

# Imagestore automated master control and channel branding system

*The powerful Imagestore master control and channel branding system provides the reliability, automation performance and low cost per channel needed for competitive broadcasting.*

Imagestore is a highly scalable and modular master control and channel branding system, designed for the playout of well presented and strongly branded television in automated environments.

The entry level Imagestore system comprises two keying layers with video storage, and the system can be expanded to include video and multi-group audio mixing, a DVE, character generator, clock inserter, and audio server.



Imagestore simplifies the automated playout of complex junctions

All of these mixing and channel branding features can be controlled by a single serial or Ethernet automation interface, simplifying the playout of complex video and audio junctions, such as 'squeeze and reveal' type transitions.

The Imagestore system also includes the branding media management software, and the multi-channel remote control systems, required for effective operation in large broadcast installations.



Imagestore automated master control and channel branding system

## Features

- Automated master control and channel branding system
- Integral video mixer option
- Optional digital audio mixing and voice-overs, with support for 5.1 multi-channel audio and multi-group, multi-lingual broadcasting
- Two keying layers can insert stills and animations or an external 'live' key input
- Large media library can store up to 4000 full frames of video, and up to 200 minutes of audio with Easyplay audio server option
- Rapid animation compilation, previewing and editing with Media Conversion Software
- In-vision clock/timer insertion with Bugclock option
- DVE option provides picture-in-picture, squeeze and reveal transitions
- Easytext automated character generator option renders Unicode characters in real-time from serial or Ethernet data
- Enhanced and Interactive Television (iTV) graphics option (see Imagestore Interactive bundle)
- Remote browsing and distribution of branding media with optional Media Distribution System
- Oxtel-RCP remote panel system allows one or more operators to control multiple Imagestores

## Video and audio mixing

The MIX-2000 integral A/B video mixer option for Imagestore is designed to be fed by an external router under automation. The mixer provides cut, fades and wipes, with variable transition rates.

The video mixer can be controlled by the Imagestore's RS422, RS485, RS232 and Ethernet automation interfaces, as well as by programmable GPIs and analog faders.

MIX-2000 is designed to operate with the optional Easysound digital audio mixer. When operating with MIX-2000, Easysound provides full group A/B audio mixing plus a full group voice-over (or two stereo pair voice-overs).

The audio mixer can de-embed a full group of audio from any of the four groups within the A and B SDI program inputs. Alternatively, the mixer can accept two AES/EBU stereo pairs per program input.

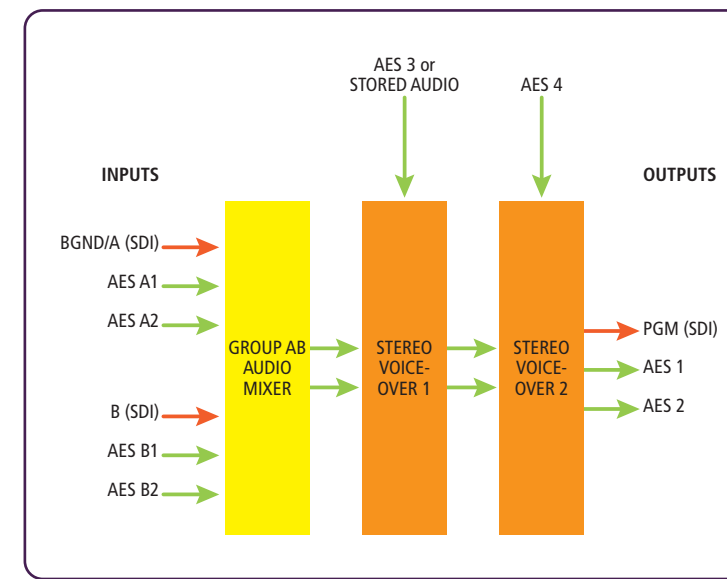
The program audio can be mixed with up to two AES/EBU stereo pairs for voice-overs. The audio mix is output as four AES/EBU stereo pairs, and

two pairs can be embedded into any one of the SDI program output's four groups.

