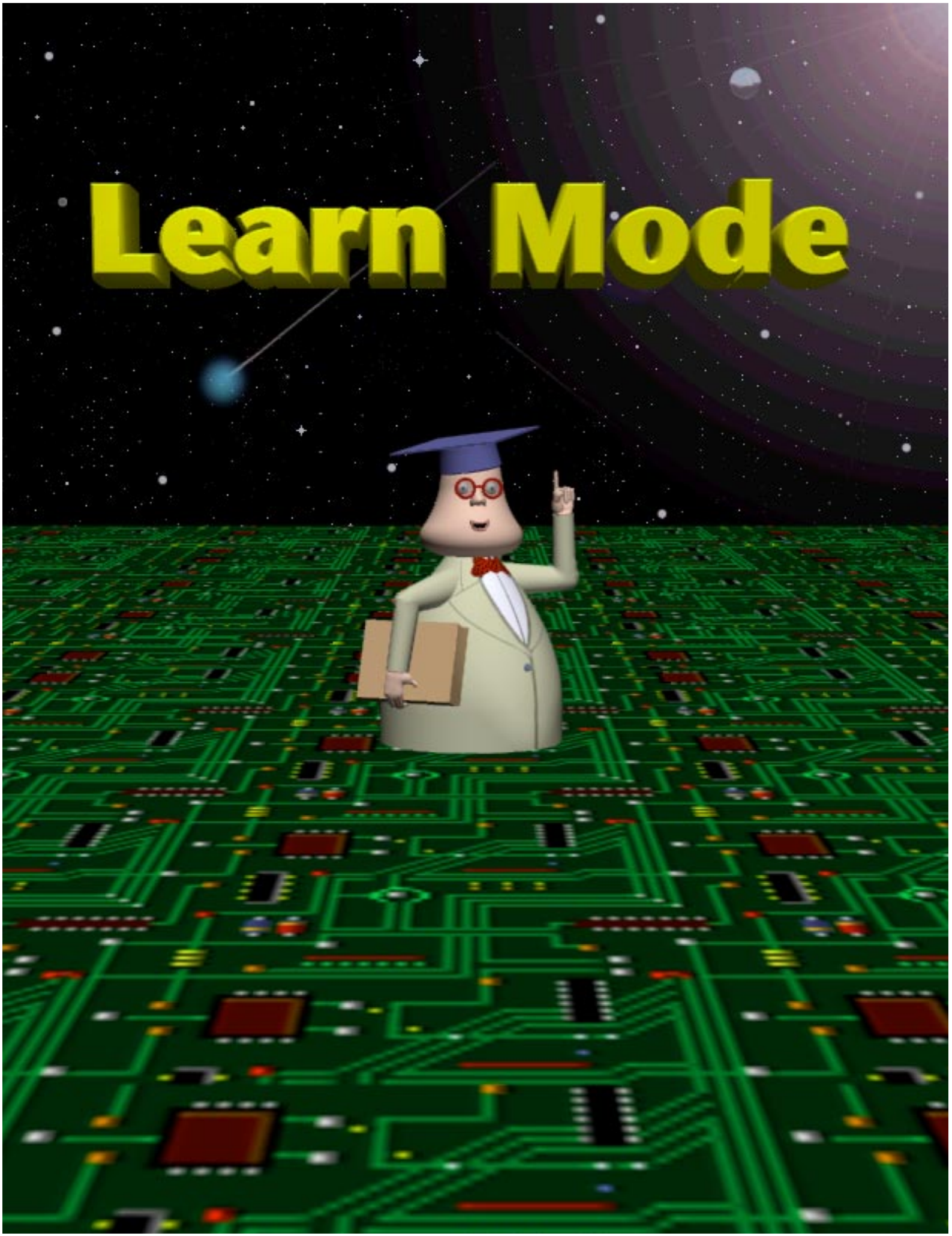
You can fine-tune the chroma key effect so that more or less of the keyed footage gets keyed. You can separately adjust the range of colors and video brightness that get keyed.

- 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 Chromakey

When you finish using chroma key, press **CHROMAKEY**.

NOTES



VIDEONICS

CHAPTER 11

LEARN MODE

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

The basic steps involved in using Learn mode include:

