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Abekas

Publishing and Copyright Information

Dveous/MX Technical Guide
Part Number 9100-0402-01

Publishing History

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Copyright

FCC Compliance

This equipment complies with the requirements in Part 15 of the FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct the interference.

Important

Changes or modifications to this product not authorized by Abekas, Incorporated could void the FCC Compliance and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Abekas peripheral devices and Abekas shielded cables and connectors between system components. It is important that you use Abekas periperal devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Abekas periperal devices and the proper shielded cables and connectors through an Abekas-authorized dealer.

Notice

Information contained in the User Guide is not guaranteed and is subject to change without notice or obligation.

Acknowledgments

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Safety and First Aid

Abekas equipment is designed to the highest standards of quality and reliability. However, no matter how these systems are designed, operators and maintenance personnel can be exposed to electrical shock hazard when protective covers are removed for maintenance or the installation of options. With this caution in mind, each operator and engineer must observe all safety regulations, and have a clear understanding of first aid procedures related to electrical hazards.

Safety and Compliance Certifications

Conforms to UL STANDARD 1950
Certified to CAN/CSA STANDARD C22.2, No.950-95

中文	警告！	重要安全注意事项

本系统遵守安全标准 IEC/EN60950。为确保安全操作及防止电击或火灾危险，请遵守以下规定:

- 本系统能够自动调整以适应供电情况。请确保贵处的电源符合本系统所要求的正确电压和频率工作范围。
- 本系统中的每个机壳均必须接地，方法是将输入电源线连接到正确接线并接地的电源插座上。
- 对于随本系统提供的输入电源线，必须按如下方式接线:

载电线 = 棕色　　中性线 = 蓝色　　地线 = 绿色/黄色

在从机壳取下顶盖之前，必须从机壳完全断开所有的输入交流电源线。否则将会暴露于危险电流及电压之下。身体接触这些电流和电压非常危险，并可能导致严重的人身伤害或伤亡！只有合格的服务人员才可以取下机壳的顶盖。

对于带有此标记的组件，可以在系统运行（带电）时取下。在取下组件之后，请当心机壳内组件插孔连接器上暴露的危险电流及电压。当机壳接通输入交流电时，请勿用手指、工具和外部金属物体接触裸露的插孔连接器。身体接触这些电流和电压非常危险，并可能导致严重的人身伤害或伤亡！只有合格的服务人员才能取下这些组件。

ENGLISH	WARNING!	IMPORTANT SAFETY NOTICES

This system complies with safety standard IEC/EN60950. To ensure safe operation and to guard against potential shock hazard or risk of fire, the following must be fulfilled:

- This system features auto-ranging power supplies. Ensure that your power source is within the correct operating range of voltage and frequency, as required by the system.
- Each chassis in this system must be electrically grounded by connecting the input power cord(s) to a correctly wired and grounded power outlet.
- The input power cord(s) supplied with this system must be wired as follows:

Live = Brown　　Neutral = Blue　　Earth = Green/Yellow

Completely disconnect all input AC power cords from chassis before removing top cover from chassis. Failure to do so will expose dangerous electric currents and voltages. Physical contact with these electric currents and voltages is extremely dangerous and may result in severe physical injury or death! Only qualified service personnel should remove the top cover from the chassis.

Modules marked with this symbol may be removed while the system is operating (powered). After removing a module, beware of dangerous electric currents and voltages that are exposed on the module receptacle connector inside the chassis. Please keep fingers, tools, and foreign metal objects away from the exposed receptacle connector while the chassis has input AC power applied. Physical contact with these electric currents and voltages is extremely dangerous and may result in severe physical injury or death! Only qualified service personnel should remove these modules.

Start Here–Dveous/MX Technical Guide

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Section 1: Introduction

Abekas

Scope of Manual

This Technical Guide provides detailed information to help you plan, install, and configure your Dveous/MX Universal Format Digital Video Effects system. For operations information, please see the Dveous/MX User Guide - P/N 9100-0401-01.

Section Descriptions

This manual covers installing and using the Dveous/MX hardware. The manual is separated into the following functional topics.

Section 1 – Introduction

This section presents an overview of the Dveous/MX system, its standard features and options. It also includes a summary of basic operations and basic signal path block diagrams.

Section 2 – Installation

The Installation section covers the physical aspects of a Dveous/MX system. This includes power and cooling requirements, and size and weight specifications. It covers all rear panel connections, with connector pinouts, and discusses connecting a Control Panel.

Section 3 – System Overview

This section contains the information needed to configure the Dveous/MX chassis. It defines the front panel LEDs and the internal configuration switches. It also covers powering the system on and off and updating software. Discussions of board overviews, first birthday procedure, power supply removal and fan assembly removal are also in this section.

Section 4 – Option Installation

This section details procedures for installing and replacing hardware options in the chassis. These include optional transform boards for extra HD channels as well as an additional input board to increase the total inputs from 6 to 12.

Section 5 – Applications

The Applications section covers integration of Dveous/MX into an existing system and the remote protocol interfaces that Dveous/MX supports.

Section 6 – Setup Menus

This section details the engineering and setup menus. It covers the settings and ranges in menus used for system timing and configuration. This section also discusses disk menu operations settings.

Section 7 – Appendix A

This section is a list of commonly requested assemblies and their Abekas part numbers.

Manual Conventions

In this manual, all Control Panel keys are called buttons to avoid confusion with the video keying process.

Keycap labels appear in bold capital letters: the **3D TRANS** button, the **RUN→** button. Menu names are capitalized: the Warp menu, the Input menu. Softkey labels are in bold upper and lower case italicized letters: the ***Rotate*** softkey. Softknob labels appear in bold upper and lower case letters: the **H Pos** softknob. Otherwise, softknobs appear as softknob A, softknob B, softknob C, and softknob D, starting on the left with softknob A.

A sequence of button presses appears with long dashes (—) separating the buttons: **MODIFY — ALL — ENTER**. Holding one button down and pressing another appears with a plus (+). For example, holding **CLEAR** and pressing the **3D TRANS** button appears as **CLEAR + 3D TRANS**.

Depending on your input and channel configurations, a channel can process a video signal, a key signal, or a drop shadow derived from a key signal. This manual uses the word *image* generically to indicate the channel's output (video, key, or shadow).

System Description

Dveous/MX is a Universal Format Digital Video Effects system available in three configurations that can work in SD or HD and is software configured in the user interface.

Dual Twin SD Configuration
SD Mode (1A/1B, 2A/2B) — Two DVE channel pairs of SD with each pair capable of working as a Video + Video (V/V) pair, or as a Video + Key (V/K) pair, or as a Video + Key+ Shadow (VK/S). All functionality is available in SD Mode.

HD Mode (1A) — One DVE channel (1/2 of a single twin) of HD capable of working in Video mode only. No Input Key available. Therefore, Video + Key (VK), Video + Key + Shadow (VK/S)) and Solid Builder functionality is not available in HD Mode.

Single Twin HD Configuration
SD Mode (1A/1B, 2A/2B) — Full functionality as described above.

HD Mode (1A/1B) — One DVE channel pair of HD capable of working as a Video + Video (V/V) pair, or as a Video + Key (V/K) pair, or as a Video + Key+ Shadow (VK/S). To create six sided cubes with Solid Builder will require two recording passes in HD Mode.

Dual Twin HD Configuration
SD Mode (1A/1B, 2A/2B) — Full functionality as described above.

HD Mode (1A/1B, 2A/2B) — Two DVE channel pairs of HD with each pair capable of working as a Video + Video (V/V) pair, or as a Video + Key (V/K) pair, or as a Video + Key+ Shadow (VK/S). All functionality is available in HD Mode.

Standard Features

Dveous/MX's standard features include the following:

- Channel configurations. One of the features that makes Dveous/MX unique is its flexible channel configuration. Dveous/MX is available in three configurations that can work in SD or HD and is software configured in the user interface.
  - Dual Twin SD Configuration
  - Single Twin HD Configuration
  - Dual Twin HD Configuration

  Please refer to the Video and Key Signal Paths section for detailed information.

- The A video transformation path is a full-bandwidth video channel. The B channel can process key signals (luminance only), but is also a full bandwidth video channel. This lets Dveous/MX operate in four modes:
  - Video – you can control one video channel.
  - Video/Video – you can control the twin channels independently.
  - Video/Key – you can control the key channel independently.
  - Video-Key/Shadow – The key follows the main video channel, with independent control of the shadow.

  Please refer to the Video and Key Signal Paths section for detailed information.

- Dveous/MX supports up to twelve Standard Definition (SMPTE 259M) or High Definition (SMPTE 292M) 10 bit serial inputs. Six inputs are standard and six are available as an option.
- The Dveous/MX chassis supports six Standard Definition (SMPTE 259M) or High Definition (SMPTE 292M) 10 bit serial outputs. They are selectable as combined video, combined key, channel video or channel key outputs.
- Multiple Rates and Formats - Dveous/MX supports both 525 and 625 formats in SD mode. HD modes supported include 720,1035 and 1080 at both progressive (frame) and interlaced (field) rates.
- SuperShadow – a full-bandwidth drop shadow.
- An internal Combiner that keys up to two DVE channel pairs and the Target Framestore over a background.
- A Background Framestore that can feed live or frozen images to the internal Combiner as a background.
- SurfaceFX, which combines the powerful texture and 3D light sourcing tools. There is an internal Pattern Framestore for generating video test patterns and textures. You can use any input to the routing matrix, including video and key inputs and the SuperMatte generator, as the source for a texture.
- SuperMatte color generator for creating dual color washes and patterns.
- The reTouch Color Corrector offers wide range color correction and modification in either RGB or YUV space for each DVE channel input independently.
- The Target Framestore lets you create trails with variable decay (with either video or a matte fill), sparkles with variable size and intensity, motion blur, and montage (drop-ins) with selectable priority for live video over or under

existing drop-ins. This feature also stores Z, or depth, information, letting you build solids easily and move live images in front of or behind the frozen images automatically.

- Four independent input freeze buffers (two for video, two for textures) per DVE channel pair.
- UltraWarp advanced image warping feature.
- The Defocus feature allows wide band defocusing of the luminance or chrominance in an image, or both. It is dual channel: you can use it on one or two video signals, or on one video and one key signal or the background. Defocus controls include independent horizontal and vertical defocus settings.
- The Dveous/MX Control Panel has a high resolution graphics display and a 3.5" high density (1.44MB) MS-DOS format floppy disk drive. You can use the floppy drive to store and recall effects and engineering setup files.
- Remote interfacing capabilities. Dveous/MX can control external switcher aux buses with frame accurate front/back switching. Three RS422 serial interfaces let external devices, such as a switcher or edit controller, communicate with Dveous/MX. An additional RS422 port is used for connecting to the Dveous/MX Control Panel. There are also 12 GPI (General Purpose Interface) inputs and 12 GPI outputs.
- The included CPL Protocol interfaces Dveous/MX to switchers using GVG Control Protocol Language and is available on any of the 3 remote ports.
- Internal 16 X 11 crosspoint matrix for source routing.
- Non-volatile Hard Drive for storing effects, setups and JPEGs.

Options

- Additional transform boards can be installed for extra HD channels.
- Additional input card can be added to increase the total inputs from 6 to 12.
- An external floppy drive can be connected to the Dveous/MX control panel when console mounting blocks access to the on-board drive.
- Additional control panels can be connected to the Dveous/MX chassis to allow control from other users. Only one panel can be active at one time.

Reference Requirements

You must operate Dveous/MX locked to an external reference input. Dveous/MX accepts either tri-level sync or black bust (bi-level) in NTSC or PAL as reference. The reference must match the selected video format frame rate. For instance, NTSC black burst will lock up to 525 SD formats as well as any HD formats running at 59.94 or 29.97. HD at 1080/24P would require tri-level sync running at a 24 frame rate.

The reference input is a high impedance loop thru for daisy chaining the reference signal to other devices. This loop thru must be terminated at 75-ohm if not used and termination should always be at the end of the reference signal.

Refer to section two for more information on reference requirements.

Control Ports

There are six control ports on the rear of the Dveous/MX Main Chassis.

- The three RS422 serials ports support Sony, SMPTE, GVG Peripheral Bus, CPL and Switcher Aux Bus Protocols. A fourth port supports the communication between the control panel and the chassis.
- Two GPI (General Purpose Interface) ports supply extensive input and output switch closure-based remote control. The GPI outputs can also provide tally information. Input and Output functions are assignable and trigger-edge mode is selectable in the **Remote Setup** menu. Pinouts and specifications for the GPI ports are provided in Section 2. Configuration is discussed in Section 6, Setup Menus.

Overview of Terms

The terms below are commonly used when discussing Dveous/MX.

- **Channel—**The term "channel" has been used to describe either the video or key processing path, inputs, or outputs. Most DVE systems process luminance and chrominance in the video path but only luminance in the key path. Usually, a "two-channel" system or effect refers to the number of video images involved, and implies that the key channels are included. This is not the case with Dveous/MX.