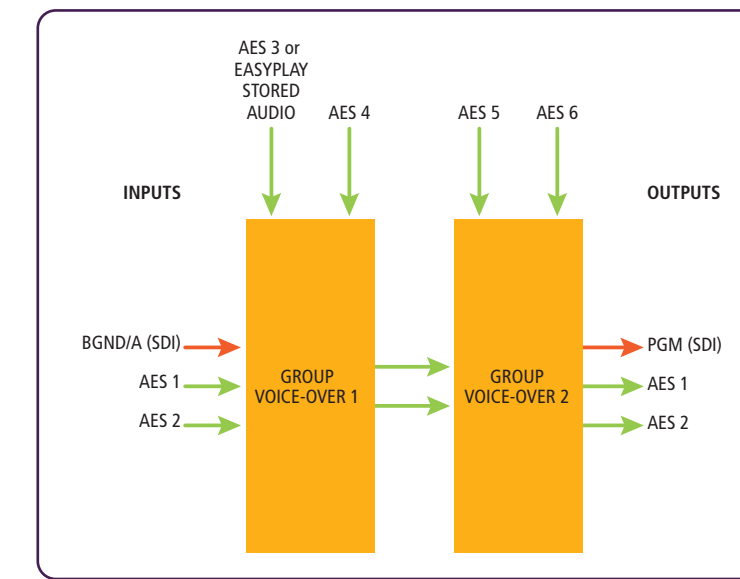
If the MIX-2000 option is not fitted to Imagestore, Easysound can provide two group voice-overs via four stereo pair AES/EBU inputs, with the mix output as four AES/EBU stereo pairs and a full group of embedded audio.

Easysound can be configured easily from the Imagestore's front panel or by the Oxtel-RCP, which offers adjustment of group selection, phase inversion, input level, ducking and track shuffling.

The audio mixing capabilities of Imagestore can be enhanced with Easysound Stand-alone to provide multi-lingual, multi-group audio mixing and cinematic, multi-channel surround sound, including 5.1 audio. This 1RU audio mixer extender has audio mixing capabilities similar the standard Easysound, and adds a further group of A/B audio mixing and voice-overs when used alongside an Easysound integrated within Imagestore.



A/B audio mixing with Easysound digital audio mixer



Two group voice-overs with Easysound digital audio mixer

### Dual keying layers

Imagestore's two independent keying layers can insert animations and stills from internal storage. For example, Imagestore can simultaneously insert a scrolling caption plus a revolving logo.

An external 'live' key signal from a character generator, or another graphical device, can also be inserted using either of the keying layers.

In automated environments, Imagestore's two keying layers are typically configured to operate in series to allow the independent insertion of two images over SDI.



Imagestore can playout animations of up to 6 minutes duration (1/64 frame). Picture courtesy of Cartoon Network

Alternatively, the two keyers can be operated in parallel to provide a more powerful previewing and image editing capability. This configuration restricts the Imagestore to a single layer of image insertion but this mode is well suited to graphics preparation.

### Image storage and animation memory options

In entry level configuration, Imagestore features 40 full frames of image storage which can be distributed among up to 40 stills/animations of variable size. The image storage can be expanded up to 4000 full frames.

The standard 32MB+32MB (program+preview) animation playout memory can output a typical 1/64 frame logo for up to 45 seconds with optional looping. The animation playout memory is expandable up to 256MB+256MB to provide, for example, up to 6 seconds full frame playout.

### Image storage and animation memory options

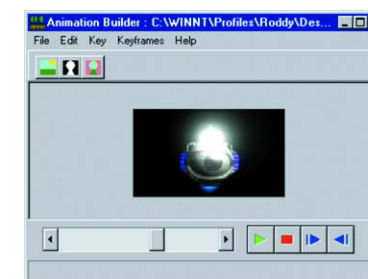
Memory options	Standard	MEM-400V	MEM-2000V	MEM-4000V
Maximum number of full frames/images	40	400	2000	4000
Animation playout memory (program + preview)	32MB + 32MB	64MB + 64MB	128MB + 128MB	256MB + 256MB
Max full frame playout duration	0.75 secs playout	1.5 secs	3 secs	6 secs
Max 1/64 frame playout duration	45 secs	1.5 mins	3 mins	6 mins

### Image editing and distribution

Images can be loaded directly into Imagestore by SDI capture (stills) or via the front panel floppy disk drive in TGA format or Miranda's proprietary OXT and OXA formats.

An optional Ethernet interface allows images to be loaded rapidly from a PC to an Imagestore over a coaxial or RJ45 (twisted pair) network.

TGA, Quantel VPB, BMP and Windows Clipboard™ format images can be converted into OXT/OXA formats with Miranda's Media Conversion Software which is provided with Imagestore.



Animation compilation, previewing and editing with Media Conversion Software

The Windows 95/98/00/NT™ compatible Media Conversion Software allows animations to be compiled from a sequence of stills, and then previewed and edited prior to loading. Lossless image compression simplifies and quickens image loading via the floppy disk drive.

Once loaded, images can be saved using file names and titles to simplify and speed identification.

Images can be previewed in less than a second, and then immediately taken to-air by fade or cut transitions.

Imagestore's standard image editing capabilities include adjustment of clip, gain and transparency, as well as masking, and horizontal and vertical positioning.