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

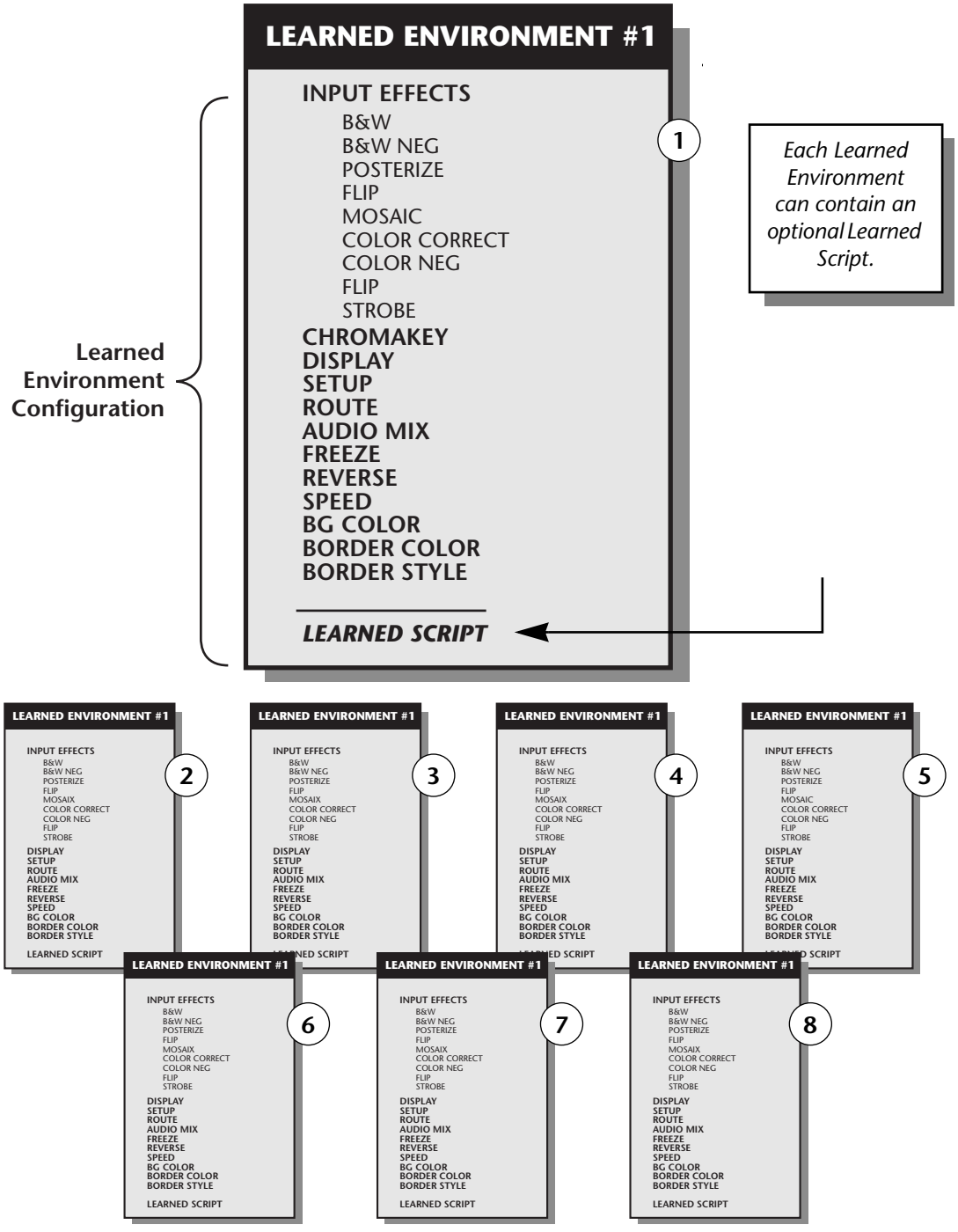
WARNING

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

Learned Environments

A Learned Environment can be thought of as a "snapshot" of your current MXProDV 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 VCR 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.



To create a Learned Environment:

1. Set up MXProDV 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.

   MXProDV saves all current settings under the number you enter. Note that the **INPUT EFFECTS** LED (or, light) flashes to let you know MXProDV 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, MXProDV 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, MXProDV simply stops recording steps when it reaches capacity. You can replay all steps learned up to that point.

MXProDV 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 MXProDV, the Learned Environment is retained, but the Learned Script is not.

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

- Create or transition to compose screens
- Use Chromakey
- 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," MXProDV is *not* an EDL. MXProDV 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.

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).

TIP

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.*

Using Learn Mode

Learn mode involves the following steps:

1 Activate all devices.
Turn on MXProDV 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 MXProDV 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 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.
When this step finishes, MXProDV restores the selected environment and the unit is ready to play back any learned scripts.

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.

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 **PLAY**. See "Using a GPI Device" beginning on page 152 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, MXProDV OVERWRITES the previous script.

OTHER USEFUL INFORMATION

When MXProDV comes to the end of a Learned Script, it stops. You can re-initiate the same or any other Learned Script by entering **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.

MXProDV 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**.

MXProDV erases a Learned Script when:

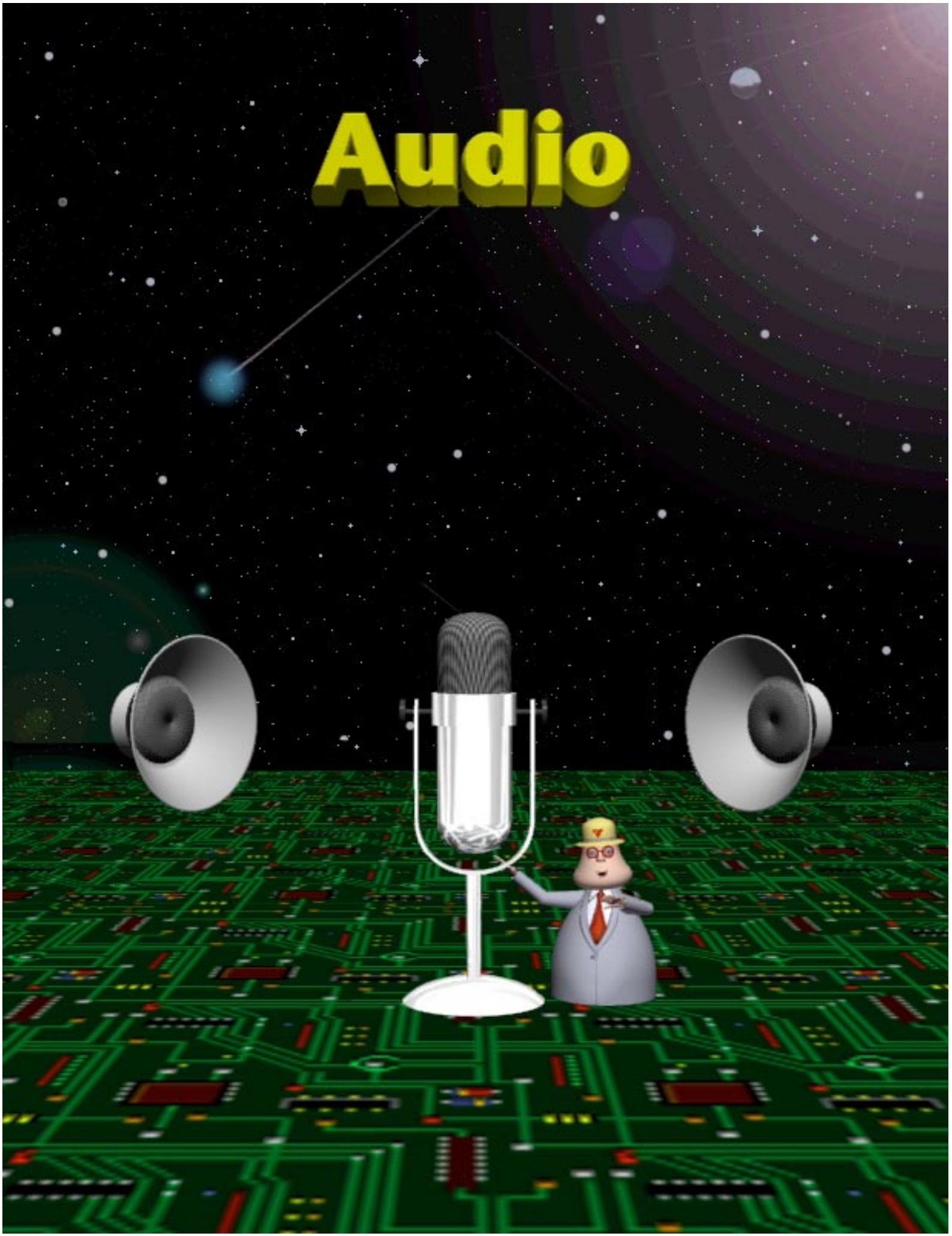
- You turn off MXProDV.
- MXProDV loses power (such as a power failure).
- You overwrite an existing Learned Script.

ABORTING A PLAYBACK SESSION

Once MXProDV 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 **T-BAR** act normally, playing the effect indicated on the screen rather than the Learned Script.

NOTES



VIDEONICS

CHAPTER 12

Working with Audio

MXProDV 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 MXProDV. See Chapter 3, *Installing MXProDV*, for instructions. You might also have to visit the Route menu to set up the audio devices correctly. See “Route” beginning on page 92 for more information and instructions.