  Dveous/MX has the unique ability to process either a key signal or a video signal on the second "twin" channel. This means that a twin channel can have one video and one key path, or two video paths and no key path; it can generate raster-shaped key signals at output.

  In this manual, "channel" can refer to a video path or a key path, and, unless specifically noted, they are interchangeable. Please refer to the Video and Key Signal Paths section later in this document for a complete explanation with illustrations.

- **Multichannel—**"Multichannel systems" in the past always referred to the video channels, with the abekaspanying key channels implied. Thus, a four-channel system had four video paths and four key paths. Dveous/MX's multichannel capabilities are different because both channels can process video. You can use these channels in four different ways:
  - **V (Video)** — *Dual Twin SD Configuration (HD mode)*
    The transform board processes only one video source in HD mode. All transform, warp, and lighting effects are available on that video channel. The DVE processor internally generates the associated key signal. The key signal is full screen "white" with adjustable opacity and edge softness.
  - **V + V (Video + Video)** — *Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)*
    The transform board independently processes two video sources in either SD or HD mode. All transform, warp, and lighting effects are adjustable separately on each video channel. The DVE processor internally generates the key signals associated with these signals. The key signals are full screen "white" with adjustable opacity and edge softness.
  - **V + K (Video + Key)** — *Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)*
    The transform board independently processes one video and one key source. All transforms are available to the key signal independently from the video. The key channel also has clip, gain, and horizontal phase controls.

- **VK + S (Video/Key + Shadow)** — *Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)*
  In this mode, the transform board derives a full-bandwidth drop shadow from the key input. It processes the video and key (which are tied together) in the A channel, with independent control of the shadow in the B channel. Besides the clip, gain, and horizontal phase controls for the key part of the A channel, there are color and opacity controls for the shadow channel.

Control Panel Buttons

A brief description of the Control Panel and its button groups follows.

The Menu Screen

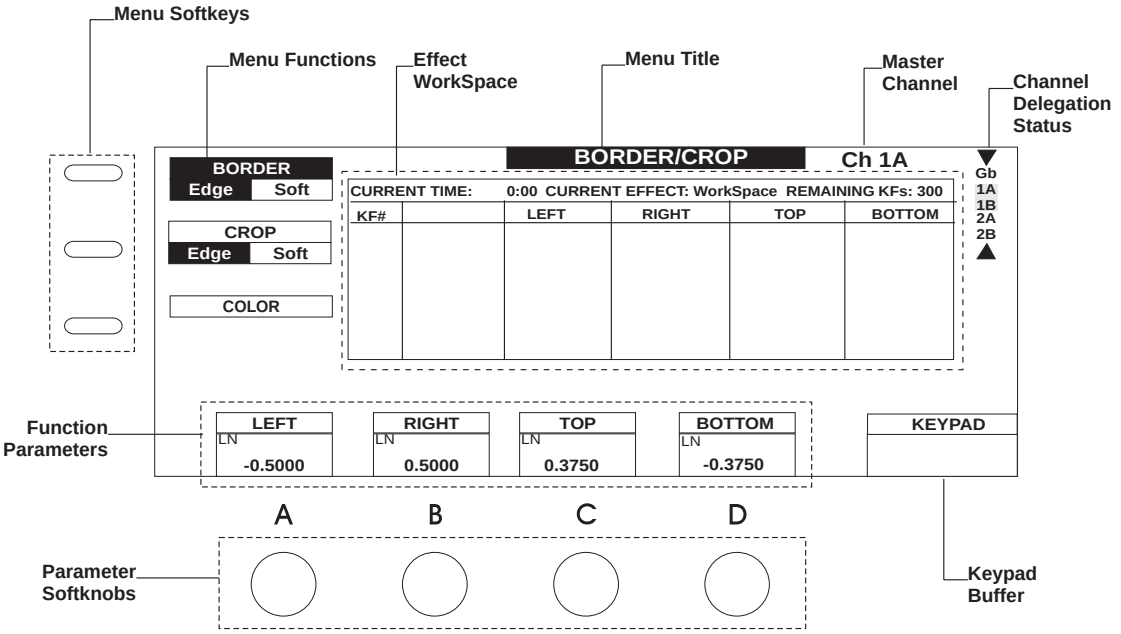
Menu Display

The menu screen is in the upper left corner of the Control Panel. You can adjust brightness and contrast in the Engineering Setup menu.

Menu Labels and Controls

Some of the information displayed in the menu screen changes depending on Dveous/MX's current status and the current menu. The figure below shows a typical display.

The top line shows the current menu title, and indicates the currently selected master channel (the one the menu settings reflect): 1A, 1B, 2A, or 2B. The master channel display does not appear in global menus.



A menu can have up to three different softkeys. The softkey labels appear on the left side of the menu screen. Select a softkey by pressing the button next to its label. When you press a softkey, a black highlight indicates that it is active. If there is more than one label for the softkey, pressing it toggles the function, and the highlight indicates the active mode. Also, up to four parameters for each

softkey function can appear above the softknobs at the bottom of the menu display. You can adjust these settings with the softknobs, the keypad, or the joystick. The motion path type assigned to the parameter appears above the softknob values.

You can change softknob settings several ways:

- Turn the softknob.
- Enter a value in the numeric keypad, then press the corresponding **A**, **B**, **C**, or **D** button in the top row of the numeric keypad. For example, to enter the value 17 in softknob A, enter **17** on the keypad, then press **A**. This applies to softknobs that use numeric values.
- Use the joystick to change softknob settings. Adjust softknob settings with left/right arrows by moving the joystick left and right. Adjust settings with up/down arrows by moving the joystick up and down. Adjust softknob settings with circular arrows by twisting the end of the joystick handle.
- You can copy a value from one softknob to another. With the keypad buffer empty, press the keypad softkey (**A**,**B**, **C**, or **D**) for the softknob you want to copy. This copies the value to the keypad buffer. Pressing another keypad softkey (**A**, **B**, **C**, or **D**) enters the value in that softknob and clears the buffer.
- You can invert a value by pressing the **+/-** button, then the keypad softkey (**A**, **B**, **C**, or **D**) for the softknob. Use this for values that accept negative numbers.
- You can also use **TRIM** to trim a value: press **1** — **TRIM** — **A** to add 1 to the value in softknob A.
- You can reset values and entire menus to their default settings:
- Press **CLEAR**, then **A**, **B**, **C**, or **D** to reset the softknob value to default. Hold **CLEAR** and press more than one keypad softkey (**A**, **B**, **C**, or **D**) to reset multiple values.
- Hold **CLEAR** and press a softkey to clear all the values for that softkey to default. This resets both the softkey setting (if it is a toggle or flag) and any softknob values.
- Hold the **CLEAR** button and press a menu button to reset all the values for that menu to default. This resets all softkeys and softknob values.

A keypad buffer appears in the lower right corner of each menu. The buffer can display one of the following:

- Empty (default).
- A number waiting to be assigned to a softknob.
- A number and the word ***Trim***.
- The word ***Align***.
- The word ***Clear***.
- The +/- symbol.
- The message **<<Set Path>>** and a list of the path types: **JP** (jump), **LN** (linear), **SL** (smooth linear), **T1** (Tension Continuity Bias 1), **T2** (Tension Continuity Bias 2), and **SM** (smooth). A cursor indicates the currently selected path type.

The center of the display shows information about the current timeline and effect. The top line (***CTime***) indicates the current point on the effects timeline as seconds:frames. The next five lines indicate the current keyframe and total keyframes for each channel's effect. For example, if channel 1A is on keyframe 2 of a five keyframe effect, the display reads ***Ch 1A: Kf 2 of 5***. There are two ***Free Kf*** lines. The first one shows the number of keyframes available for addition in the current effect (there is a maximum of 300 keyframes per effect). The bottom line shows the number of keyframes available in the system keyframe pool.

Below the effect information display area is a single line edit buffer that shows your keyframe editing command strings (TimeFrame Effects Editor or Quick Keyframes keystroke sequences). If Dveous/MX recognizes the command string, it confirms by displaying ***OK*** at the end of the string when you press **ENTER**. If it does not, an error message appears after the unrecognized command string.

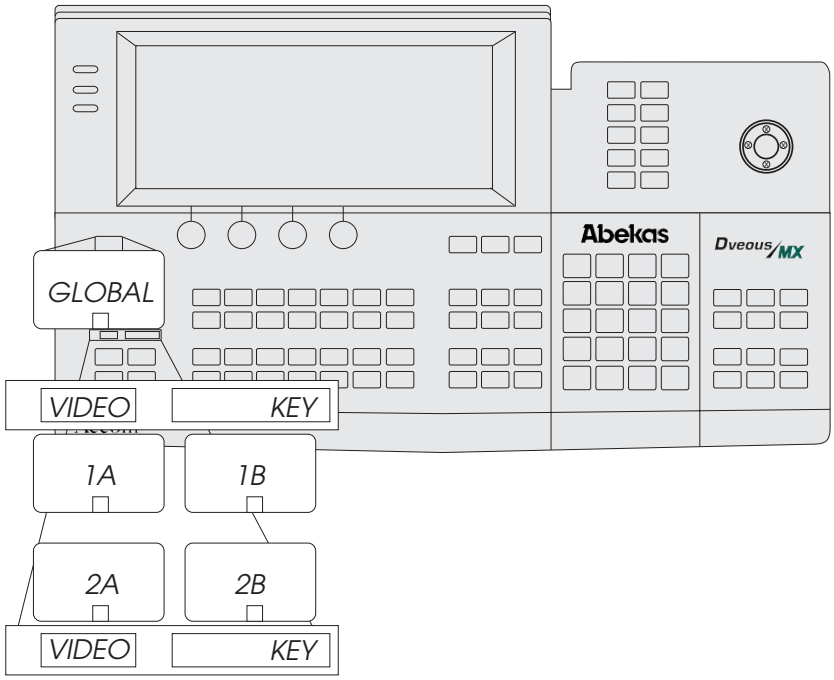
You can “lock” the joystick control to the current menu settings, then change to a different menu and use the softknobs to control the settings there. The joystick still affects only the settings it is locked to.

Channel Select Buttons

The Channel Select buttons include **GLOBAL**, **1A**, **1B**, **2A,** and **2B**. They are the red buttons on the left side of the Control Panel, below the menu display. **1A** and **1B** comprise the single twin channel. **2A** and **2B** comprise the second (dual) twin channel. The global channel affects every channel equally. Press a Channel Select button to light its LED and make it the active channel. The menus reflect the status of the active channel, and any changes you make in the menus affect the active channel.

The LED displays above and below the A Channel Select buttons read *VIDEO* to indicate that these channels are video channels. The displays above and below the B Channel Select buttons can be either *VIDEO* or *KEY*, depending on how you have configured your channels. See the discussion at the end of this section for more details on configuring channels.

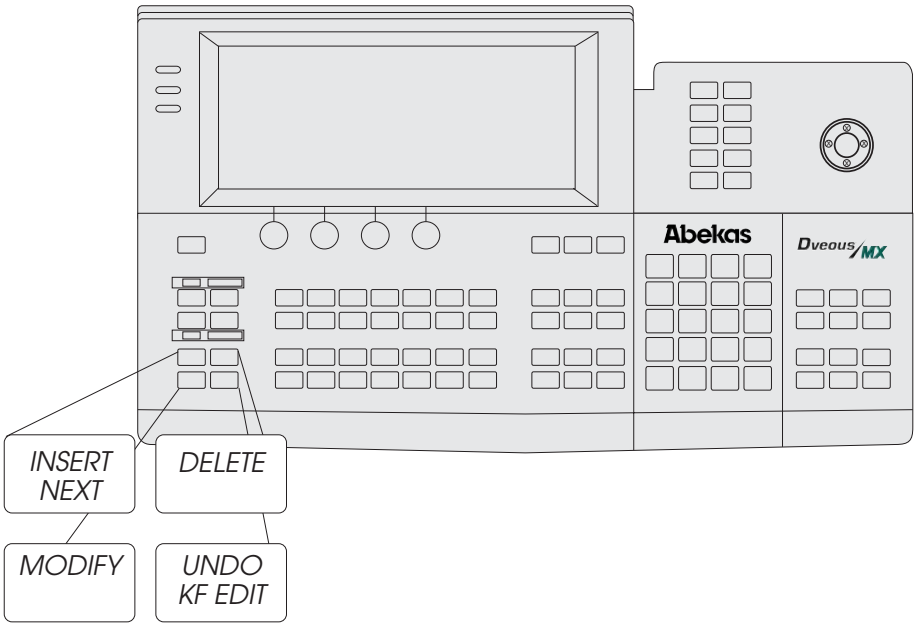
When a channel is designated as the "master," its settings appear in the menus. You can have more than one channel active at a time, but only one channel can be the "master" channel. Though the menus reflect the master channel's settings, any changes you make in the menus affect all active (selected) channels. Hold a Channel Select button for half a second to designate it as the master without de-selecting other channels. Double press a Channel Select button to select it as the master channel and de-select all other channels. You can toggle any other channel on and off after designating a master channel by pressing its Channel Select button once.