Additional editing, playlist creation and previewing capabilities are provided with the Edit Pack option. These features are only accessible with the Oxtel-RCP remote control panel. The Edit Pack provides image clean-up (interpolated and algorithmic functions) to remove any inter-field flicker which may be present following image capture.

Easier image searching and previewing is also provided with a selectable, smooth scrolling poly-photo of the whole image library or individual playlists on the preview output.

The poly-photo enables rapid playlist creation, editing and transmission. Up to 250 playlists can be created and played out using the Oxtel-RCP remote control panel.



Scrolling poly-photo of Imagestore image library or individual playlists selectable on preview output

### In-vision clocks

A customized in-vision clock or timer can be inserted with either of Imagestore's keying layers with the Bugclock option.

A clock can be inserted with one keying layer and an internally stored image, such as a logo, or a 'live' image from a CG, can be inserted with the other keying layer.

Alternatively, two clock images, for example, a station clock and a count-down clock or two time zone clocks, can be inserted simultaneously.

Bugclock can insert analog or digital clocks with hours, minutes, seconds and date information. Digital clocks can display information in either 12 or 24 hour modes. The clocks and timers can be referenced to an external LTC timecode source or an internally generated signal.

The Bugclock option includes a number of standard clock and timer images, and these can be customized by loading new face and hand images (with linear keys) using the Media Conversion Software.

The clock face images can be full frame but the maximum size of the digits or hands is dependent on whether seconds are displayed (see table below).

Max clock size (active area)	Digital clock/timer	Analog clock
Without seconds	1/9 screen	1/2 screen
With seconds	1/9 screen	1/16 screen

### Squeezy DVE

The integral *Squeezy* DVE option for *Imagestore* is designed for picture-in-picture applications such as 'over the shoulder' news transitions, as well as squeezes for credits, news flashes, sports results and schedules.

*Squeezy* is an integral 10-bit 'agile' DVE with two inputs which can be fed by the *Imagestore's* background/program A input (two program inputs available when the *MIX-2000 A/B* video mixer option is fitted). The DVE can also be fed by either keyer with internally stored images or an external 'live' key input.

Either input to *Squeezy* can be squeezed over the other. For example, a program input can be squeezed to reveal an animated or still image stored within *Imagestore*.

*Squeezy* can provide variable geometry and adjustable rate squeezes with selectable velocity profiles. The DVE can also perform image cropping.

The DVE is fully integrated into *Imagestore's* automation control system, and can also be remotely controlled and configured by the *Oxtel-RCP* panel.

An *Imagestore* fitted with the *Easysound* digital audio mixer can provide audio mixing of squeezed and non-squeezed program inputs.

The diagrams opposite provide examples of typical *Squeezy* applications.

### Automated voice-overs

Up to 200 minutes of digital audio voice-overs can be stored and played out with the *Easyplay* option for the *Easysound* audio mixer.

*Easyplay* enables broadcasters to associate voice-overs with images stored within *Imagestore*, such as program schedules, station idents and stills-based commercials.

The stored audio is output as an AES/EBU stereo pair, which can be mixed with any of the other inputs to *Easysound*.

*Easyplay* provides 40 minutes of audio storage, and this can be associated with multiple images. The maximum audio storage can be increased to 200 minutes with the *MEM-200A* option.

Audio files are loaded into *Imagestore* via the floppy disk drive or the optional Ethernet interface in 16-bit, 48KHz .WAV format using Miranda's *Media Conversion Software*.

### Diagnostics and bypass

*Imagestore* is equipped with front panel diagnostics to provide easy monitoring of the internal temperature, power supplies and phase lock loop. The diagnostics display also presents configuration and operational history.

Remote monitoring information is provided by the EDH output option, which allows studio and network engineers to assess the quality of the

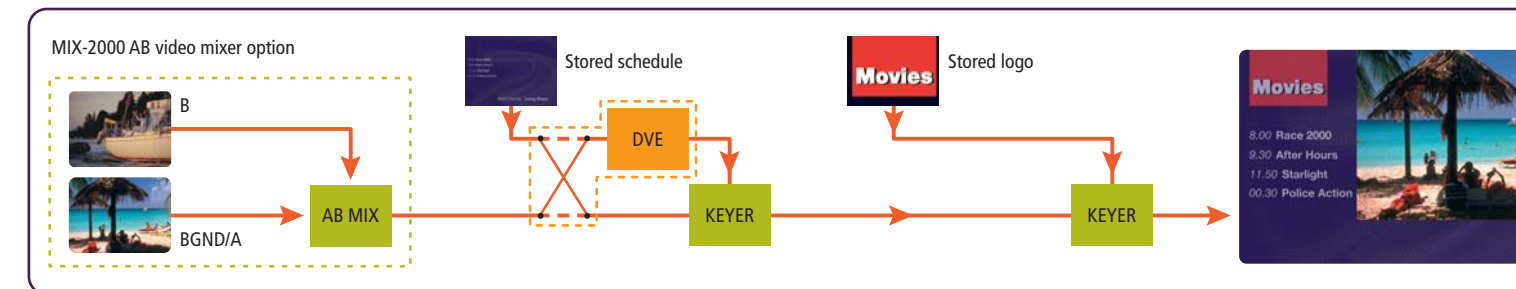
SDI signal, even when keying has occurred in the program path.