Audio Devices You Can Use

You can:

- Use the digital audio connected to the DV IN jacks.
- Use *dedicated* audio input sources, such as audio cassette players, compact disc players, and even live microphones. (See "Using a Microphone with MXProDV" on page 40 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

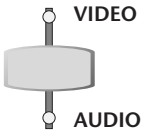
Basically, you can:

- 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, MXProDV 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



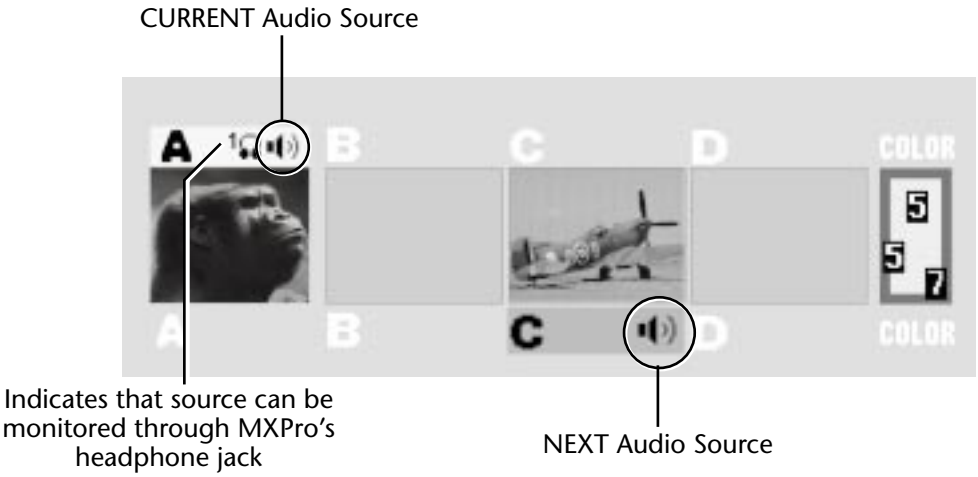
Small lights appear above and below the **VIDEO/AUDIO** selector labeled **VIDEO** and **AUDIO**. The lights tell you whether the next transition will affect the video, the audio, or both. By pressing the **VIDEO/AUDIO** selector you can choose between the following states:

- 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 under "Ways to Use Audio" starting on the next page.

Selecting Audio Sources

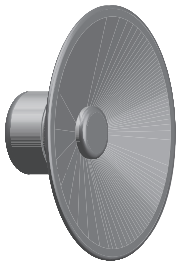
Select audio sources the same way you select video sources, using the **CUT** and **NEXT** buttons and the highlights at the top of the Preview screen.



Remember, MXProDV 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. MXProDV 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 MXProDV headphone jack, located on the rear of the unit.

WAYS TO USE AUDIO



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

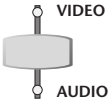
Audio Accompanies Video

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.

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 70.) If you use a Cut transition, the sound switches abruptly.

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.

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.

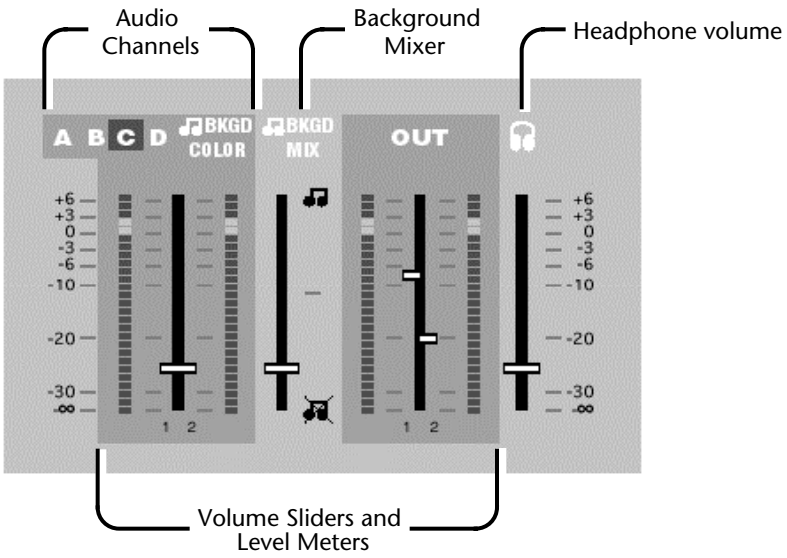
   This tells MXProDV that when the transition runs, only the video changes. For example, press **CUT/B** to cut to the video of the audience. The audio continues to come from channel A.

3. Continue pressing **CUT** (or using other transitions) to switch back and forth between the stage and the audience. The audio will remain with channel A.

USING THE AUDIO MIXER

MXProDV'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.



Audio Channels—Select the audio channel you want to adjust or monitor by using the NEXT keys (**NEXT/A**, **NEXT/B**, …, **NEXT/COLOR**, or **SHIFT+NEXT/COLOR** for the background audio channel). If there is no audio on the channel you select, verify the Route information using the Route function.

Volume Slider and Level Meters—Use the level meters to visually monitor the output audio signal for the selected input channel. Use the slider to adjust the volume. If 4-channel audio output is selected (Setup menu), the slider is divided into two halves. The left half controls the volume for Audio 1 (channels 1 & 2); the right half controls the volume for Audio 2 (channels 3 & 4). A middle position lets you adjust both Audio 1 and Audio 2 simultaneously.

Background Mixer—Use this slider to control the mix between the current audio source and the background audio.

- If the slider is all the way down, there is no mix: 100% of the audio comes from the selected audio channel.
- If the slider is all the way up, 100% of the audio comes from the background audio channel. (You define what audio is used for background audio in the Route menu.)
- If the slider is somewhere in between, part of the audio comes from the current channel (A, B, C, D or Color) and part of it comes from the Background Audio channel.

TIP

If Background Audio is not being used, be sure to set the Background Mixer slider all the way down.

Headphone Slider—Use this slider to control the volume of the audio played in the headphones.

Audio Mixer Controls

The default setting in the Audio Mixer for all channels is 0 (zero) dB. The default setting for the Background Mix level is no mix.

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

Table 14: Selecting Mixer Channels

To...	Use these keys...
Select a specific channel	**NEXT/A** **NEXT/B** **NEXT/C** **NEXT/D** **NEXT/COLOR** **SHIFT+NEXT/COLOR** (background)