Quick Keyframe Buttons

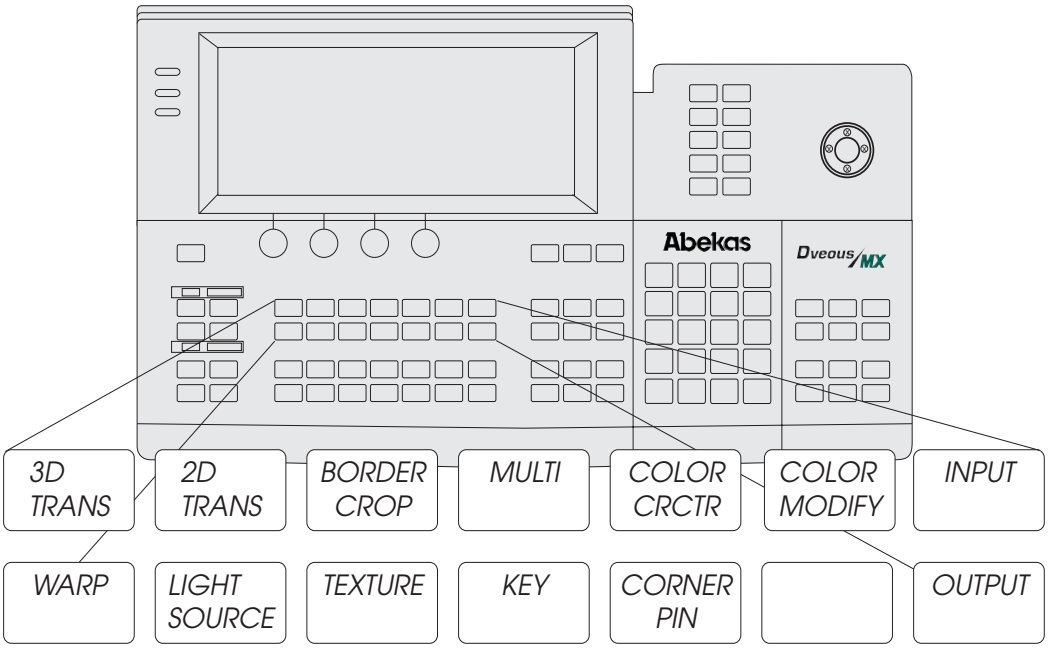
The Quick Keyframe buttons include the **INSERT NEXT**, **DELETE**, **MODIFY**, and **UNDO KF EDIT** buttons. All are located on the left side of the Control Panel. They only affect the current keyframe (the one that is currently highlighted in the timeline[s]).

These buttons are single press functions. Pressing **INSERT NEXT** inserts a keyframe after the current keyframe. Pressing **DELETE** removes the current keyframe, including its duration, from the timeline. Pressing **MODIFY** changes the current keyframe to reflect any changes in any parameter. Pressing **UNDO KF EDIT** "undoes" the last keyframe edit you made.



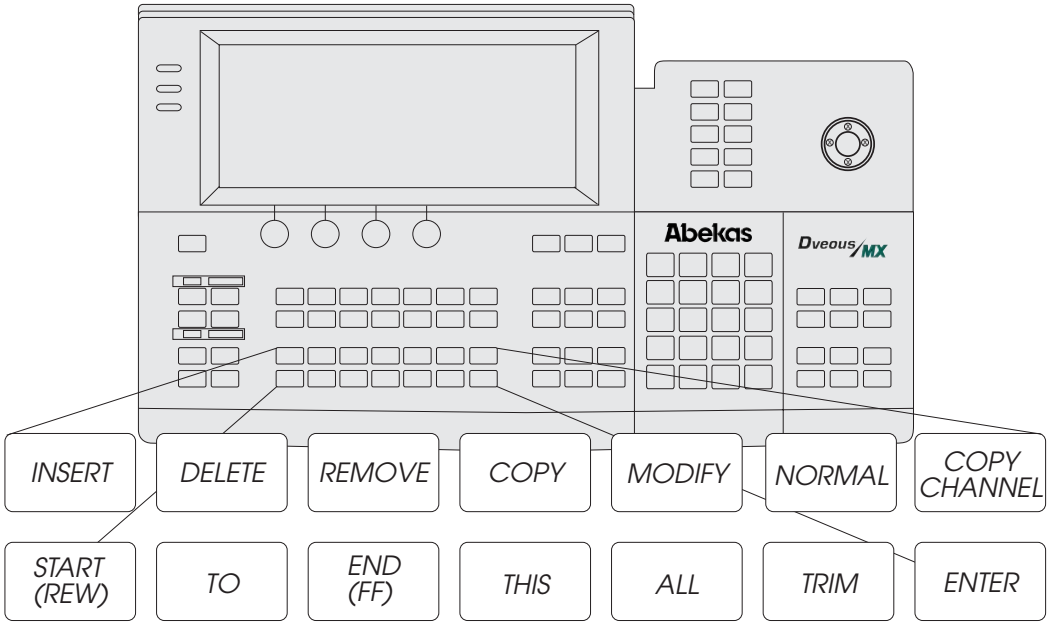
Channel Menu Buttons

The Channel Menu buttons include the **3D TRANS**, **2D TRANS**, **BORDER/CROP**, **MULTI**, **COLOR CRCTR**, **COLOR MODIFY**, **INPUT**, **WARP**, **LIGHT SOURCE**, **TEXTURE**, **KEY**, **CORNER PIN**, and **OUTPUT** menu buttons. These buttons are located below the softknobs. Use these buttons to access menus and parameters for the active channel(s).



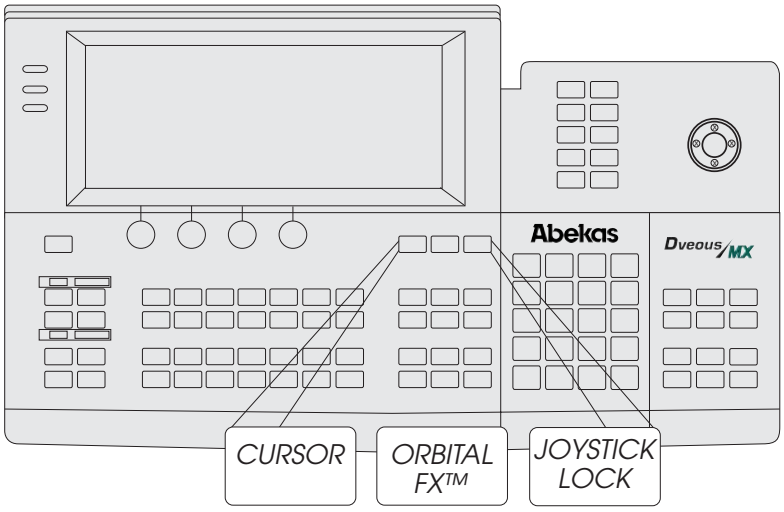
TimeFrame Effects Editor Buttons

The TimeFrame Effects Editor buttons, located below the Channel Menu buttons, include **INSERT**, **DELETE**, **REMOVE**, **COPY**, **MODIFY**, **NORMAL**, **COPY CHANNEL**, **START (REW)**, **TO**, **END (FF)**, **THIS**, **ALL**, **TRIM**, and **ENTER**. Use these buttons to insert, delete, edit, and copy keyframes in effects.



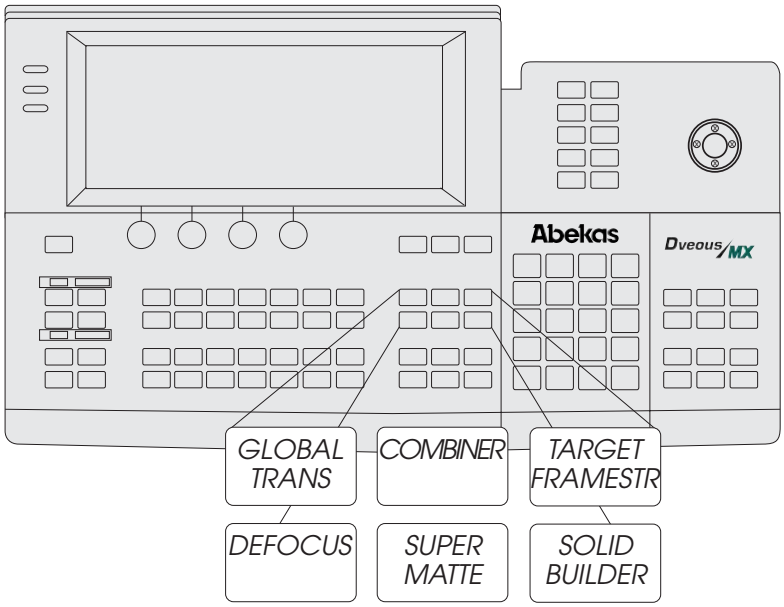
Graphics Buttons

The Graphics buttons let you enable graphic overlays, lock the joystick to the current menu controls and access the Orbital FX™ menu. Press the **CURSOR** button to turn on a cursor for each channel on the Dveous/MX output. The cursor appears at the intersection of the H, V, and Z axes for each channel, and a channel identification (1A, 1B, etc.) appears on the channel's image. This can help when you need to identify or position an image very precisely. Use **JOYSTICK LOCK** to dedicate the joystick to the current menu controls. This is handy if you want to continue using the joystick for positioning, for example, while using the softknobs in the Warp menu. Press the **ORBITAL FX™** button to display the **ORBITAL FX™** menu. Refer to the Dveous/MX Operations Guide for information on using this feature.



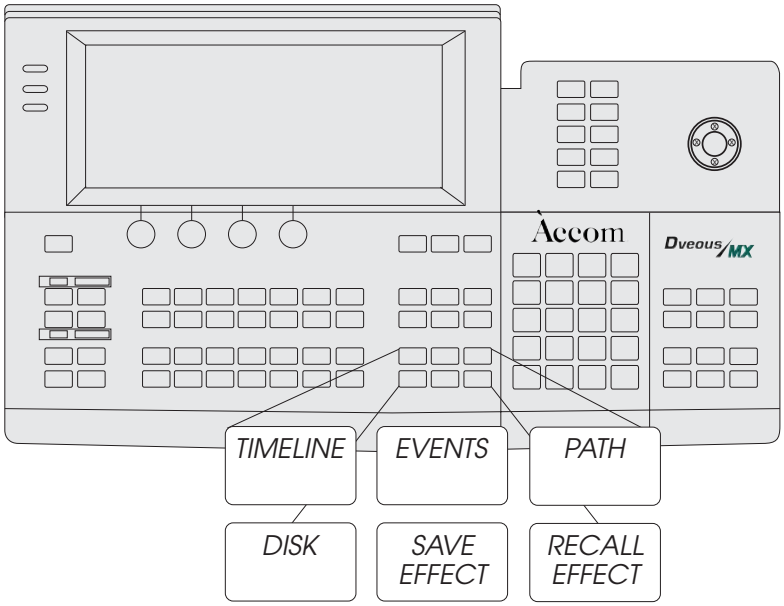
Global Menu Buttons

The Global Menu buttons are below the Graphics buttons, and include **GLOBAL TRANS**, **COMBINER**, **TARGET FRAMESTR**, **DEFOCUS**, **SUPER MATTE**, and **SOLID BUILDER**. These buttons access menus that control Dveous/MX functions that are not specific to the individual DVE channels (1A, 1B, 2A, 2B). This includes menus for controlling optional features.



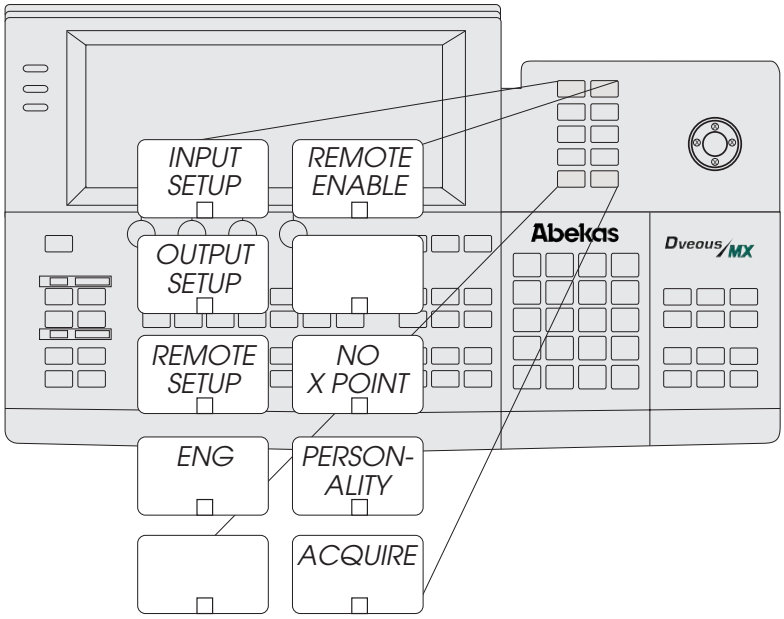
Effects Buttons

The buttons in this group, **TIMELINE**, **EVENTS**, **PATH**, **DISK**, **SAVE EFFECT**, and **RECALL EFFECT**, access menus that let you set controls for the effect as a whole. The Disk menu lets you save effects and setups to floppy disk or hard drive.