In the unlikely event of power supply failure, the optional MBP-002 mechanical bypass ensures that the background/program A input to *Imagestore* is passed unaffected.

### Typical Squeezy applications

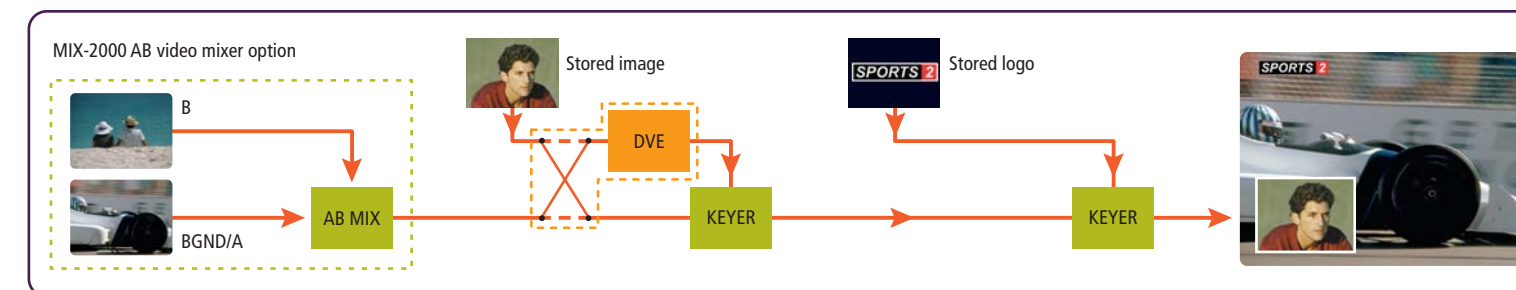
#### Squeeze to reveal schedule plus logo insertion

→ Program 'corner squeezed' to reveal schedule → *Easyplay* digital audio schedule voice-over triggered with *Squeezy* → Animated logo insertion



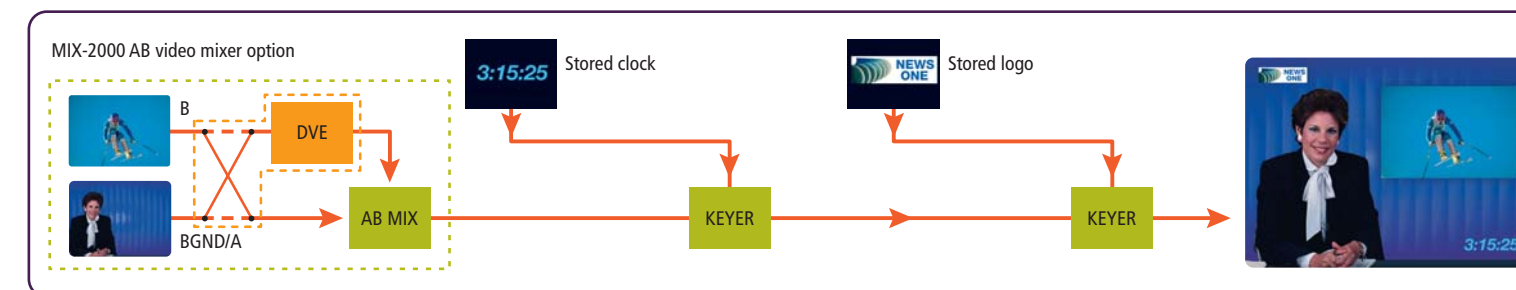
#### Live race with squeezed driver picture plus logo insertion

→ Stored racing driver still 'corner squeezed' to reveal motor racing program → Animated logo insertion



#### 'Over the shoulder' news report squeeze with clock and logo insertion

→ 'Over the shoulder' squeeze of live report to reveal news studio → In-vision clock insertion → Animated logo insertion



### Easytext automated character generator

Eye-catching graphics can be rendered in real-time over custom backgrounds, using multi-session automation data, with the *Easytext* character generator option for *Imagestore*.

*Easytext* can significantly reduce manual intervention without compromising creativity, and is ideal for highly automated applications, such as inserting information about a musician's chart performance for a music channel, or the layout of 'Coming up next' type program schedule information.