Table 15: 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

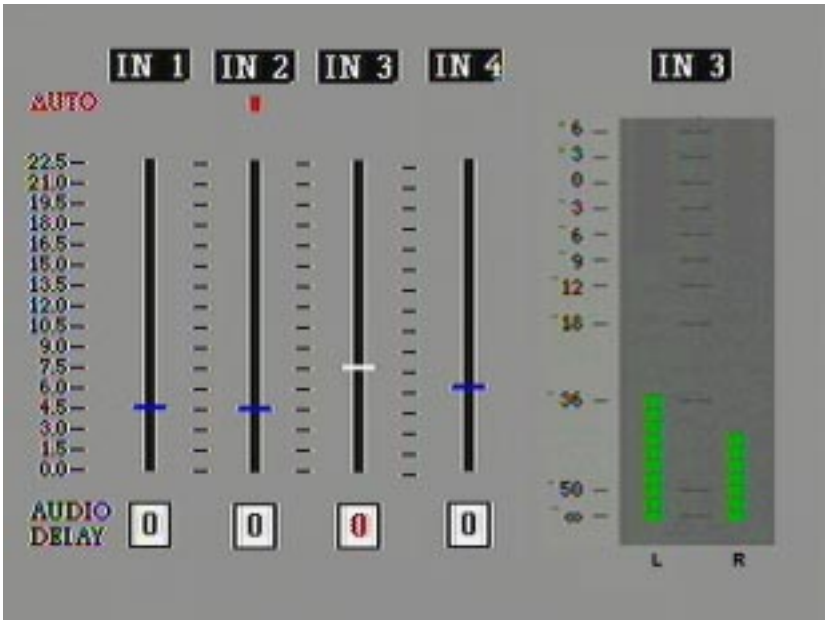
Any audio input can be used as the source for background audio. Use the Route menu to select a source and press **SHIFT+NEXT/COLOR** to access the background audio channel. To control the level of the music, use the Background Music slider in the Audio Mixer. Use the keyboard controls shown in the preceding 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.

USING THE ANALOG AUDIO ADJUSTMENTS FUNCTION

Use the Analog Audio Adjustments Function to adjust the analog audio input levels and add delay to the analog audio path. These are advanced functions and most users should leave the system set to its default settings: 0dB gain and 0 fields of delay. Use these functions if you need fine control over your audio inputs or to compensate for video delays that may have occurred in other devices in your video stream.

To display the Analog Audio Adjustment screen, press **SHIFT+AUDIO MIX**. The four sliders represent the four analog audio inputs on the rear of MXProDV: IN1, IN2, IN3 and IN4. The audio delay values show the amount of delay, in video fields, to be applied to each source. The maximum delay is five fields.



Selecting Automatic Adjustments

To select automatic adjustments, use the **LEFT ARROW/RIGHT ARROW** keys to select the audio source (IN1, IN2, IN3 or IN4), then press **UP ARROW** to select automatic adjustments. The Auto indicator will be highlighted when auto is selected. The default selection is Auto.

The adjustment range is the same for all inputs: +12.5dB to -6dB. With automatic adjustments, if the audio level is initially low, the level will be adjusted upwards in 1.5dB steps until an optimum level is reached. The optimum level will be below the clipping level. Once this level is reached, the only auto-adjustments will be to lower the gain if the audio is in danger of being clipped. In this case, the value becomes the new optimum.

The optimum value can be reset by pressing **SHIFT+OK**. After this is done, the automatic adjustments start again.

Analog Audio Level Meters

The meters on the right show the signal level for the selected analog audio input.

Selecting Manual Levels

To make manual adjustments to the input audio level for your analog sources,

- Use the **LEFT ARROW/RIGHT ARROW** keys to select the audio source (IN 1, IN 2, IN 3 or IN 4).
- If the auto indicator is highlighted, press **DOWN ARROW** to return to manual mode.
- Use the **T-BAR** to adjust the input to the desired level.

The adjustment range is the same for all inputs: 22.5dB to 0dB.

Selecting Audio Delay

Because analog audio and video travel in different paths in audio/video equipment, the audio and video can become separated. Typically, the video is delayed in relation to the audio. For example, if video is delayed you might hear someone clap then a moment later see the hands come together. Usually the difference is so minimal that no adjustment is needed. However, if an adjustment is needed, you can delay analog audio up to five fields with this parameter.

To make a change to the audio delay value, use the **LEFT ARROW/RIGHT ARROW** keys to select the source then type the number of fields of delay you want to use, from zero to five.

Using Headphones

You might find headphones helpful for monitoring audio input signals. You can plug a set of headphones directly into the MXProDV by connecting them to the headphone jack located on the rear panel of the unit. Headphone audio is stereo.

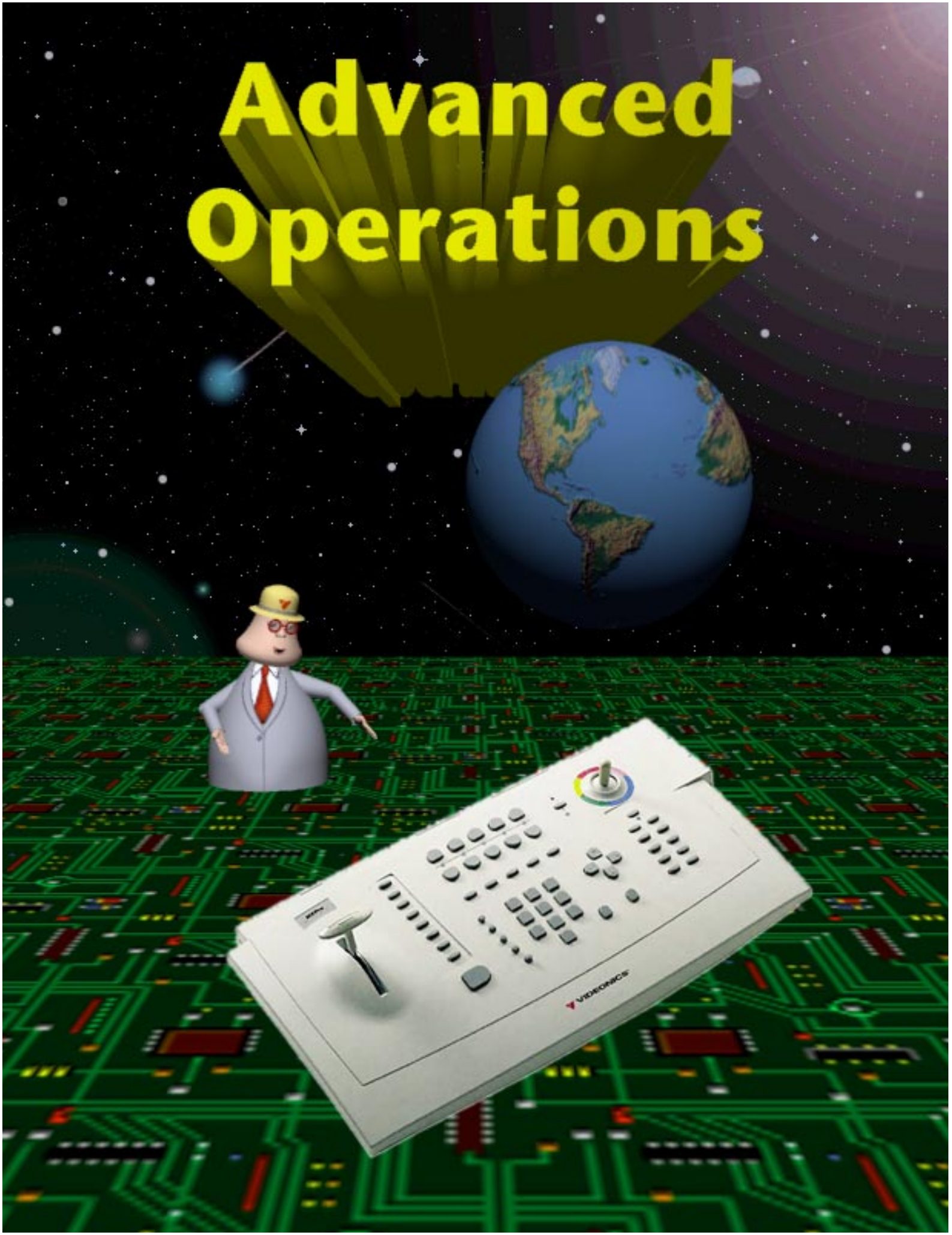
Normally, headphone audio comes from the CURRENT audio source. You can, however, toggle the headphones to listen to the NEXT source.

