# ADO 500 Digital Video Effects

Always a little different,
always a lot better.

AMPEX

Producers' demands for touching up and adjusting video, creating interesting scene transitions, and adding attention-grabbing effects are the reasons why special effects systems have been moving from the "should have" to the "must have" lists of professional facilities. And ADO® from Ampex has led the way.
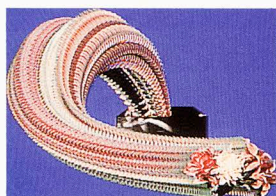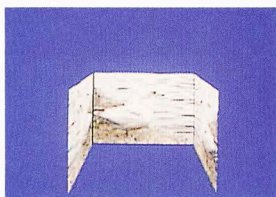
The ADO 500 system combines the ability to do touch-ups, scene transitions and exciting effects like *3-D page turns* and *warps*, with Ampex's unparalleled digital signal processing quality. This means that at last you have a *single* system to meet all of your clients' needs!

This unique combination, plus the ADO system's accessible and easy-to-learn controls, make ADO 500 the perfect digital effects system, whether your business is the ultimate commercial production, or a "time-is-money-but-it's-gotta-be-good" corporate video facility.

ADO 500 gives you exactly what you need for your business, and for your art.
Modifying the color content or resolution of video can yield a dazzling effect, or a subtle transition. *Image Innovator* ™ lets you create varied mosaic patterns, color tint, posterization, or solarization. For enhanced effects, these features can be controlled to affect a user-defined masked area or the area defined by an

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The ADO 500 system's *Target Framestore* (TFS) option includes Ampex's Dynamic Priority Control™ system. The TFS mask can be toggled on and off, or inverted on a keyframe-by-keyframe basis to allow live video to fly in front of *and behind* TFS elements in a single effect pass. Animations such as an orbiting satellite, or pulling video out of a box (as shown in this picture sequence), can be done completely *within* a single-channel ADO 500 system.
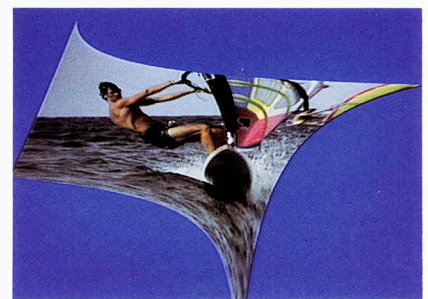
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In addition to linear scaling and perspective, a set of curvilinear effects, called *warps*, is included in the ADO 500 system. Warp features, such as twist, flare, stretch, and shear allow you to create scenes that flip, twist and float through space, or simulate reflections on curved surfaces.

input key signal. Also included is the ability to de-focus the video and to create an internally generated background color.

When it comes to smooth motion, ADO systems have long been recognized as the "motion masters," and the ADO 500 effects system refines this capability to the nth degree. This advanced system calculates all of the effect parameters for each video *field*, producing smooth, splined motion, direct linear motion, or a combination—all under your control.
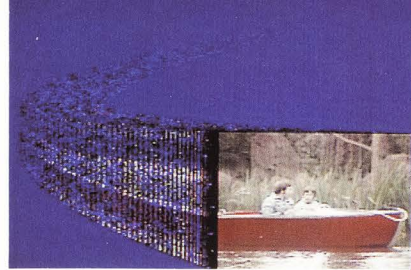
The ADO 500 system's Target Framestore is an internal graphics system that adds an array of paint, switcher, and animation effects to your repertoire. Trails, star trails, and sparkles (that can be opaque, transparent, or decaying over time) "follow" your video to focus the viewer's attention. Drop shadows with adjustable transparency will inspire new effects and add a feeling of depth as you position your transformed video over other sources. For dual channel ADO 500 systems, the Target Framestore allows the video and key signals from both channels to be priority controlled, mixed, and digitally combined.


The first law of special effects system design is to provide transparent picture quality.
The ADO 500 system's new three-dimensional page turn is an exciting effect, but it's also realistic and believable. This ideal combination is possible because the ADO 500 system, although very affordable, includes Ampex's patented *double-digital filtering*, where four times the amount of picture information is processed to calculate each resulting picture element. This proprietary *separable architecture* scheme filters horizontal and vertical picture information separately, providing the smoothest motion and highest picture quality.

Flexible effects management
For on-air applications, a 24-effect shot-box allows you to recall and run effects at the touch of a button. And you can name the effects for rapid identification. In post-production, you can use the 24-effect on-line storage to save in-process versions of your effect, and quickly review and compare different "looks" and approaches to solve your clients' problems.

For permanent storage, MS-DOS' compatible disks are used to create an unlimited library of off-line effects. And because they're DOS-compatible, you can use your PC with Ampex's *ADO/Access* program to organize, modify...even create ADO system effects.