Even complex mixing and channel branding transitions can be simplified with *Easytext*. For instance, dynamic program schedules can be generated combining a squeeze and reveal DVE transition with an automated voice-over and associated text insertion direct from playlist; logo, time and temperature insertion can also be performed concurrently. *Easytext* is also suitable for inserting fully pre-prepared text and backgrounds, if dynamically updated graphics are not required.

The *Easytext* system offers complete creative freedom for character generation. Graphic designers can use any style of background image, and Unicode characters in Truetype fonts can be used from 6 to 600 pixels, in any RGB color. High quality characters are output with 256 level anti-aliasing, with easy drop shadow and transparency control.



Program schedule image is converted into Easytext template with Text Builder PC software



Program schedule graphic with still and crawling text plus time/temperature data and logos; all inserted by automation

Graphics can combine multiple lines of static and moving text, including scrolls and crawls. Time and date information can also be inserted via automation, an external station LTC source, or *Imagestore's* internal clock.

*Easytext* can also insert images stored within the image library into the background graphic, thereby simplifying the playout of graphics combining text, logos and other icons.

Graphics can be produced quickly using the *Text Builder 95/98/00/NT™* PC software. For example, a program schedule background image can be prepared on a graphics PC to 'house style' with spaces where text, logo, time/date and temperature are to be entered via automation. *Text Builder* is used to convert the image into an *Easytext* template, creating multiple 'active fields', where alphanumeric data and associated images are to be entered via automation.

The completed template is downloaded to an *Imagestore* via Ethernet. When the graphic is required to be played out, the template is keyed and the text is entered into the 'active fields' via commands within the automation protocol. The *Easytext* character generator can be driven by the main station automation or by a simple text automation program, which may be fed by databases of program specific information, such as financial, political and sporting data.



### Imagestore Interactive

The combination of *Imagestore* plus the *Easytext* character generator, the *Squeezy* DVE and the *Bugclock* in-vision clock is well suited to Interactive (iTV) and Enhanced Television channel branding applications.

These Interactive and Enhanced Television systems typically require multiple *Imagestore* systems per channel (see page 9), and the *Imagestore Interactive* bundle is designed to maximise cost-effectiveness.

The *Imagestore Interactive* bundle includes three *Imagestores*, each fitted with *NET-003*, *Easytext*, *Squeezy*, *Bugclock* and *MEM-2000*. All other *Imagestore* options can be added in the normal way.



Imagestore is well suited to Interactive and Enhanced Television mixing and channel branding applications

### Remote browsing and media distribution

Miranda's *Media Distribution System* software simplifies the distribution and management of image and audio files at installations with multiple *Imagestores*.

The *Media Distribution System* is especially valuable in multi-channel installations, or where there is a requirement for managing a large number of channel branding files.

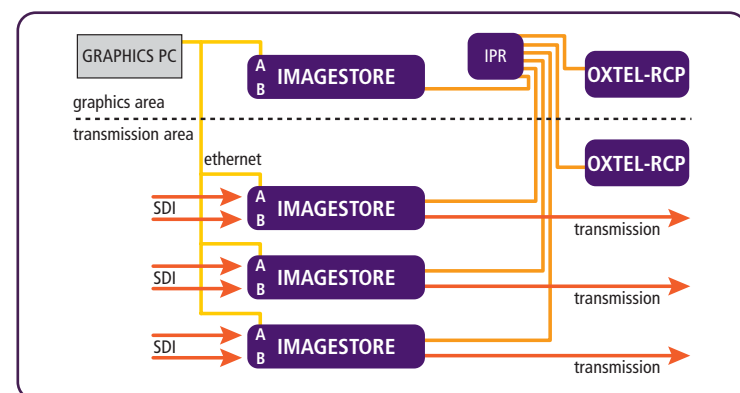
The Windows 95/98/00/NT™ compatible software integrates closely with the *Media Conversion Software*. Multiple networked *Imagestores* and graphics/audio preparation PCs are displayed in individual Windows.

Image and audio files are shown in poly-photo format with file names for easy identification. Individual images can be previewed with associated audio playout via PC speakers.

Image and associated audio files can be distributed by 'drag-and-drop' from one networked *Imagestore* or PC, to another networked *Imagestore* or PC. This process provides rapid transfer of channel branding media from graphics/audio preparation areas to the transmission suite.



Remote Windows™ browsing and media distribution



Multi-channel manual control and media distribution

### Multi-channel remote panel system

The *Oxtel-RCP* remote control panel system for *Imagestore* provides full and effective control of mixing and channel branding.

The panel is 3RU high, 1/2 19" rack frame wide, and is designed to be flush fitted into a desk or rack mounted with the optional RMF-002 frame.