To toggle the headphones between CURRENT and NEXT:

➔ Press **SHIFT+VIDEO/AUDIO.**

The headphones play only two channels of audio at a time, so if 4-channel audio output is selected in the Setup menu, you need a way to toggle between Audio 1 (channels 1 & 2) and Audio 2 (Channels 3 & 4). The Shift+Video/Audio key sequence does this, too. Repeatedly pressing **SHIFT+VIDEO/AUDIO** toggles between Audio 1 and Audio 2 of the CURRENT source, then Audio 1 and Audio 2 of the NEXT source. As you switch between Audio 1 and Audio 2, the headphone icon switches from 1 to 2, indicating the current choice.

Advanced Operations



VIDEONICS

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

Using Titles

In Chapter 3, *Installing MXProDV*, you learned how to install a character generator (**CG**) to use with MXProDV (see "Live Broadcast Configuration" on page 38). Using a set up where you connect the CG between the MXProDV 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 MXProDV 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 MXProDV'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

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

To display the built-in color bars:

1. Press **COMPOSE**. MXProDV 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 exit Compose mode.

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 MXProDV. 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 MXProDV, 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. MXProDV 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 MXProDV 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 close-up 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!

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.

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 MXProDV 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

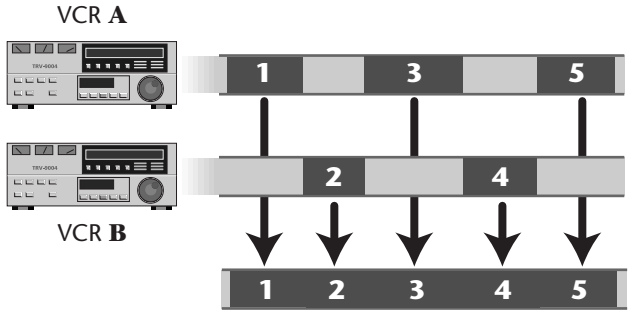
A/B roll editing involves editing scenes from multiple sources. When doing A/B roll edits, you must manually synchronize the sources so that they are timed correctly.

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). The extra generation is a lesser concern if you are using DV sources and a DV recorder.

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.

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 MXProDV'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*.

To run this type of transition:

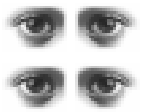
1. Use MXProDV's Route function to make the same source appear on two different channels. For example, route channels A and B to IN 1 on the ROUTE screen. (See "Route" on page 92.)
2. Enter **SHIFT+FLIP** (horizontal) to apply the effect.
3. Select a transition (such as number 6) to run between channels 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.

Operating in Live Environments

In most live environments you need the ability to quickly and easily switch between the various live feeds. MXProDV 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



MXProDV 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 MXProDV. 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 MXProDV but still want to be able to control its operation.

A GPI pulse causes MXProDV to behave exactly as if the play button were pressed. Normally, it starts a transition you previously set up. If you are playing back 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 MXProDV. Doing so can damage the equipment and void your warranty.

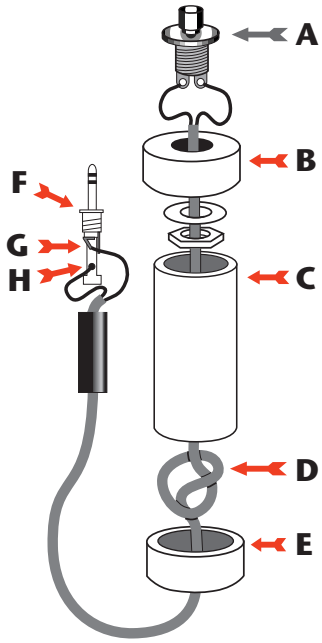
You can use a remote push-button device to trigger events on MXProDV. If you already have a GPI device you want to use, refer to “Live Broadcast Configuration” on page 38 to learn how to connect the device. If you do not have a GPI device but would like to build one, refer to the instructions in the next section.

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**).

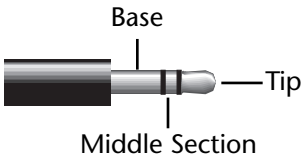
One four-inch piece of 3/4-inch PVC pipe (**C**) and two end caps (**B** and **E**).

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 MXProDV rear panel.

Using a GPI Trigger Device

If your edit controller is automatic and has a 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 MXProDV.

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.

To use a GPI device as a trigger:

1. Connect the GPI device to MXProDV 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 131).

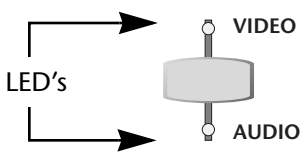
Calibrating the T-BAR

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.

To re-calibrate the T-BAR:

1. Turn MXProDV off.
2. Press and hold **SHIFT+INPUT EFFECTS** while turning the unit back on.
3. Wait 10 seconds, then 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.

VIDEO/AUDIO Selector



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 MXProDV automatically re-initializes itself. The **T-BAR** is now properly calibrated.