A Digi-Matte™ key channel is *standard* on every ADO 500 system. It gives you an easy way to create "flying" logos, characters, and objects, without the cost of additional channels, or the bother and expense of matte reels. For added control, key gain and softness are also adjustable on a keyframe basis.
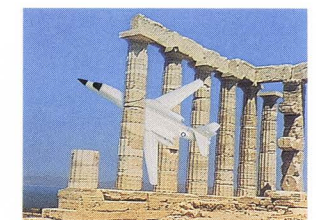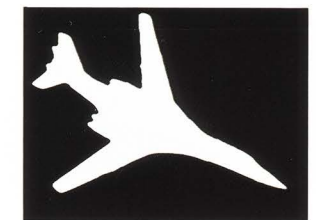
The ADO 500 system delivers the popular "page turn" effect with a whole new twist. As shown in this sequence, Ampex's *True-Dimensional™ Page Turn* peels the image off the surface of the screen—when the image plane is tilted, more (or less) of the interior of the curl is revealed. The image can peel and tilt *simultaneously*, enabling your creativity to define a whole new set of realistic effects and transitions. And this page turn is efficient, too. While other systems require two channels, or two passes, to accomplish this effect, the ADO 500 system will reveal the mirror image of the source video on the "back" of the page, in a single pass with a one-channel system.
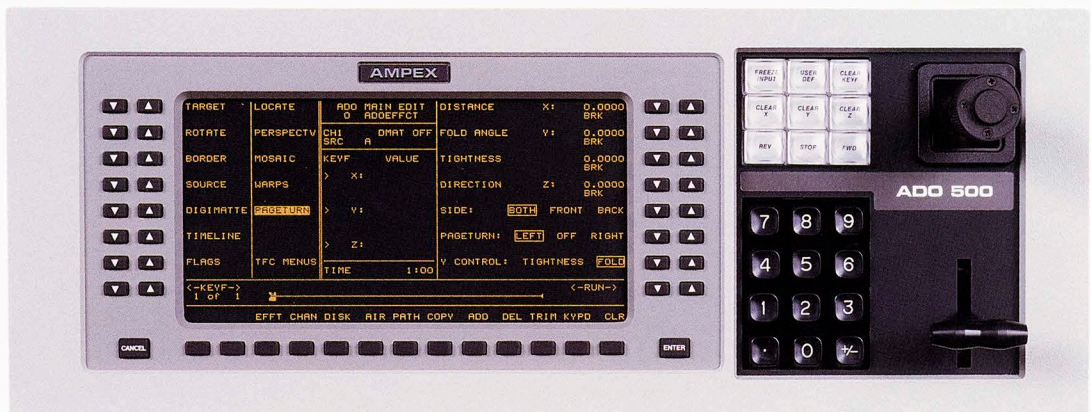
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All the features in the world are of little use if they are "hidden," or hard to use. The ADO 500 system provides an easy-to-read graphic display where all of the effect information and control options are always visible. And a unique graphic timeline is constantly displayed to give you rapid reference to the entire effect.

This approach to the user-interface means that, in addition to learning the system and becoming productive quickly, users who have been on other assignments can come back to the ADO 500 system and "re-learn" the system within minutes.
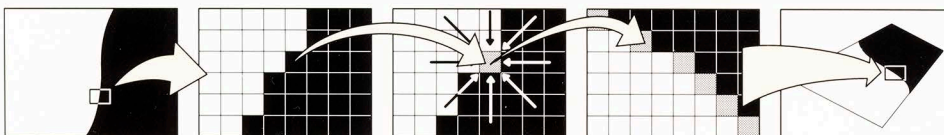
One example of this is the ease with which you can view changes to your effects. Dedicated keys are provided for forward and reverse playback, and stepping through the keyframes. This allows you to quickly view the results during the creation of effects. In addition, a dedicated fader bar is always active, allowing you to play in forward and reverse at any speed for any segment of the effect.

And when it comes to the creation of realistic and impressive 3D effects, the ADO system makes their creation fast and easy. As the image is rotated into the plane of the screen, perspective is automatically applied. Selecting the perspective command and twisting the joystick accentuates (or minimizes) the amount of perspective. You also have control over the axes of rotation. Offsetting the axis in the X-direction creates the "swinging door" effect, while moving the axis back in the Z-direction creates "barrel rolls."
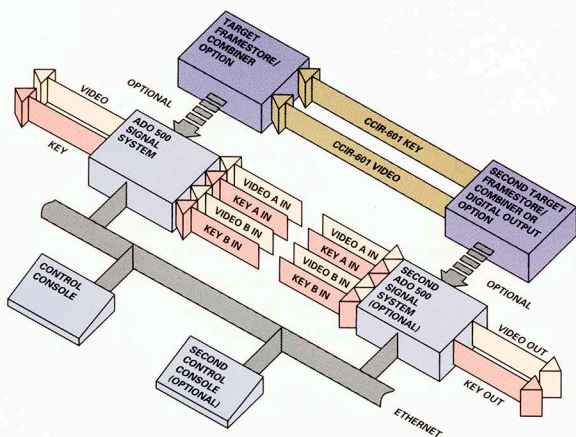
Input/output options include composite analog, component analog, and component digital (CCIR-601) in NTSC or PAL, so the ADO 500 system will interface easily with your existing facility today, and with the one you plan to have tomorrow.