One or more *Oxtel-RCP* remote control panels can be connected to multiple *Imagestores* with the optional *Intelligent Panel Router* (IPR).

The *Intelligent Panel Router* system comprises a PC with control software plus one or more routing modules. The system can allocate different control rights among multiple operators. The routing modules come in three variants with 8, 16 or 32 ports. Up to four routing modules can be linked to create a maximum of 128 ports.

Each port can be connected to either an *Imagestore* or an *Oxtel-RCP*. For example, a 32 port routing module can be connected to 28 *Imagestores* and four *Oxtel-RCPs*. A VGA monitor is required to configure the *Intelligent Panel Router* PC, and this is available as an option.

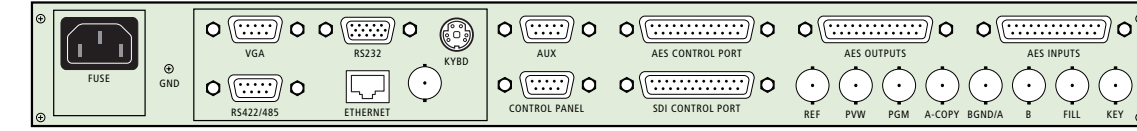
For environments where there is a requirement for frequent, or more powerful, manual intervention, the *Imagestore* system can also be operated by the *Presmaster* multi-channel, master control switcher panel (see page 26).