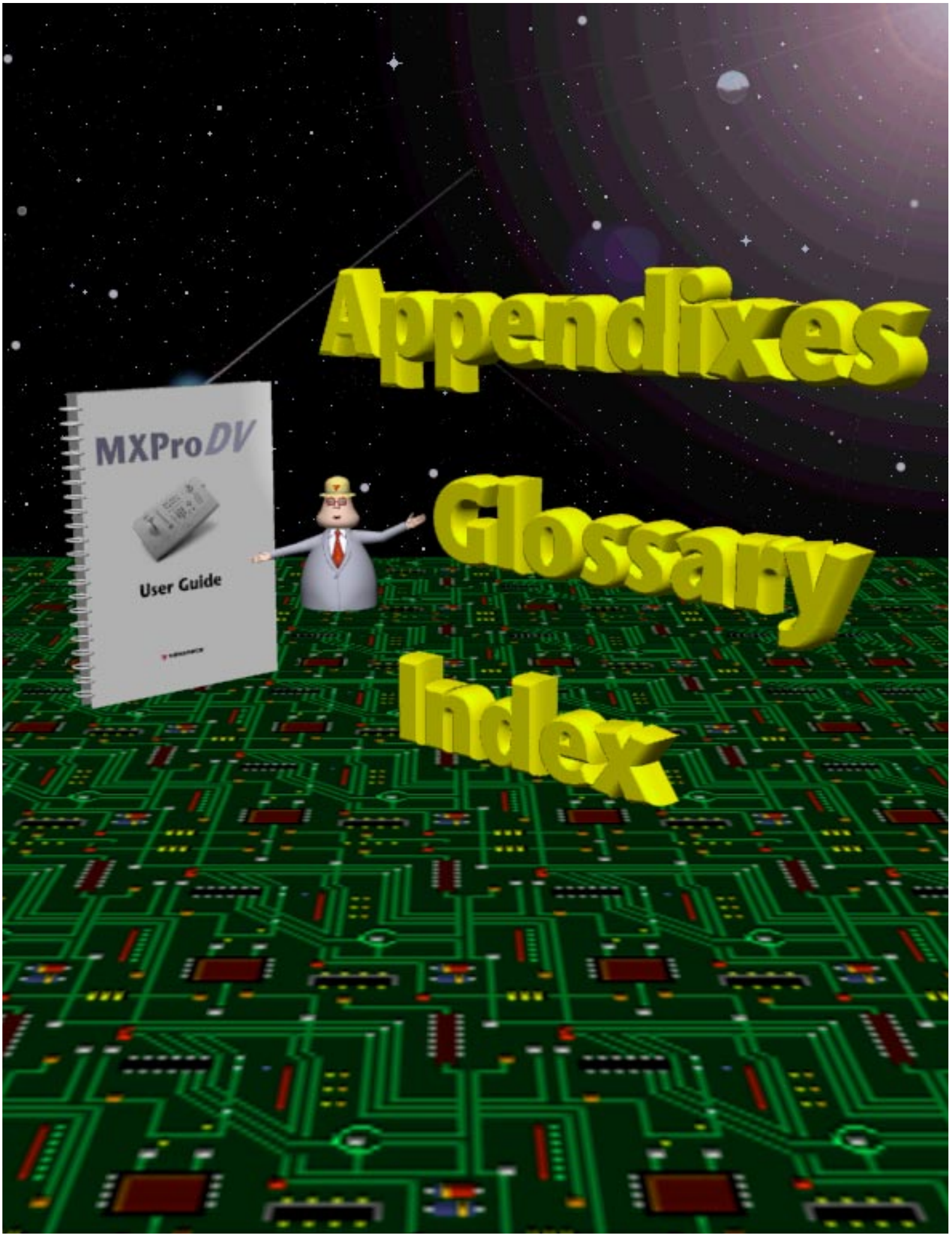
RESETTING MXPRODV FACTORY DEFAULTS

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

To reset MXProDV 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 MXProDV's Power switch.
4. After the unit powers up and you see the Preview screen, release all buttons.

NOTES



VIDEONICS

APPENDIX A

TRANSITIONS LIST

This appendix shows the icons assigned to each MXProDV 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.

Basic Transitions

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 16: 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

Table 16: Descriptions of Basic Transitions (continued)

#	Description	#	Description
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
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

Table 16: Descriptions of Basic Transitions (continued)

#	DESCRIPTION	#	DESCRIPTION
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.
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)

Table 16: Descriptions of Basic Transitions (continued)

#	Description	#	Description
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

Table 16: Descriptions of Basic Transitions (continued)

#	DESCRIPTION	#	DESCRIPTION
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
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

Table 16: Descriptions of Basic Transitions (continued)

#	Description	#	Description
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		

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 17: 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	

Trailing Transitions

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

Table 18: 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

SHAPE TRANSITIONS

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

Table 19: 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			
Ctr Wipe									
554		555		556		557		558	
559		560		561		562			

Table 19: Shape Transitions (continued)

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					
Horizontal Curtain Expand (B) from Ctr to full											
617		618		619		620		621			
622		623		624		625					

Table 19: Shape Transitions (continued)

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					
Horizontal Compress (A)/Wipe (B) *											
680		681		682		683		684			
685		686		687		688					

Table 19: Shape Transitions (continued)

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			

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 66.

APPENDIX B

TIME BASE CORRECTOR

The MXProDV contains a Time Base Corrector (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 MXProDV 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 87 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, MXProDV 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.

VERTICAL INTERVAL DATA

Time code, closed captioning, and other data in the vertical interval should be added after mixing (downstream from MXProDV). This is necessary because dissolves and other transitions mix the data signals, making them unreadable. The MXProDV 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.

- MXProDV's TBC has no control options. MXProDV always applies TBC to the entire signal, including the horizontal and vertical intervals.
- MXProDV 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.

APPENDIX C

VIDEO QUALITY

MXProDV 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 MXProDV Preview screen do not represent MXProDV'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 87 to learn about all of the display options.

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 MXProDV removes pixels and, therefore, parts of the line.

Some MXProDV 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 MXProDV to freeze either a frame or a field (see "Force Field Freeze" on page 90).

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. MXProDV's Field Freeze eliminates flashing artifacts but reduces vertical resolution because it shows only one field.

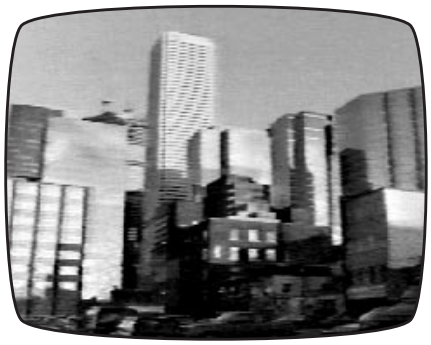
Freeze Frame captures all fields in the image. This produces a higher quality image, but some flashing might occur.

Upside-Down Video

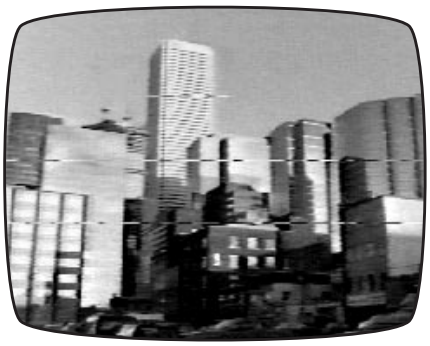
When you flip video upside-down (as occurs automatically with some transitions and when using the Flip (vertical) option on the **INPUT EFFECTS** menu), the picture resolution reduces slightly to make the video image more stable. The reduction is subtle with most video and most effects, especially those that move quickly.

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.

NOTES

APPENDIX D

TECHNICAL SPECIFICATIONS

MXProDV is a four-input video production switcher, mixer, frame synchronizer/TBC (Time Base Corrector), Manual Color Corrector, and special effects generator.