System Buttons

The System buttons include **INPUT SETUP**, **OUTPUT SETUP**, **REMOTE SETUP**, **ENG**, **REMOTE ENABLE**, **NO XPOINT**, **PERSONALITY**, and **ACQUIRE**. These buttons access menus that let you set up the Dveous/MX inputs, outputs, remote setups, and enables. Press **ENG** to bring up the Engineering menu.



Joystick

You can use the joystick to change parameter settings. Adjust parameters with left/right arrows by moving the joystick left and right. Adjust parameters with up/down arrows by moving the joystick up and down. Adjust parameters with circular arrows by twisting the joystick handle.

You can "lock" the joystick control to the current menu controls, then change to a different menu and use the softknobs to control the settings there. The joystick still affects only the settings it is locked to.

Numeric Keypad

The numeric keypad is located under the System buttons. Use the keypad to enter effect numbers, keyframe numbers, parameter values, etc. The **A**, **B**, **C**, and **D** buttons let you enter values into the softknob settings. For example, to enter the value 17 in softknob A, enter **17** on the keypad, then press **A**.

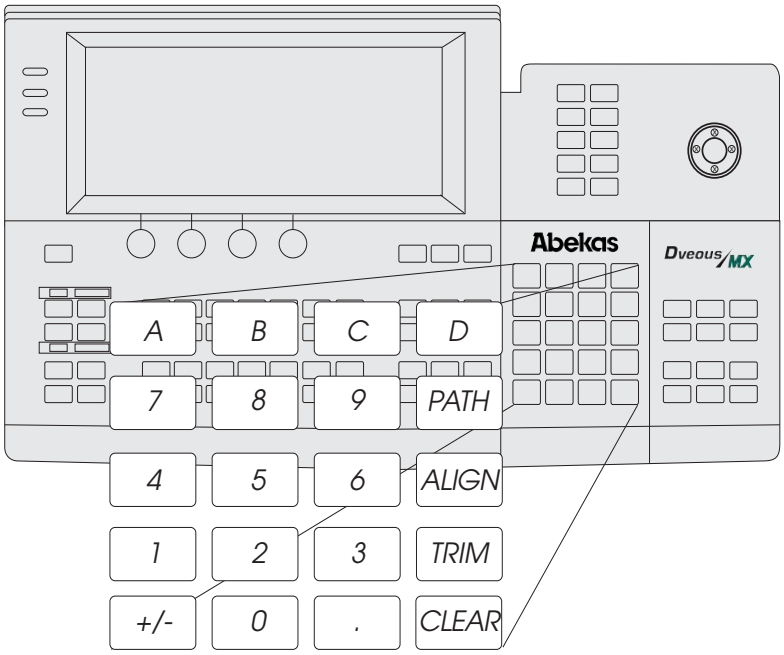
You can invert a value by pressing the **+/-** button, then the **A**, **B**, **C**, or **D** button for a softknob. Use this for values that accept negative numbers.

You can use **CLEAR** to erase the contents of the keypad buffer, the contents of the keyframe edit dialog, or reset entire softkeys or menus to default.

You can use **TRIM** to adjust values. For example, press **1 — TRIM — A** to add 1 to the value in softknob A.

Press **ALIGN** to put the word ***Align*** into the keypad buffer. Now pressing a keypad softkey (**A**, **B**, **C**, or **D**) brings the corresponding softknob value to its nearest "nominal" value. For example, aligning a rotation value of 39 degrees sets it to 45 degrees. Pressing **ALIGN**, then a menu softkey (left side of the display) sets all the softknobs to their closest nominal value.

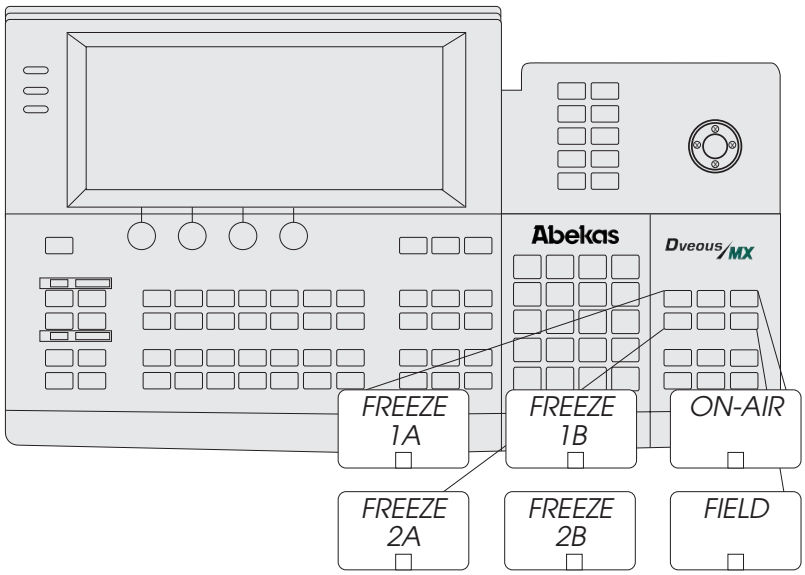
Pressing **PATH** displays the available motion path types in the keypad buffer. You can assign a motion path type to any parameter by pressing **PATH** to select the motion type in the keypad buffer, then the keypad softkey (**A**, **B**, **C**, or **D**) for that softknob.



On-Air Buttons

Use these six On-Air buttons when operating Dveous/MX live. Press the **ON-AIR** button to bring up the On-Air menu and put the keypad in on-air mode. The four freeze buttons let you freeze the channels independently. Once you have frozen an input, you can set up the freeze type for each input. Parameter softknobs for each channel appear when you press **FIELD**, allowing you to select the freeze type (field 1, field 2 or frame).

Note: On-air freezes override any timeline effect: the channel stays frozen no matter what effects you recall or run. This on-air freeze is different from the freeze setting in the Input menu, which lets you apply a freeze on a keyframe-by-keyframe basis.

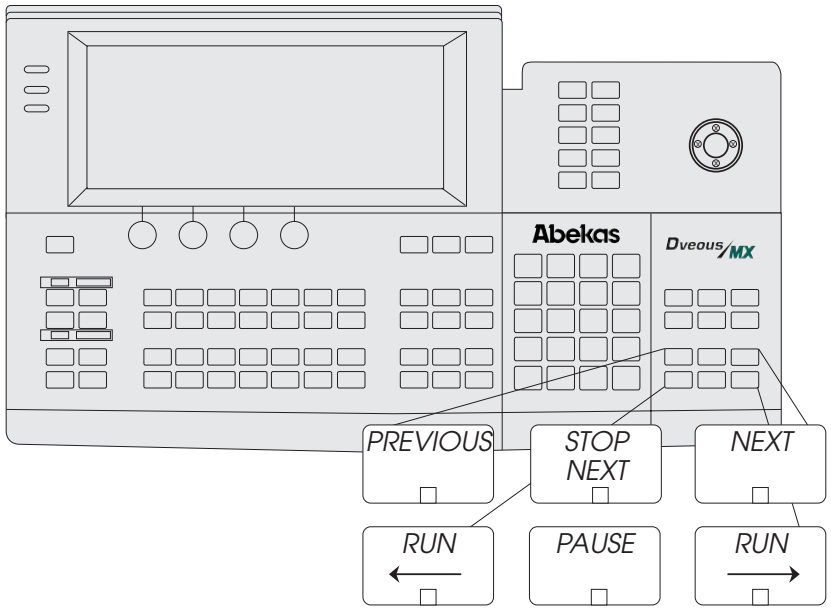


Timeline Control Buttons

These buttons are in the lower right corner of the Control Panel and let you step through keyframes in an effect, run an effect either forward or reverse, and pause a running effect.

Pressing **RUN→** runs the current timeline effect forward. Pressing **←RUN** runs the current timeline effect in reverse. Pressing the **PAUSE** button momentarily halts the effect. You can continue running it by pressing **RUN→** or **←RUN**. The **PAUSE** LED lights if the effect is currently paused, and one of the **RUN** button LEDs flashes to indicate the direction the effect was running when it was paused. Pressing the **PAUSE** button to turn its LED off takes the effect out of run mode. Use the **RUN→** or **←RUN** button to run the effect from the beginning or the end.

Pressing the **PREVIOUS** button steps the timeline back to the previous keyframe. Pressing the **NEXT** button steps the timeline forward to the next keyframe. Pressing the **STOP NEXT** button pauses a running effect when it reaches the next keyframe.



Video and Key Signal Paths

This discussion is an overview of the video and key signal flow paths, which will help you better understand how Dveous/MX works. It includes details of your options for channel configurations and block diagrams that show the system video and key signal paths in more detail.

Channel Configurations

Dveous/MX is capable of working in either Standard Definition (SD) or High Definition (HD).

In SD mode, the twin channel transform board has a main video channel (1A) and its "twin" video, key or shadow channel (1B) plus an additional video channel (2A) with its "twin" video, key, or shadow channel (2B).

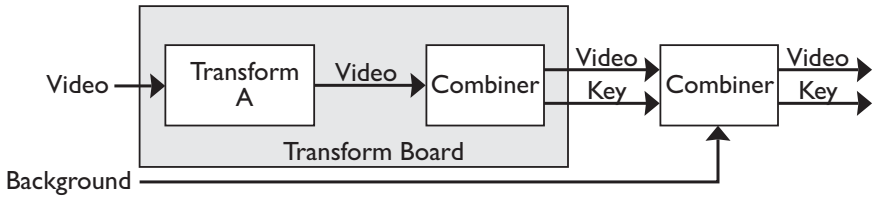
In HD mode, the transform board has a main video channel (1A) only; there is no "twin" video, key or shadow channel. An optional transform board may be added to provide a "twin" video, key or shadow channel (1B). Two more transform boards can be used which adds an additional video channel (2A) and its "twin" video, key, or shadow channel (2B).

This flexibility gives Dveous/MX four different channel configurations:

V (Video)

Dual Twin SD Configuration (HD mode)

The video channel has full control of all keyframe parameters including motion paths, warps, light sources, and textures. The transform board internally generates the key signal associated with this signal. The channel's key signal is raster size "white" with adjustable opacity and edge softness. This mode does not let you use the B channel.

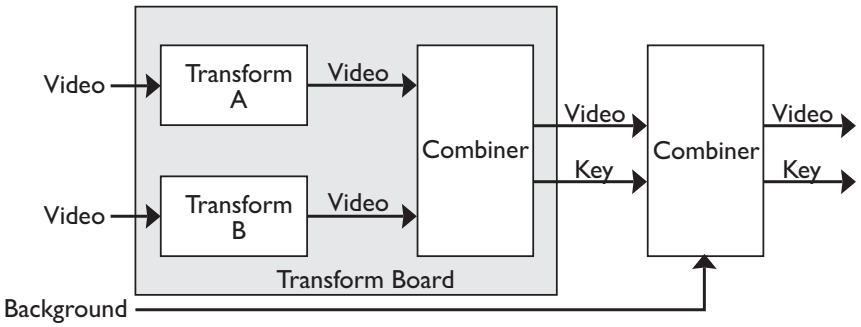


V + V (Video + Video)

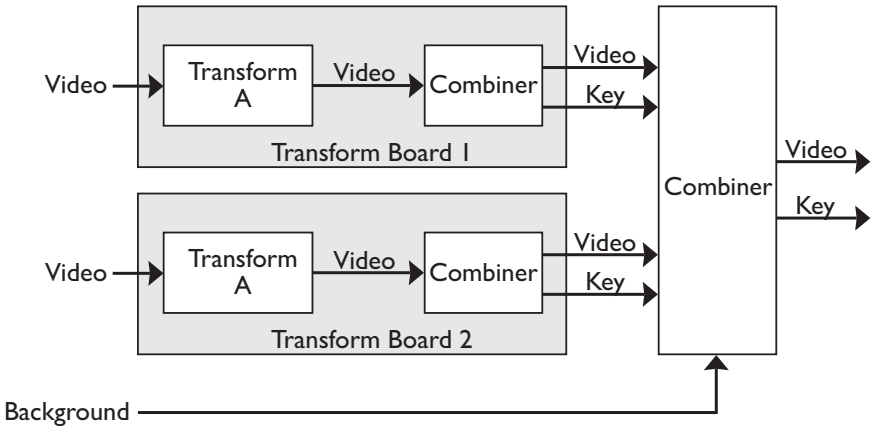
DualTwin SD, DualTwin HD and SingleTwin HD Configurations (SD & HD mode)

This mode lets you use the B channel as a second video channel with independent control of all keyframe parameters including motion paths, warps, light sources, and textures. The transform board internally generates the key signals associated with these signals. The channels' key signals are raster size "white" with adjustable opacity and edge softness.