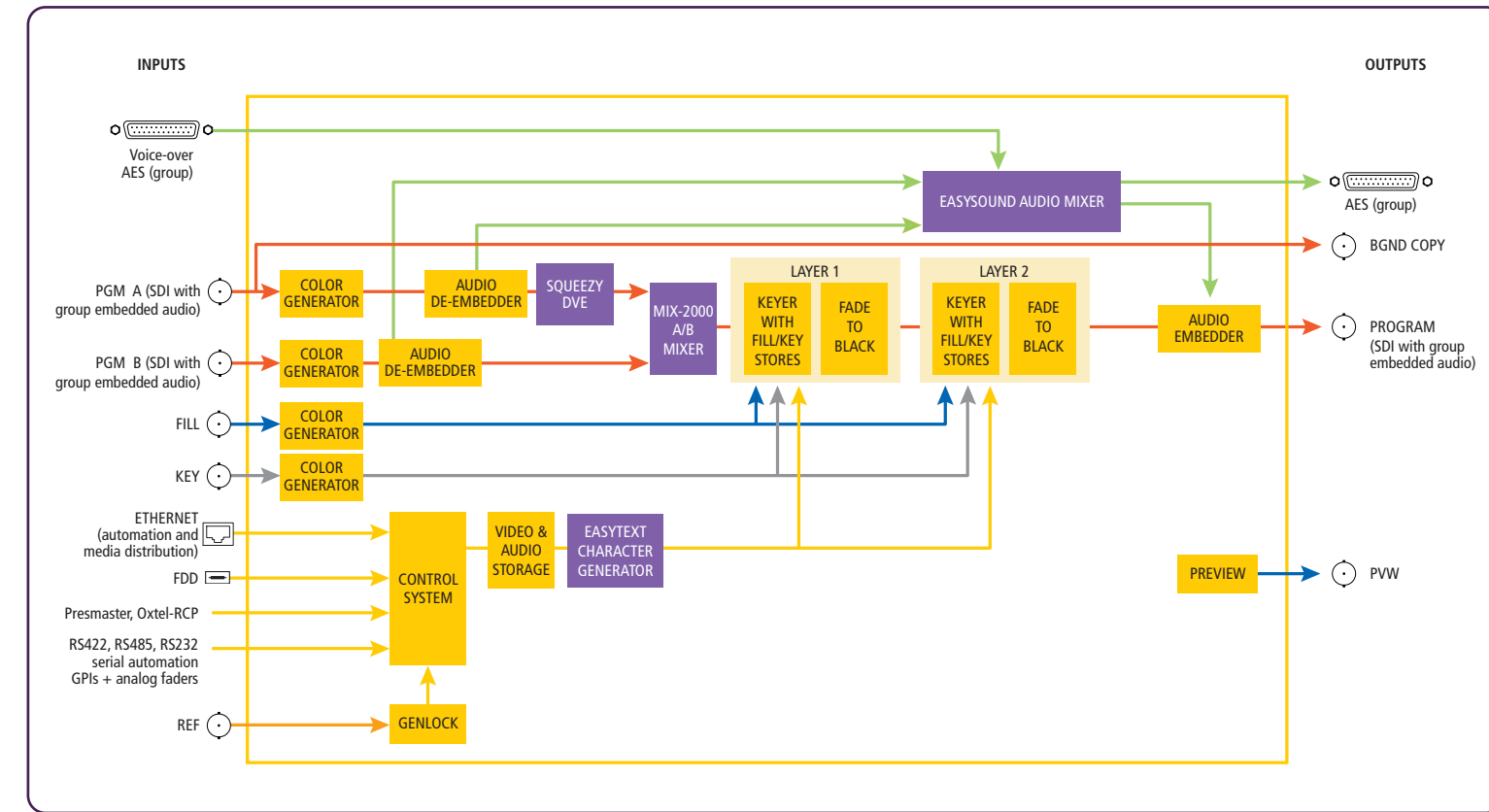
Oxtel-RCP remote control panel



Presmaster master control switcher panel



Imagestore rear-panel



Imagestore automated master control and channel branding system

## Imagestore technical specifications overview

Video inputs	<ul style="list-style-type: none"> <li>▶ Background/program A (Bgnd/A), fill and key inputs.</li> <li>▶ Optional program B input with <i>MIX-2000</i> A/B video mixer option</li> <li>▶ Proc-amp/color field generators on each video input.</li> <li>▶ All component SDI 270 MHz to SMPTE 259M-C BNC (625/525 compatible).</li> </ul>
Video outputs	<ul style="list-style-type: none"> <li>▶ Program, preview and program copy outputs.</li> <li>▶ All component SDI 270 MHz to SMPTE 259M-C BNC.</li> <li>▶ Copy feed fully equalised and regenerated.</li> <li>▶ Optional analog composite preview output.</li> </ul>
Video mixing	<ul style="list-style-type: none"> <li>▶ Optional <i>MIX-2000</i> A/B video mixer provides cut, fade and wipe transitions.</li> </ul>
Audio mixing	<ul style="list-style-type: none"> <li>▶ Optional <i>Easysound</i> digital audio mixer (embedded and AES/EBU) provides full group A/B mixing plus full group voice-over.</li> <li>▶ Multi-lingual, multi-group audio mixing and cinematic multi-channel surround sound, including 5.1 audio, can be performed with <i>Easysound Stand-alone</i>.</li> </ul>
Keying capabilities	<ul style="list-style-type: none"> <li>▶ Two independent keying layers (with preview) can insert animations and stills</li> <li>▶ Linear and additive keying using separate/external key sources or self-keying (minimum 12-bit processing)</li> <li>▶ Analog/digital clock or timer insertion with <i>Bugclock</i> option</li> </ul>
DVE	<ul style="list-style-type: none"> <li>▶ Agile, two input <i>Squeezy</i> DVE option can perform picture-in-picture and squeeze and reveal type transitions</li> </ul>
Character generation	<ul style="list-style-type: none"> <li>▶ <i>Easytext</i> character generator option provides real-time rendering of dynamic and static characters, and text backgrounds, with a single keying layer</li> <li>▶ Insertion of multiple lines of text of variable size, color and font (TrueType)</li> <li>▶ Text template created with Miranda <i>Text Builder</i> software using TGA, BMP, VPB, Windows Clipboard file formats</li> <li>▶ Full Unicode character support and 256 level anti-aliasing plus adjustable transparency and drop shadows</li> <li>▶ Alphanumeric data input by serial/Ethernet automation ports or GPI</li> </ul>
Image storage	<ul style="list-style-type: none"> <li>▶ 40 full frames of image storage can be distributed among 40 stills/animations of variable size.</li> <li>▶ Memory expandable up to 4000 full frames.</li> </ul>
Animation playout memory	<ul style="list-style-type: none"> <li>▶ 32MB+32MB (program+preview) memory can playout a typical 1/64 frame logo animation for up to 45 seconds with optional looping.</li> <li>▶ Animation playout memory expandable up to 256MB+256MB to provide, for example, up to 6 seconds full frame playout.</li> </ul>
Image loading & distribution	<ul style="list-style-type: none"> <li>▶ Image loading by SDI capture (stills), floppy disk drive or over Ethernet interface.</li> </ul>
Image editing	<ul style="list-style-type: none"> <li>▶ Clip, gain and transparency adjustment plus image positioning and masking.</li> <li>▶ Optional <i>Edit Pack</i> provides image clean-up to remove inter-field flicker.</li> </ul>
Audio storage	<ul style="list-style-type: none"> <li>▶ <i>Easyplay</i> option provides storage for 40 minutes of digital audio, expandable to 200 minutes.</li> </ul>
References	<ul style="list-style-type: none"> <li>▶ +/- one line (SDI reference) or +/- 7 lines (analog black and burst reference)</li> <li>▶ LTC reference for in-vision clock/timer</li> </ul>
Bypass	<ul style="list-style-type: none"> <li>▶ Optional MBP-0002 mechanical bypass allows background/program A input to pass unaffected in event of power supply failure</li> </ul>
Diagnostics	<ul style="list-style-type: none"> <li>▶ Front panel indication of internal temperature, voltages, phase lock loop, configuration and operating history. Remote monitoring information is provided by the optional EDH output.</li> </ul>
Physical	<ul style="list-style-type: none"> <li>▶ 1 RU 19" rack mount frame</li> <li>▶ Weight 7.0 Kg (15.4 lbs)</li> <li>▶ Cooling air (forced) from side</li> <li>▶ Operating temperature 0-40°C</li> <li>▶ Power: 90-240V, 60Hz or 50Hz, 50W</li> <li>▶ CE and UL approved</li> </ul>
Processing	<ul style="list-style-type: none"> <li>▶ 10-bit 4:2:2 SDI</li> </ul>
Remote control	<ul style="list-style-type: none"> <li>▶ Manual control via <i>Oxtel-RCP</i> or <i>Presmaster 100</i> panels.</li> <li>▶ Automation control via RS422, RS485, RS232 or Ethernet.</li> <li>▶ Programmable GPIs (9) and analog faders (7).</li> </ul>
Dedicated software	<ul style="list-style-type: none"> <li>▶ <i>Media Conversion Software</i> enables loading of TGA, Quantel VPB, BMP or Windows Clipboard™ images via floppy disk or Ethernet.</li> <li>▶ <i>Media Distribution System</i> provides remote browsing and distribution of channel branding media among networked <i>Imagestores</i> and PCs.</li> </ul>