Table 20: MXProDV 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%
ANALOG 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	4 x 2 (L and R) RCA connectors, 50 k ohms
GPI	Mini-jack
ANALOG OUTPUTS	
Video (PREVIEW & MAIN)	1.0 Vp-p, 75 ohm, PREVIEW=1x RCA; MAIN=2x RCA Connectors and 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, 2x L+R RCA connectors
Headphone	Stereo jack, 8-100 ohms
DIGITAL INPUTS	
	2 x 4 pin IEEE 1394 (FireWire, i.LINK) connectors, Audio and Video Effects

Table 20: MXProDV Technical Specifications (continued)

DIGITAL OUTPUT	
	1 x 4 pin IEEE 1394 (FIreWire, i.LINK) connector, Audio and Video
EFFECTS	
Video	501 Transitions
Input Effects	Strobe, Mosaic, Flips, and Posterize
Special Effects	Chroma Key and Compose (see partial list under features)
Audio	Mix, Fade, Background
COLOR GENERATORS	
	2 (Background and Border)
	Millions of Colors
VIDEO PERFORMANCE	
Digital	Sampling: 13.5 MHz Quantization: 8-bit Horizontal Resolution: 500 TV lines
Analog	Digital Conversion: 13.5 MHZ, 4:2:2, 10-bit quantization (Y/C); 8-bit quantitization (composite) Gain: Unity S/N Ratio: Greater than 60 dB (Y/C); Greater than 56 dB(composite) Horizontal Resolution: 480 TV lines
General	Compatible with all NTSC video sources and tape formats (PAL version available) Meets long-haul video broadcast specs including CCIR-601 sampling and RS-170A
AUDIO PERFORMANCE	
Digital 2-channel	Sampling: 16 bit, 48 kHz Frequency Response: 20 Hz - 20 kHz
Digital 4-channel	Sampling: 12 bit, 32 kHz Frequency Response: 20 hZ - 14.5 kHz S/N Ratio: 80 dB
Analog	Frequency Response: 20 hZ - 20 kHz +/- 3dB S/N Ratio: 80 dB

APPENDIX E

MXProDV Differences

This appendix helps Videonics MXPro and MX-1 users transition to MXProDV. It highlights key operational differences between MXProDV and the other Videonics mixers.

DV Support Added

MXProDV lets you connect digital video (DV) sources to the mixer via IEEE 1394, (FireWire, i.LINK). MXProDV has three 1394 ports: two for inputs and one for output. FireWire provides high speed, short distance transfer of digital data. Audio and Video are both sent over the FireWire connection.

MXProDV accepts DV data from DV (and miniDV), DVCAM, DVCPRO and Digital 8 camcorders and VCRs. These devices use 4:1:1 sampling (NTSC) or 4:2:0 sampling (PAL) and a 5:1 compression. High end broadcast DV devices, such as Digital-S and DVCPRO50, use a different sampling [usually 4:2:2] and compression [usually 3.3:1]; these cannot be used with MXProDV.

With MXProDV, your DV data can be mixed with your analog data (Y/C and composite video and analog audio) in almost any combination, and you can output your data in both DV and analog format.

DV audio is usually 4-channel (12-bit, 32 kHz) audio or 2-channel (16-bit, 48kHz) audio. MXProDV outputs either of these formats. Choose the format in the Setup menu. The default is 4-channel output.

NOTE

If you use 4-channel audio output, you can use either 4-channel or 2-channel DV audio inputs. However, if you select 2-channel audio output, your DV audio inputs must be 2-channel, too. There are no restrictions on using analog audio inputs.

Default Routing Changed / No Auto Detect

The default routing has changed for MXProDV:

- DV IN 1's video and audio (channels 1 and 2) are routed to channel A.
- DV IN 2's video and audio (channels 1 and 2) are routed to channel B.
- Video IN (Y/C) 3's video and analog Audio IN 1 are routed to channel C.
- Video IN (Y/C) 4's video and analog Audio IN 2 are routed to channel D.
- No audio is routed to the Color channel (mute selected).
- IN 4's analog audio is routed to the Background audio channel.

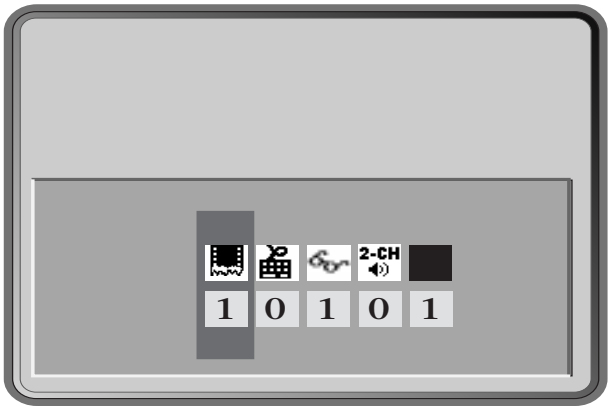
There is no automatic source detection in MXProDV as there was in MX-1. If your sources are not attached in the same locations as the defaults, you will need to use the Route menu to redirect your inputs. Note, however, that with MXProDV the route settings are saved in non-volatile memory so your routing information is saved even after power is cycled.

Setup Menu Differences

MX-1 Setup functions are found on the MXProDV Route screen. The MXProDV Setup menu corresponds to the MX-1 Advanced Setup screen.

For MXPro users, there is only one difference in Setup:

2-channel Audio Output Parameter Added—This parameter determines whether audio output will be 4-channel (two stereo pairs) or 2-channel (one stereo pair). The default is 4-channel. The setting for this parameter affects several other settings and functions. See "2/4-Channel Audio Output" beginning on page 90.



For MX-1 users, the following additional changes have been made:

Frame/Field Freeze Added – See "Force Field Freeze" on page 90 and "Major Freeze Functions" on page 97.

GPI Mode Added – See "GPI Out Mode" on page 90 and "Using a GPI Device" on page 152 for further information.

Comb Filter Added – See "Comb Filter" on page 90.

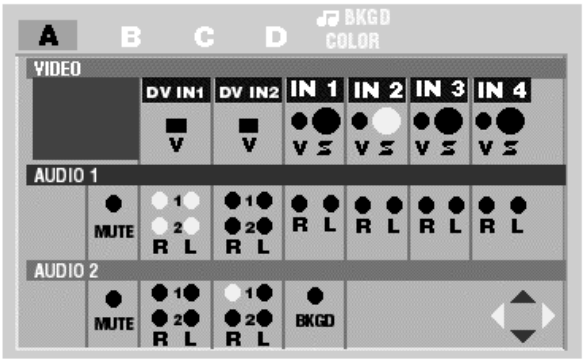
Frame Rate Lock and Noise Filter – Removed

Headphone Control Moved – Controls for adjusting headphones are in the Audio Mix screen. See "Using the Audio Mixer" on page 141 and "Using Headphones" on page 144.