SD Mode:



HD Mode:

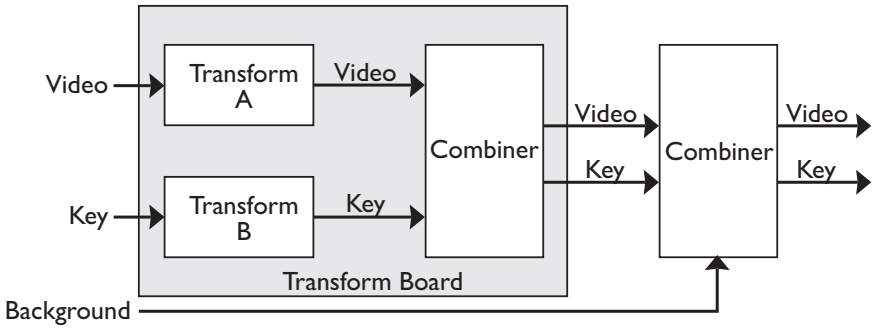


V + K (Video + Key)

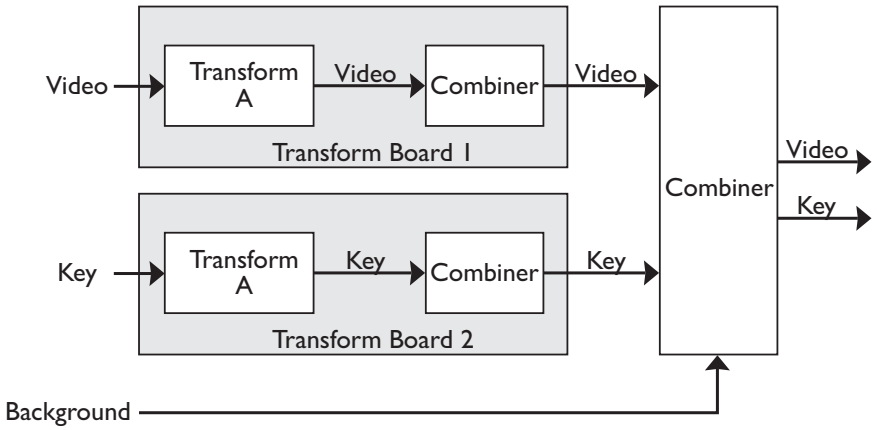
DualTwin SD, DualTwin HD and SingleTwin HD Configurations (SD & HD mode)

The transform board independently processes one video and one key source. In this mode, you can manipulate the key signal with all keyframe parameters, including motion paths, warps, light sources, and textures, independently of the video. Note that, since you can move the key channel completely independently of the video channel, parts of the video channel that do not overlap the key channel are not visible. For this reason, select both channels when moving the image in this mode, unless this effect is what you want.

SD Mode:



HD Mode:

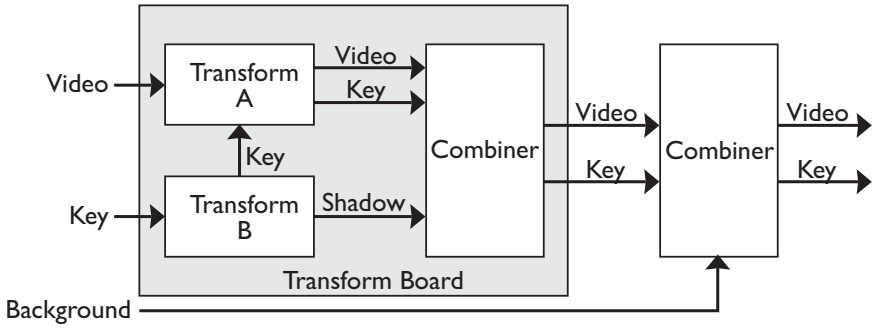


VK + S (Video/Key + Shadow)

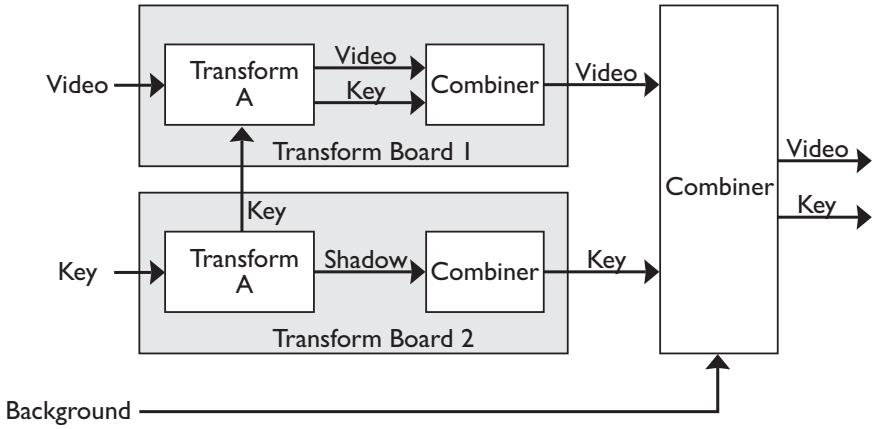
Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)

This mode splits the B channel in two. The key signal moves with the main video channel (A), with a horizontal position control for the key signal. You can manipulate the shadow, which is derived from the key input, with the B channel, completely independently of the video/key. All keyframe parameters, including motion paths, warps, light sources, and textures, apply to the shadow channel.

SD Mode:



HD Mode:



Additional Channels

Dual Twin SD Configuration systems can be expanded to add a second twin channel transform board to provide a B channel in HD mode. This second transform board in HD mode allows configuration of the system as single channel Video + Video, Video + Key or Video/Key + Shadow mode. Two additional transform boards can be added to provide another set of A and B channels in HD mode. Refer to the sections above for more information on these modes.

Signal Paths

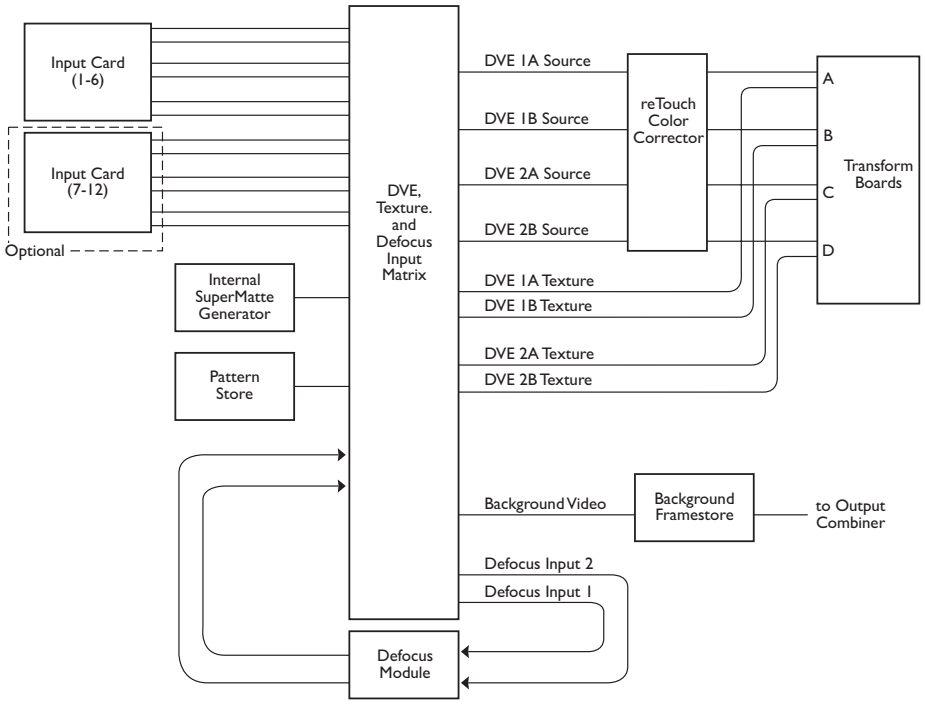
Inputs

Dveous/MX supports 6 high definition video and/or key inputs An additional 6 inputs can be added as an option.

Crosspoint Matrix

Dveous/MX's Combiner board has a 16 input by 11 output crosspoint matrix that lets you route sources internally. You can route any source in the matrix to any destination fed by the matrix. These are the 16 matrix inputs:

- External inputs 1 through 12 (6 standard, 6 optional).
- The SuperMatte output (dual color wash generator).
- The Pattern Framestore output, which is used to generate video test patterns and textures.
- Two outputs for the dual channel wide range Defocus module.



The matrix outputs feed these 11 destinations:

- The DVE channel video inputs. These matrix outputs are routed through the reTouch Color Correctors before passing to the DVE channel inputs.
- The DVE channel texture inputs.
- The Background Framestore.
- The dual channel wide range Defocus module inputs.

DVE Paths

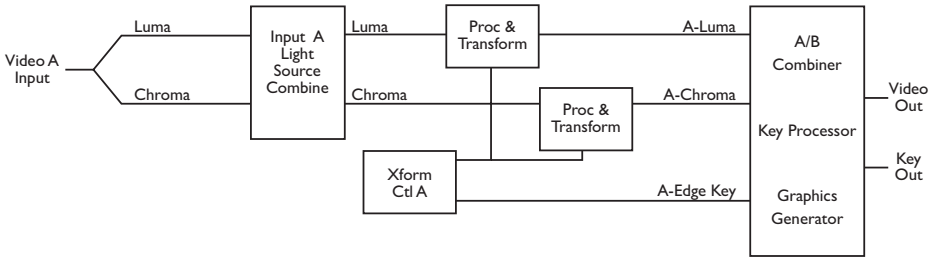
You can configure the DVE channels four ways: Video, Video+Video, Video+Key, and Video-Key+Shadow. This discussion includes a drawing for each mode. Please refer to the System Description section earlier in this manual for a detailed description of the Dveous/MX system configurations.

Video Mode

DualTwin SD Configuration (HD mode)

In the Video mode, the transform board processes one full 4:2:2 video path. This channel has a video input which feeds the border/crop processing, then pass to the light source model. Then the light source, including texture, is applied to the image.

This channel has a transform controller, which generates addressing for the main transform framestore and filter coefficients for the horizontal and vertical bandwidth filters. The video is filtered and then passed to the motion detection and vertical upsampling circuitry. From here the video is written into the main transform framestores.



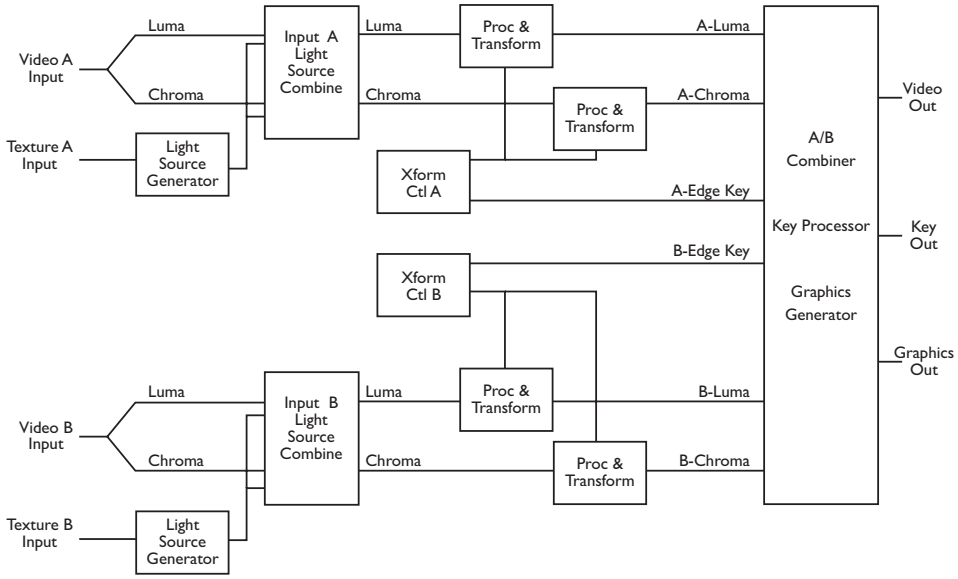
The video is read out of the transform framestores, with addresses generated by the channel's transform controller, and sent to the output interpolators. The transformed video from each channel passes to the combiner.

Video+Video Mode

Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)

In the Video+Video SD mode, the transform board acts as two identical video-only DVE channels, each processing a full 4:2:2 video path. In HD mode, two transform boards are required. Each channel has a video input and a texture source input with dedicated freeze buffers. The texture inputs feed each channel's light source model, where the textures are applied to the light source calculations. The video inputs feed the border/crop processing, then pass to their respective light source models. Then the light source, including texture, is applied to each image.

Each channel has its own independent transform controller, which generates addressing for the main transform framestore and filter coefficients for the horizontal and vertical bandwidth filters. The video for each channel is filtered and then passed to the motion detection and vertical upsampling circuitry. From here the video is written into the main transform framestores.



The video for each channel is read out of the transform framestores, with addresses generated by that channel's transform controller, and sent to the output interpolators. The transformed video and generated key information from each channel passes to the combiner, which composites the two channels together.