## Imagestore ordering information

IS2 Imagestore SDI automated master control and channel branding system	
<b>OPTIONS</b>	
MEM-400V	▶ Image library expansion to 400 images/full frames plus 2 x 64MB animation playout memory
MEM-2000V	▶ Image library expansion to 2000 images/full frames plus 2 x 128MB animation playout memory
MEM-4000V	▶ Image library expansion to 4000 images/full frames plus 2 x 256MB animation playout memory
MIX-2000	▶ A/B video mixer
SQZ-2000	▶ <i>Squeezy</i> DVE
IS-EDIT <sup>(1)</sup>	▶ <i>Edit Pack</i> (poly-photo, playlists and image clean-up)
CPV-001 <sup>(2)</sup>	▶ Analog composite preview
MBP-002	▶ Mechanical by-pass
NET-003	▶ Ethernet interface (co-axial & RJ45 twisted pair)
ET1 <sup>(3)</sup>	▶ <i>Easytext</i> automated character generator
Bugclock	▶ In-vision analog/digital clock or timer
EDH-001	▶ EDH output option
ES2	▶ <i>Easysound</i> digital audio mixer
ES2-SA	▶ <i>Easysound Stand-alone</i> audio mixer extender
EMB-001	▶ Embedded audio mixing module for ES2-SA
EP1	▶ <i>Easyplay</i> digital audio storage and playout system
MEM-200A	▶ Audio storage expansion to 200 minutes
Oxtel-RCP	▶ Remote control panel
RMF-002	▶ 3RU 19" rack mount frame for <i>Oxtel-RCP</i>
RMF-002-2BP <sup>(4)</sup>	▶ Blank panel for RMF-002 (half frame width)
MDS-001 <sup>(5)</sup>	▶ <i>Media Distribution System</i> (Windows 95/98/00/NT™ software)
IPR-001 <sup>(6)</sup>	▶ <i>Intelligent Panel Router</i> PC plus control software
IPR-200-8	▶ 8 port routing module for IPR-001
IPR-200-16	▶ 16 port routing module for IPR-001
IPR-200-32	▶ 32 port routing module for IPR-001
IPR-VGA	▶ 14" VGA monitor for IPR PC
iIS2 <sup>(7)</sup>	▶ <i>Imagestore Interactive</i> bundle

<sup>(1)</sup> *Edit Pack* features only available from *Oxtel-RCP*

<sup>(2)</sup> Ordering CPV-001 will replace the standard SDI preview output

<sup>(3)</sup> *Easytext* is supplied without TT fonts: these are exported from authoring PC as part of design using free *Text Builder* program

<sup>(4)</sup> Blank panel is required when only one *Oxtel-RCP* is fitted into the RMF-002 frame (frame holds two *Oxtel-RCP* panels)

<sup>(5)</sup> MDS-001 requires each *Imagestore* to be fitted with NET-003 Ethernet interface

<sup>(6)</sup> Requires one or more IPR-200-8/IPR-200-16/IPR-200-32 modules. Also requires a VGA monitor for configuration (option IPR-VGA)

<sup>(7)</sup> *Imagestore Interactive* bundle includes: 3 IS2s each fitted with NET-003, *Easytext*, *Squeezy*, *Bugclock* and *MEM-2000V*