Route Menu Differences

The structure of the Route menu changed to support the addition of DV inputs and 4-channel audio. The approach to using the menu is similar to the approach used with MX-1 and MXProDV:

1. Select a channel (A, B, C, D, Color, or Background Audio)
2. Select a video source to display on that channel (only applies to channels A, B, C and D)
3. Select an audio source for the channel (Audio 1)
4. If 4-channel audio output, select a second audio source for the channel (Audio 2)



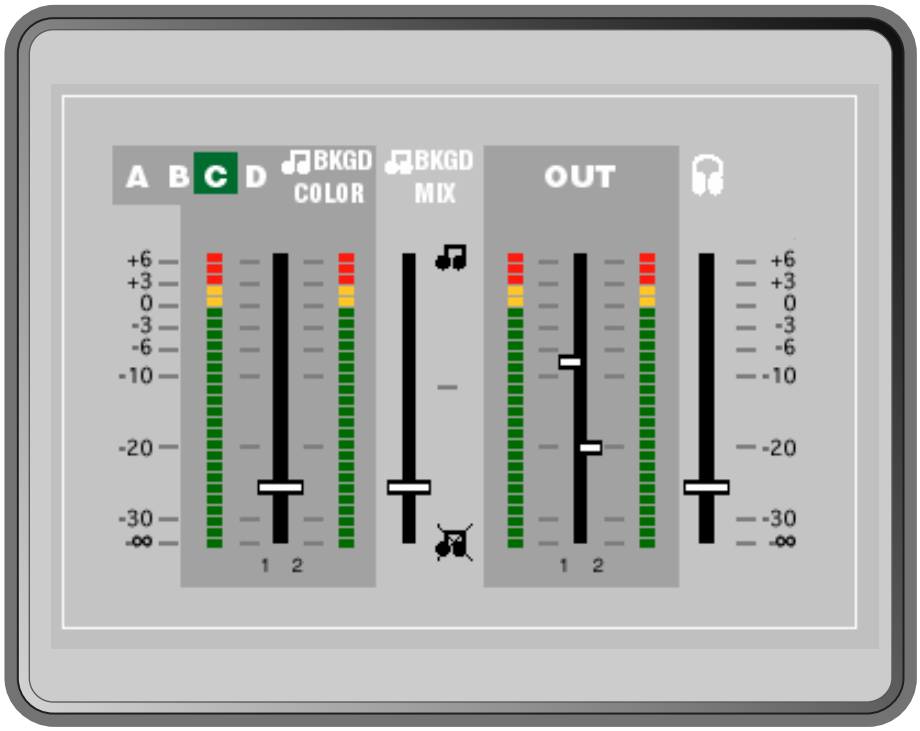
See “Route” on page 92 for more information.

Background Audio

You can use any of the audio inputs as a source for background audio. In the Route menu (above), press **SHIFT+NEXT/COLOR** to access Background audio. Next, use the **LEFT/RIGHT ARROW** keys to select the Audio 1 source you want to use. You do not use an Audio 2 source with Background. After you select a Background source, use the Audio Mixer (below) to mix background audio with main audio.

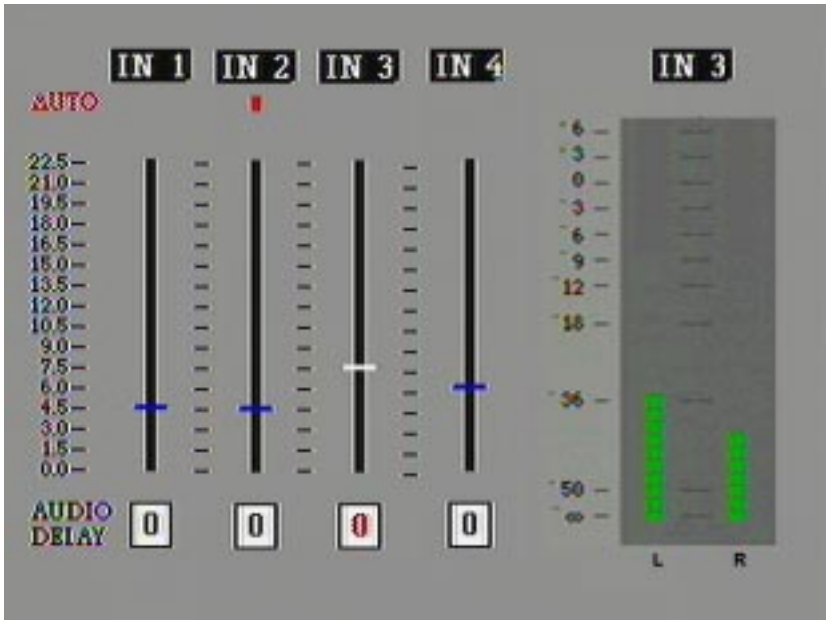
Audio Mixer Screen

Press **AUDIO MIX** to display the Audio Mixer Screen. Use this screen to adjust the volume of your audio sources and output, adjust the mix level between background and main audio, and adjust the headphone audio volume. It also provides level meters for monitoring the audio. For information on using the Mixer screen, see “Using the Audio Mixer” on page 141.



Analog Audio Adjustments

Press **SHIFT+AUDIO MIX** to display the Analog Audio Adjustments screen. This screen was added to let you fine tune your analog audio inputs. You can make manual or automatic gain adjustments to each input, and you can add delay to the audio path (up to three fields of delay) to compensate for video delays that might occur elsewhere in your audio/video chain. See "Using the Analog Audio Adjustments Function" on page 143 for more information.



Cut Speed

Using two DV and two analog inputs, cut speed is almost instantaneous (1-2 frames). In configurations with more than two analog inputs, you can minimize cut delay by selecting Display Next or Display Current for the preview screen display mode.

Headphone Location

The headphone jack was moved to the rear panel, near the middle.

Headphone Toggle

To toggle the headphone between the CURRENT and NEXT audio source, press **SHIFT+VIDEO/AUDIO**. If 4-channel audio is used, the key sequence toggles between Audio 1 and Audio 2 of the CURRENT source, then Audio 1 and Audio 2 of the NEXT source. The headphone icon is preceded by a "1" or a "2" to indicate whether audio 1 or 2 is being played (1🎧 and 2🎧).

MXProDV Contains NVRAM.

MXProDV 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.

Transitions Organized Differently

All transitions available with the MX-1 are also available with MXProDV, 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, MXProDV categorizes transitions into these five groups.

Pressing any Transition Category button displays 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 64).

Take Bar Operations

MXProDV's **T-BAR** provides added control over transitions. Swing the **T-BAR** from bottom-to-top and the transition plays in a forward direction. Swing the **T-BAR** from top-to-bottom and it plays in reverse.

See "Operating the T-BAR" on page 72. Chapter 5, *Transitions*, contains several sections explaining use of the **T-BAR**.

Transitions Compatibility

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

MXProDV provides a set of hot keys that directly correspond to the MX-1 Effect buttons. Using the hot keys (see Table 6, "MX-1 Compatibility Hot Keys," on page 65) causes the MXProDV Preview screen cursor to appear at the beginning of each section within the Basic (MX-1) category.

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