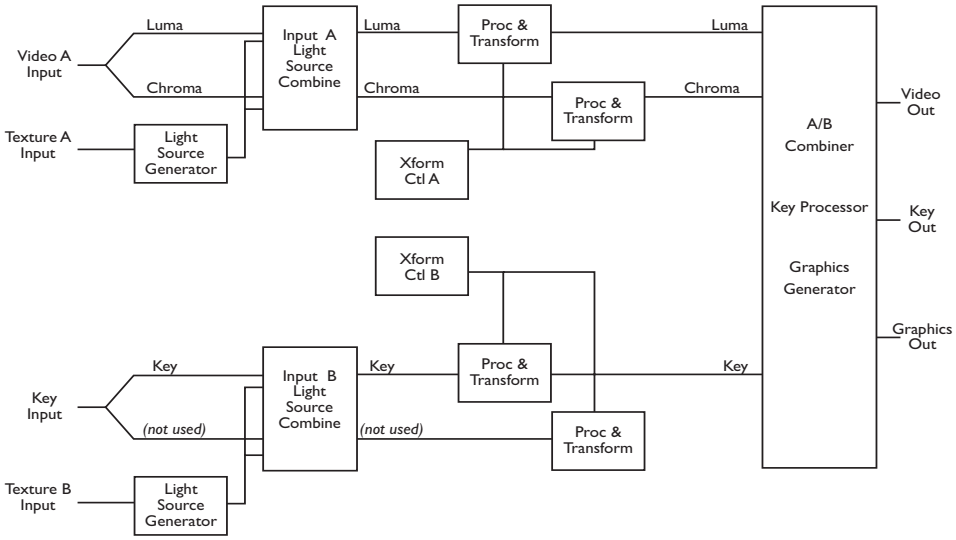
The combining process uses either a fixed key priority (A over B or B over A) or a Z (depth) based key priority. In Z key mode, the Z position of each channel in 3D space determines its priority relative to the other channel. The graphics output consists of axis grids and channel identifiers for each channel.

Video+Key Mode

Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)

The Video+Key mode differs from the Video+Video mode only in that the board processes the B channel as the key signal for the A channel, with additional key clip, gain, and horizontal phase adjustments. Note that the chrominance processing of the B channel is not used in this mode since key signals have luminance information only. This makes the A channel 4:2:2 and the B channel 4:0:0.

The A/B Combiner's key output is effectively that of the B channel, and not the raster-based signal seen in the Video+Video mode. Since the key (B) transform can be independent of the video (A) transform, it is possible to position the transformed key so that the transformed video is not visible, or only partially visible, in the final composited output.

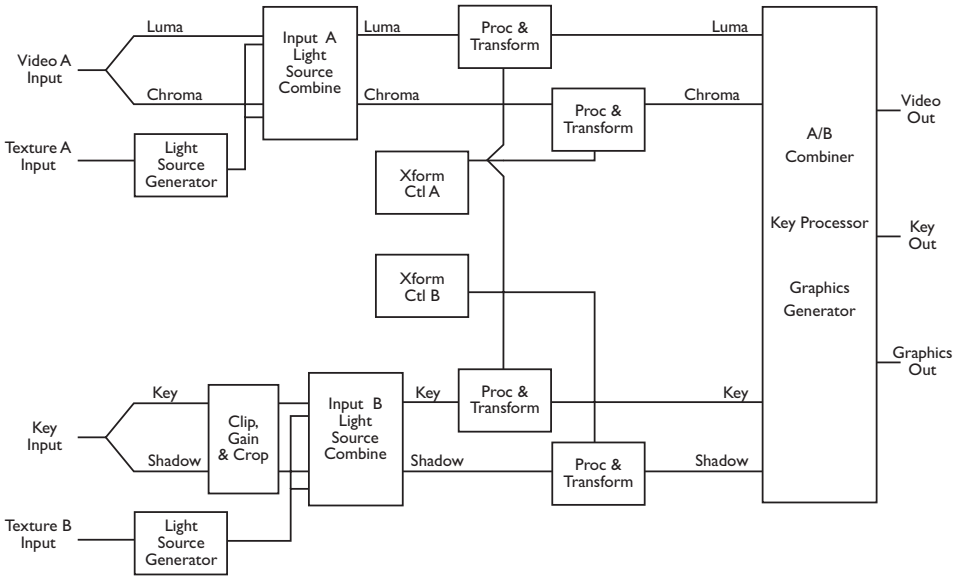


Video-Key+Shadow Mode

Dual Twin SD, Dual Twin HD and Single Twin HD Configurations (SD & HD mode)

The Video-Key+Shadow mode is similar to the Video+Key mode, except that the key signal input to the B channel is processed by the A channel's transform controller, so that the video and key are transformed at the same time. Also, the key input is used to create a drop shadow. The drop shadow is routed through the chrominance part of the B circuitry, and processed by the B channel's transform controller, which provides independent shadow transform control. Although the actual signal paths are the same as in Video+Video mode, from an operational point of view, this makes the A channel a 4:2:2:4 path and the B channel 0:2:2.

The A/B Combiner key output in this mode is a combination of the key shadow signals processed by the B channel.

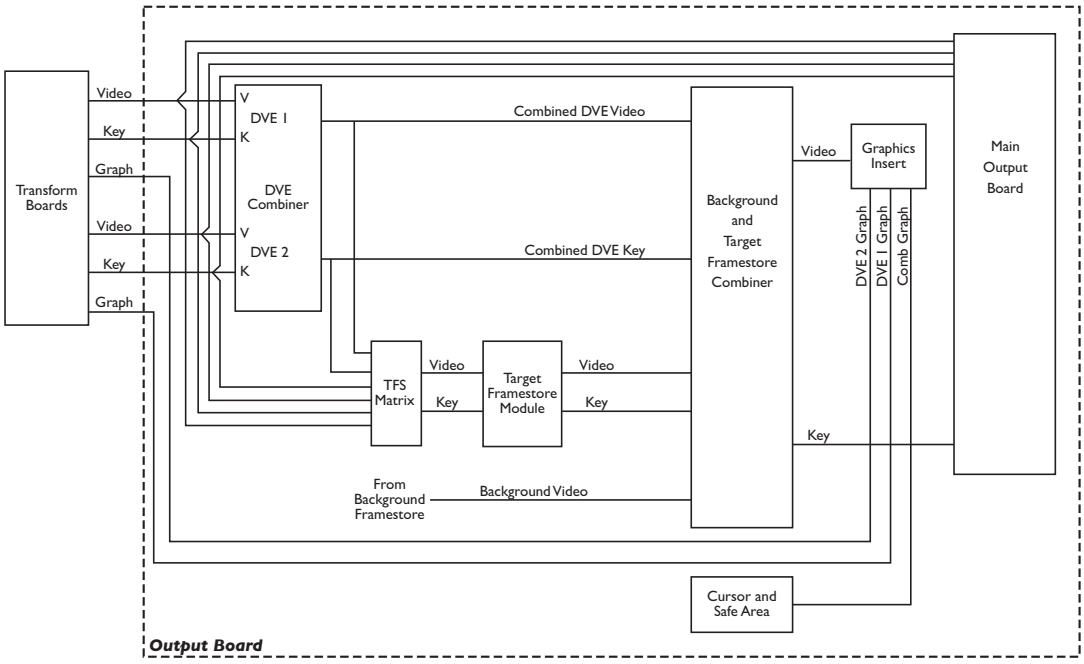


Outputs

Each transform board supplies three signals to the Combiner board: video, key, and graphics. The video signal is either a transformed version of the A input (Video, Video+Key or Video-Key+Shadow modes) or of the combined A and B inputs (Video/Video mode). The key signal is either a transformed version of the B input (Video+Key or Video-Key+Shadow modes) or an internally generated raster-shaped edge key (Video, Video+Video mode). The graphics signal has a channel identifier and up to three axis cursors per channel, which are visual clues used for creating complex objects or movement

Note: Dual Twin SD Configuration systems operating in HD mode do not have a B channel. Refer to the System Description section for more information.

The video and key signals connect to both the DVE Combiner and the Target Framestore keyers. The DVE Combiner combines the transform boards' combined video and key signals into a single composite of the four channels. This combined output is then keyed over the Target Framestore (TFS) and the background.



The Target Framestore lets you create trail, sparkle, and smear effects, as well as composite drop-ins. You can select the 1A/1B DVE output, the 2A/2B DVE output, or the combined four channel DVE output as the input source for the Target Framestore. Also, since the TFS stores key and Z (depth) information, it has its own Z key priority, and can be placed “over” or “under” the live DVE channels.

The direct unshaped video and key from each transform board is also fed to the main output intended for use as key and fil inputs to a switcher or external keyer. See Section 6, Setup Menus, Output Setup Menu for more information on selecting these outputs.

Quick Contents

Section 2: Installation

Abekas

Physical Installation

Unpacking

Remove the Dveous/MX chassis and Control Panel from the packing boxes. Inspect all articles for shipping damage. If you find any damage, notify the shipping carrier immediately for claims adjustments.

Compare the shipping box contents to the packing slip. Contact your sales representative if there are any unexplained shortages.

Power Consumption

The Dveous/MX chassis consumes less than 400 watts. The chassis normally powers the Control Panel with its 12VDC supply. If you install the Control Panel more than 33 feet (about 10 meters) from the chassis, you must use the optional 5200-CPPS Control Panel power supply, P/N 2800-0063. The Control Panel draws less than 25 watts. See page 19 for more information on cable lengths and the power supply.

Note: The Dveous/MX power switch is located on the rear of the chassis. For users who rack mount the chassis, it is recommended that a power strip be mounted towards the front of the rack for easier access to the power switch.

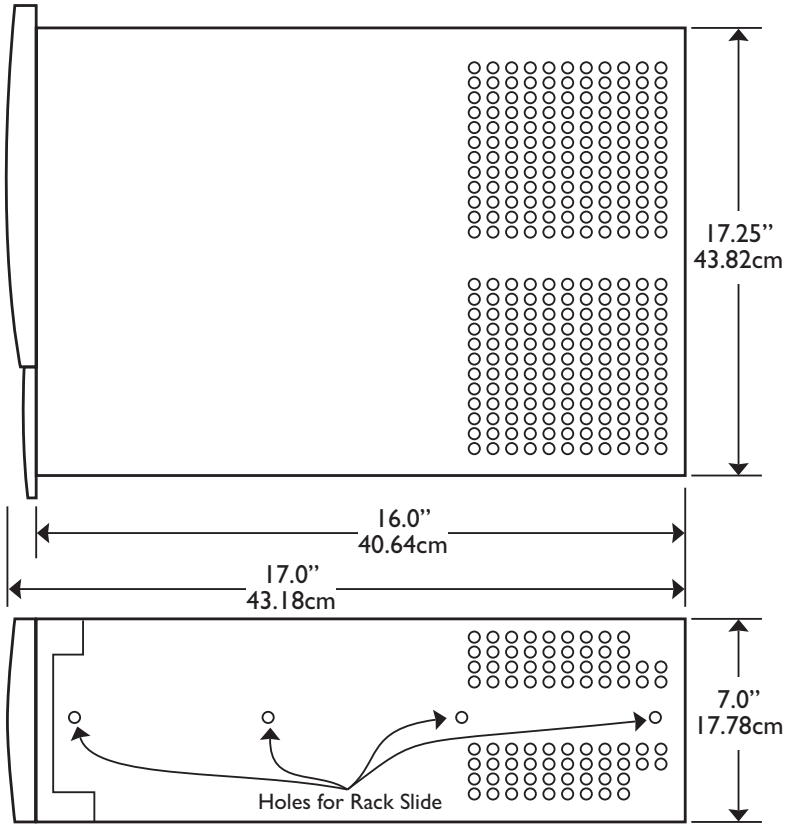
Note: Do not insert or remove boards or modules when chassis is powered.

Cooling and Airflow

Be sure that chassis air flow is not obstructed. Obstructed air flow may cause your system to overheat and potentially damage components. As with most video equipment, cool air is brought in to the front of the chassis and warm air exhausted out the back.

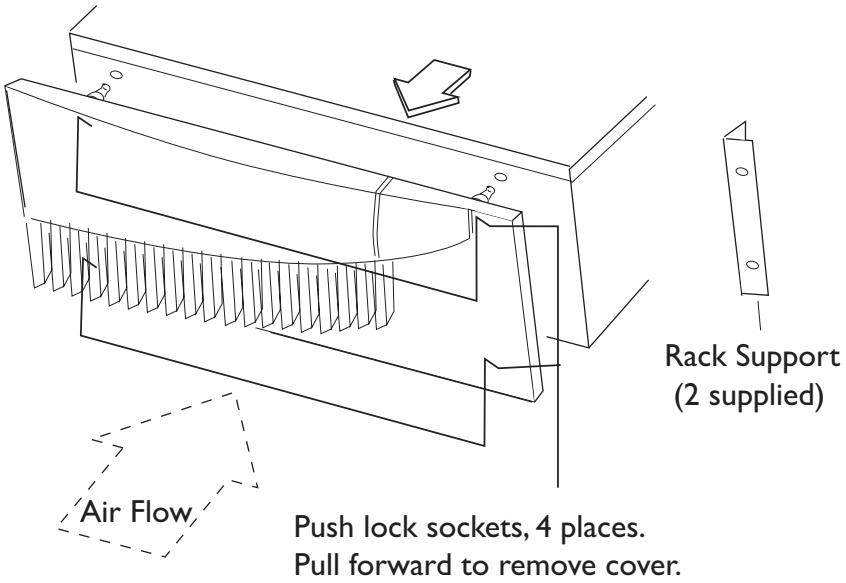
Rack Mounting

The Dveous/MX chassis is designed so that you can mount it in a standard 19-inch equipment rack. The Dveous/MX chassis weighs approximately 25 lb., depending on options, and occupies four rack units. It's dimensions are given below.