ADO signal systems and control consoles are set up for flexible communications in a single or dual channel configuration, and for communications with other devices in your facility. Control between ADO 500 units is via "thinwire" *ethernet*, allowing simple, inexpensive routing and the location of multiple units in different rooms.

ADO 500 systems can be quickly reconfigured to serve multiple client needs or dual channel requirements. For communications with external devices, GPI serial ports can be triggered to run an effect.

The built-in RS-422/232 ports support communications with editors and switcher remote operations. In the Betacam emulation mode, effect length and play parameters can be modified and new effects recalled using conventions applied to standard time-code. In addition, ADO 500 systems interface to the Ampex AVC™ switchers via panel memory, and to Grass Valley's GVG-200 and GVG-300 switchers via E-MEM.

Specifications

COMPONENT ANALOG PERFORMANCE

Operational standards	525 line/60 Hz or 625 line/50 Hz (Note 1)
Luminance frequency response (Y Channel)	±0.5 dB to 5.0 MHz
Chroma frequency response (R-Y or B-Y Channels)	±0.5 dB to 2.5 MHz (measurements based on direct A/D, D/A connections)
Inter-component delay	Less than 3 ns
Inter-component gain	Less than 1%

COMPOSITE ANALOG PERFORMANCE

Luminance frequency response:	NTSC: ±0.5 dB to 5.5 MHz PAL: ±0.5 dB to 5.5 MHz (measurements based on direct A/D, D/A connections)
Video performance	Differential Phase: <2° Differential Gain: <2% K factor (2T pulse): <1%
Motion performance	Sub-pixel resolution: 2.3 ns

DIGITAL SIGNAL SAMPLING

Video: 13.5 MHz, 4:2:2	Conforms to CCIR-601 standard
Key: 13.5 MHz, 4:0:0	Conforms to CCIR-601 standard

SIGNAL SYSTEM INTERCONNECTS

Reference	BNC loop through, 75 ohm, 1 volt, analog composite Black burst
Component Analog Video input	Two independent sets of 3 BNC, 75 ohm RGB or Y, R-Y, B-Y (Notes 2, 3)
Composite Analog Video input	Two independent BNC 75 ohm, 1 volt, composite analog
Component Digital Video input	Two CCIR-605 standard 25-pin connectors
Key input (analog)	Two independent BNC 75 ohm, 1 volt analog
Key input (digital)	Two CCIR-605 standard 25-pin connectors
Component Analog Video output	One set of 3 BNC, 75 ohm RGB or Y, R-Y, B-Y (Notes 2, 3)
Composite Analog Video output	Two BNC 75 ohm, 1 volt composite analog
Component Digital Video output	Two CCIR-605 standard 25-pin connectors
Key output (analog)	Two BNC 75 ohm, 1 volt analog, switchable between composite and non-composite
Key output (digital)	One CCIR-605 standard 25-pin connector
Digital control data	System is capable of operating with up to 500 feet (160 meters) of cable consisting of RG-58 type coax with a BNC connector interconnecting the control and signal system assemblies.

COMMUNICATIONS

20 GPIs
One RS-422/RS-232 Selectable Serial port
One RS-232 Serial port

POWER CONSUMPTION

Input power	110-120 volt, 60 Hz or 220-240, 50 Hz single phase
Signal system	<500 watts
Control system	<75 watts

PHYSICAL

Signal system chassis
Dimensions	12.5" (31.8 cm) H × 17.5" (44.5 cm) W × 20" (50.8 cm) D
Weight	80 lbs (30 kg)

Control Panel
Dimensions	7.2" (18.3 cm) H × 17.7" (45.0 cm) W × 4.3" (10.9 cm) D
Weight	14 lbs (5.2 kg) Can be mounted in 19" equipment rack or free-standing as a tabletop unit.

Note 1. Operation in 525- or 625-line formats is control panel selectable.

Note 2. RGB signals with or without sync or any or all components are supported. Separate sync (RGBS) is not supported.

Note 3. Both video inputs and system output may be independently selected for RGB, Betacam, Betacam SP, MII or SMPTE/EBU format operation. Professional Y/C or S-VHS video formats are not supported.

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