Before mounting the chassis onto the rack, you need to remove the front cover. The front trim will be replaced after the chassis is bolted to the rack.

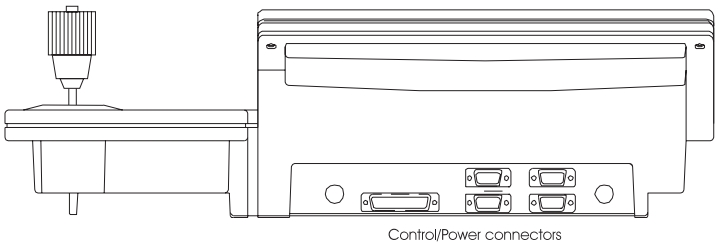
Remove Front Cover

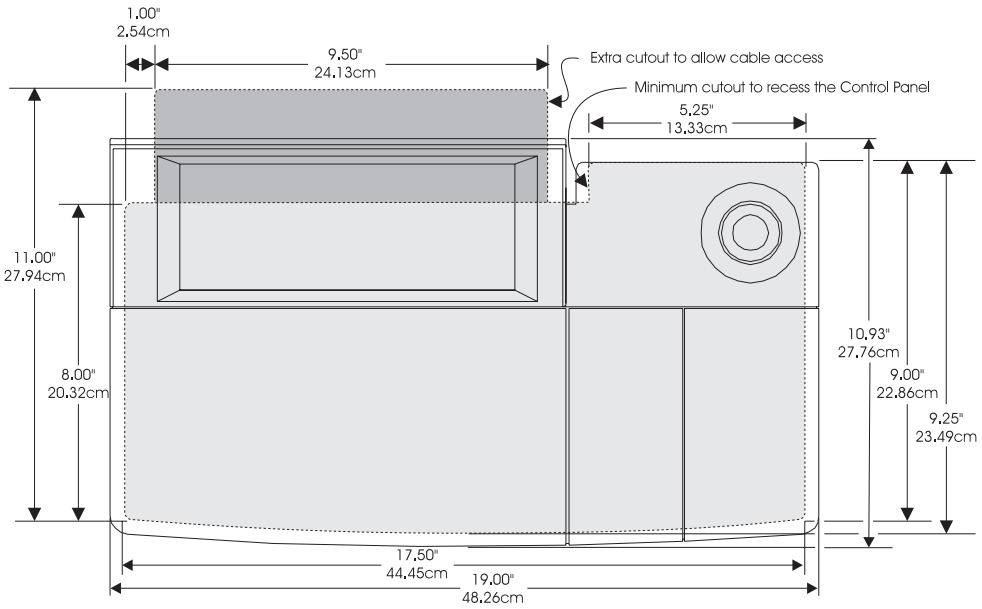


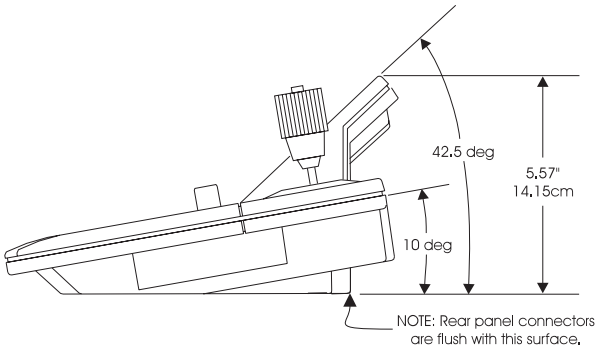
Install Chassis in Rack Two L-shaped rack supports, one on each side, are mounted on the front of the chassis. The bolts used to secure the equipment into the rack are provided by the rack manufacturer or may be obtained from a local hardware supplier. **Rack slides are shipped with the unit and these must be installed for necessary support when rack mounting.**

Control Panel Mounting

The Control Panel is designed to sit on a counter top or in a 19 inch rack rail console. You can countersink the base of the Control Panel, but doing so takes away access to the floppy drive. Also, be sure to allow access to the connections on the rear of the Control Panel base. The darker shaded cutout area is required for cable access, notice the control/power connector location below.


Control/Power connectors


1.00"
2.54cm
9.50"
24.13cm
Extra cutout to allow cable access
Minimum cutout to recess the Control Panel
5.25"
13.33cm
11.00"
27.94cm
8.00"
20.32cm
10.93"
27.76cm
9.00"
22.86cm
9.25"
23.49cm
17.50"
44.45cm
19.00"
48.26cm


42.5 deg
5.57"
14.15cm
10 deg
NOTE: Rear panel connectors
are flush with this surface.

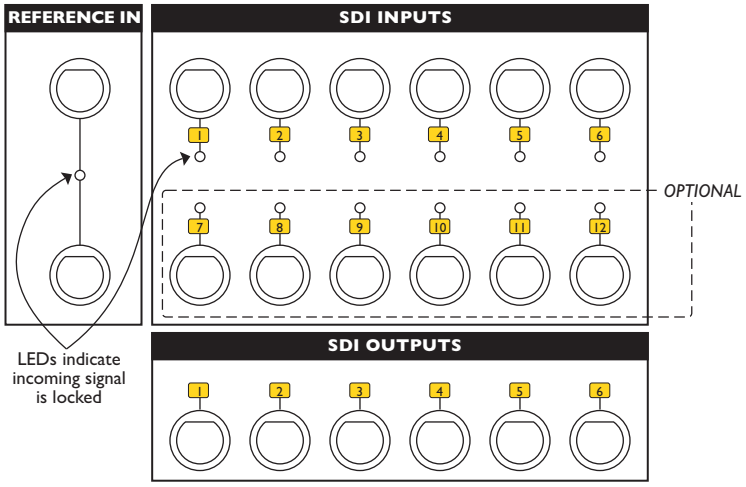
Video Connections

This section describes the video signal connectors on the rear of the Dveous/MX chassis.

Note: There is no Analog Video I/O on the Dveous/MX.

Serial Video Inputs

The 6 standard and 6 optional 10 bit serial inputs have a High Definition (HD) data rate of 1.5Gbits per second and conform to the SMPTE 292M format. In Standard Definition (SD), these inputs have a data rate of 270Mbits per second and conform to SMPTE 259M format. All of these may be either video inputs or key inputs.



Note: Video inputs 7-12 are only available if the optional input boards is installed.

Reference Input

You must operate Dveous/MX locked to an external reference input. Dveous/MX accepts either tri-level sync or black burst (bi-level) in NTSC or PAL as reference. The reference must match the selected video format frame rate. For instance, NTSC black burst will lock up to 525 SD formats as well as any HD formats running at 59.94 or 29.97. HD at 1080/24P would require tri-level sync running at a 24 frame rate.

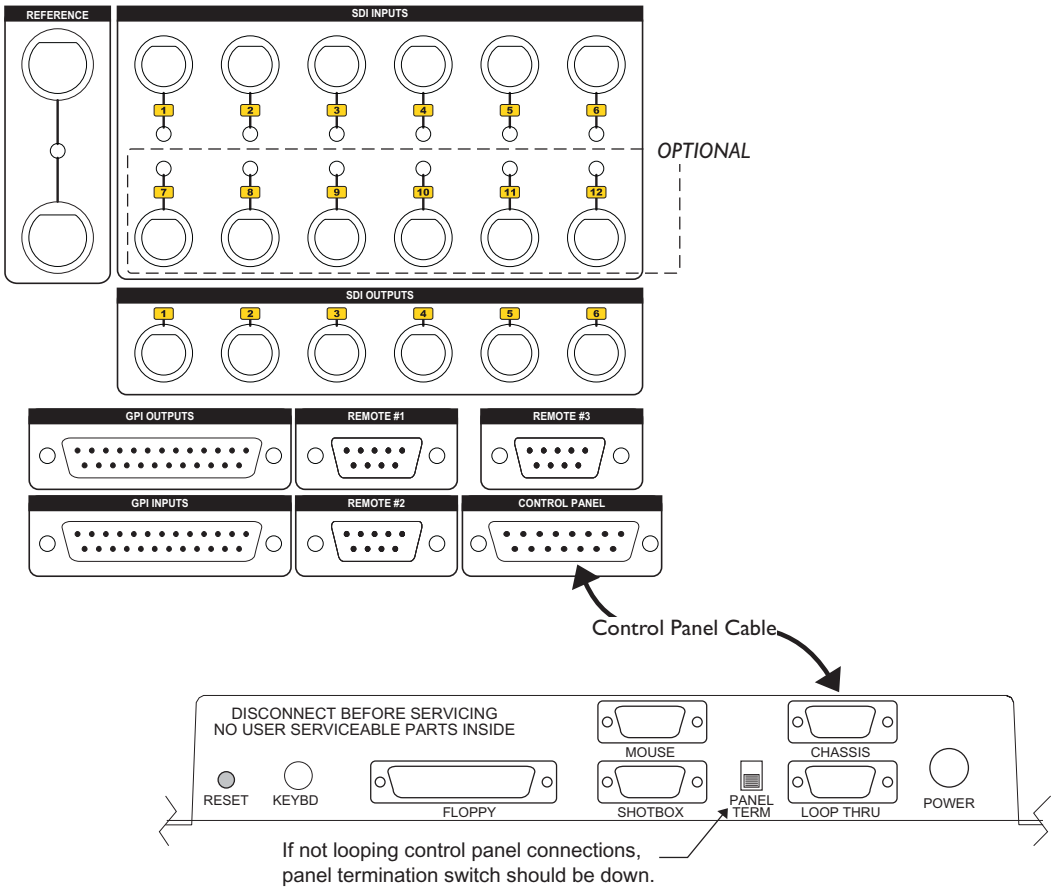
The reference input is a high impedance loop thru for daisy chaining the reference signal to other devices. This loop thru must be terminated at 75-ohm if not used and termination should always be at the end of the reference signal.

Serial Video Outputs

The Dveous/MX supports six 10 bit serial outputs. The HD data rate is 1.5Gbits per second. The SD data rate is 270Mbits per second. Outputs are selectable as combined video, combined key, channel video or channel key outputs. Please refer to Section 6 - Setup Menus for more information on output setup options.

Control Connections

See the following pages for details of the control and power connectors on the chassis and control panels. Their functions, and their pinouts are described.



Control Panel

This is a 15-pin female D subminiature connector that uses RS-422 communications. It also supplies +12VDC power for the Control Panels located near the Dveous/MX chassis. Control Panels requiring a cable longer than 33 feet (10 meters) do not use this power. A Remote Power supply is available for these long-run installations. See Using a Local Control Panel Supply, later in this section for more information on powering the Control Panel. The RS-422 communications support cable lengths of up to approximately 2000 feet (610 meters).

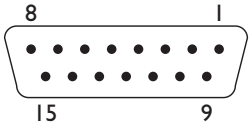


Table 2-1: C/P Connector Pinout

Pin	Function
1	+12VDC Power Supply (output)
2	+ Receive Data (input)
3	+ Transmit Data (output)
4	12VDC Power Supply Return
5	Not Used
6	+12VDC Power Supply (output)
7	– Transmit Data (output)
8	– Receive Data (input)
9	12VDC Power Supply Return
10	Not Used
11	Not Used
12	Chassis Ground
13-15	Not Used

Note: Pins 6 and 4 provide a second set of power and return lines for the Control Panel. These are in addition to those used (1 and 9) on other Abekas equipment. Their purpose is to reduce line losses.

Serial Connectors

Three serial connectors are provided: Remote 1, Remote 2 and Remote 3. These are 9-pin female D subminiature connectors.

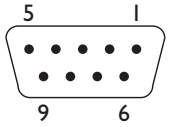


Table 2-2: Serial Connector Pinout

Pin	Function
1	Chassis Ground
2	– Transmit Data (output)
3	+ Receive Data (output)
4	Signal Ground
5	Not Used
6	Signal Ground
7	+ Transmit Data (output)
8	– Receive Data (input)
9	Chassis Ground

Note: Not all interfacing devices use standard 422 cabling. Check with the manufacturer of interfacing device for any differences to the above pinouts.

GPI In (General Purpose Interface Inputs)

This is a 25-pin female D subminiature connector you can use for a switch closure-based remote interface. There are 12 user-assignable GPI inputs, and each is configurable as either isolated closure or dry closure. There is a default function assigned to each input.

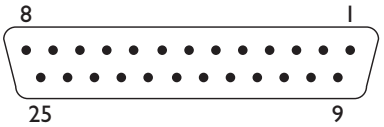
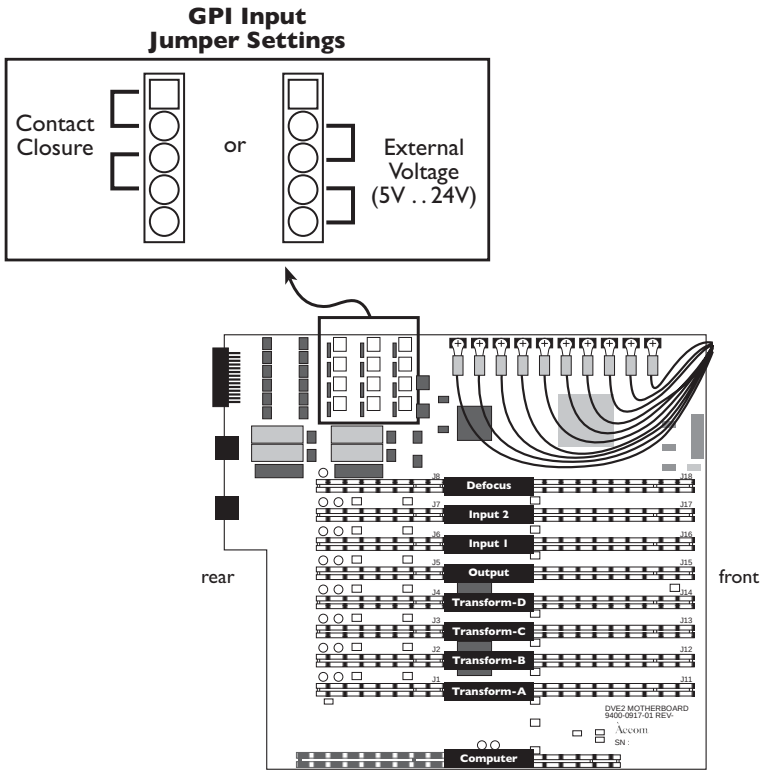


Table 2-3: GPI In Connector Pinout

Pin	Function
1	Chassis Ground
14	– GPI 1 In
2	+ GPI 1 In
15	– GPI 2 In
3	+ GPI 2 In
16	– GPI 3 In
4	+ GPI 3 In
17	– GPI 4 In
5	+ GPI 4 In
18	– GPI 5 In
6	+ GPI 5 In
19	– GPI 6 In
7	+ GPI 6 In
20	– GPI 7 In
8	+ GPI 7 In
21	– GPI 8 In
9	+ GPI 8 In
22	– GPI 9 In
10	+ GPI 9 In
23	– GPI 10 In
11	+ GPI 10 In
24	– GPI 11 In
12	+ GPI 11 In
25	– GPI 12 In
13	+ GPI 12 In

Selecting GPI Input Type

The GPI inputs can read either a simple contact closure or an external voltage between 5 and 24 volts. To choose between these two modes, set the GPI Input Jumpers located on the system motherboard.



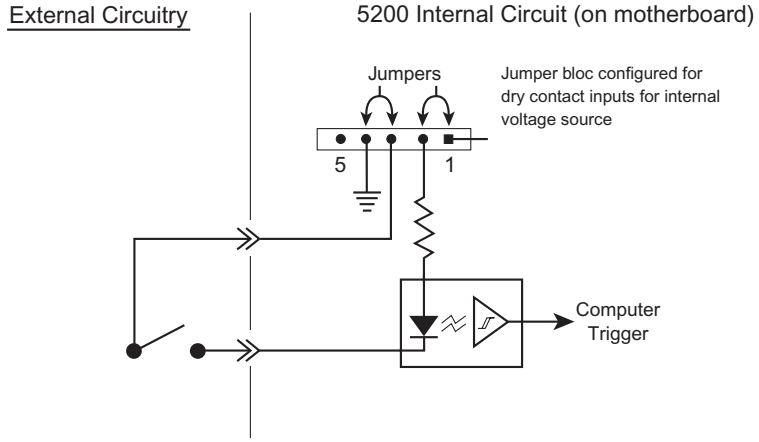
GPI Inputs

All GPI inputs work as switch closures through an opto-isolator. The following schematics show a dry contact and an external voltage interface.

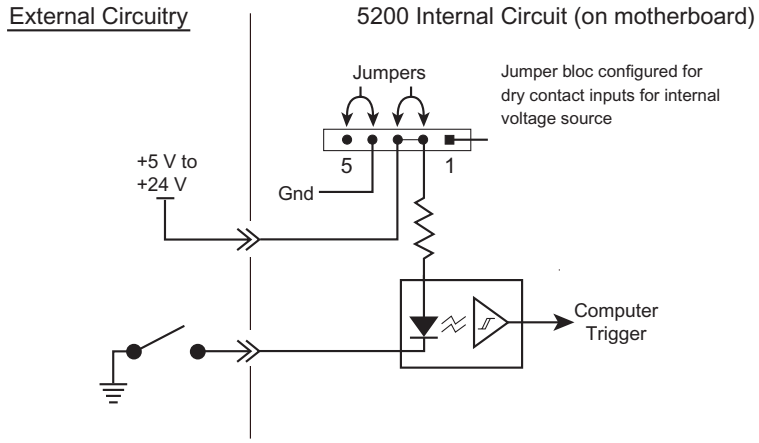
Electrical Specifications The following specifications are for the opto-isolator (device # H11L1) used in Dveous/MX.

- INPUT LED MAXIMUM RATINGS
  - Reverse Voltage (V_R): 6 V.
  - Continuous Forward Current (I_F): 60 mA.
  - Peak Forward Current (300 µSec Pulse): 1.2 A.
  - Forward (Turn On) Voltage (V_F): 1.5 V (1.2 V Typical).
  - Isolation Surge Voltage (Peak AC Voltage, 60Hz, 1 Second Duration): 7500 V.

DRY GPI INPUTS



ISOLATED (External Voltage) GPI INPUTS



GPI Out (General Purpose Interface Outputs)

This is a 25-pin female D subminiature connector. It supplies tally information and can be used for keyframe-based switch closure control of an external device. The GPI outputs are programmable on a keyframe-by-keyframe basis. Electrically, they are configured as isolated closures.

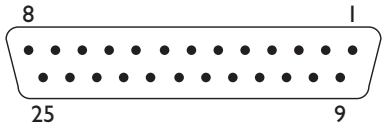


Table 2-4: GPI Out Connector Pinout

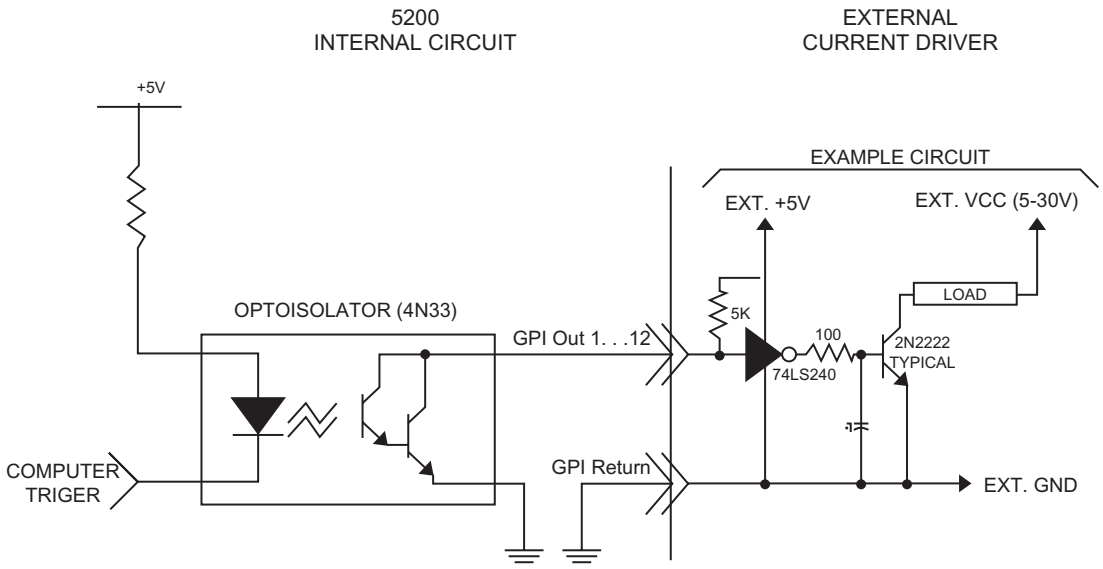
Pin	Function
1	Chassis Ground
14	– GPI 1 Out
2	+ GPI 1 Out
15	– GPI 2 Out
3	+ GPI 2 Out
16	– GPI 3 Out
4	+ GPI 3 Out
17	– GPI 4 Out
5	+ GPI 4 Out
18	– GPI 5 Out
6	+ GPI 5 Out
19	– GPI 6 Out
7	+ GPI 6 Out
20	– GPI 7 Out
8	+ GPI 7 Out
21	– GPI 8 Out
9	+ GPI 8 Out
22	– GPI 9 Out
10	+ GPI 9 Out
23	– GPI 10 Out
11	+ GPI 10 Out
24	– GPI 11 Out
12	+ GPI 11 Out
25	– GPI 12 Out
13	+ GPI 12 Out

GPI Outputs

All GPI outputs work as solid state opto-isolated switch closures. Opto-isolators have limited drive current capability, so some form of external drive interface is needed for applications that need greater current than that supplied by the opto-isolator output. The schematic below shows an example current driver circuit you can build. The 2N2222 general purpose transistor provides up to 650mW of drive. Check all applicable data sheets for the external devices shown below before building your current driver.

Electrical Specifications The following specifications are for the opto-isolator (device # 4N33) used in Dveous/MX.

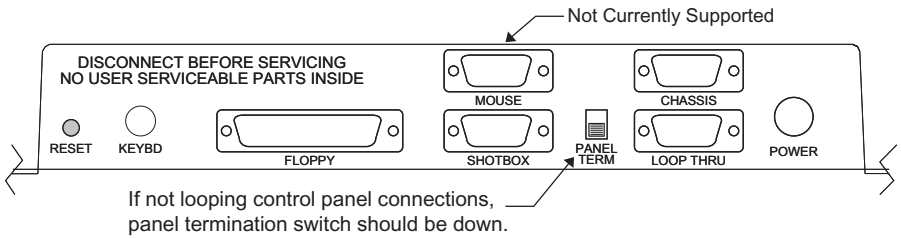
- OUTPUT DETECTOR MAXIMUM RATINGS
  - Collector - Emitter Voltage (V_{CEO}): 30 V.
  - Emitter - Collector Voltage (V_{ECO}): 5 V.
  - Collector Current - Continuous (I_C): 150 mA.
  - Power Dissipation (P_D): 150 mW.
  - Isolation Surge Voltage (Peak AC Voltage, 60Hz, 1 Second Duration): 7500 V.



Typical Off Resistance Measured Between
GPI Out and GPI Return (VCE=10V) > 10Meg Ohm.
Typical On Resitance Measured Between
GPI Out and GPI Return (VCE=10V) Approx. 200 Ohm.

Control Panel Connections

See the following pages for details of the Control Panel connectors, their functions, and their pinouts.



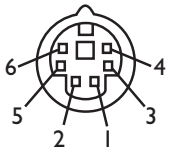
Note: The termination should be in the down position for single panel installations. For multiple panel installations, terminate (switch in down position) the last panel in the chain.

Keybd

This is a 6-pin female PS/2 connector for connecting an external QWERTY keyboard. This keyboard can be used to name files and add comments to them.

Table 2-5: Keyboard Connector Pinout

Pin	Function
1	Data
2	No Connection
3	Ground
4	+5 VDC
5	Clock
6	No Connection



Floppy

This is a 25-pin female D subminiature connector, used to connect the optional 5200-FDD external floppy drive, P/N 9500-0204. This option is used if you countersink the Control Panel or otherwise block access to the built in floppy drive. Note that connecting an external floppy drive does not deactivate the internal drive; both are active and usable.

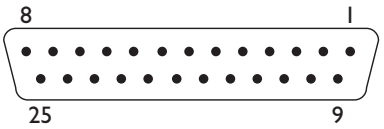


Table 2-6: Floppy Connector Pinout

Pin	Function
1	Read Data
2	PU
3	Write Enable
4	Write Data
5	Step
6	Index
7	Track 00
8	Write Protect
9	Head Load
10	Direction
11	PU
12	Drive Select 4
13	Not Used
14	Ground
15	Ground
16	Ground
17	Ground
18	Ground
19	Ground
20	VCC
21	VCC
22	VCC
23	Head Side
24	Drive Select 2
25	Disk Changed

Mouse

Note: This connector is not currently supported.

Chassis

Use the Chassis connector to connect to the Dveous/MX Main Chassis. When using the standard Control Panel and a cable length of 33 feet (10 meters) or less, this port also provides the +12VDC power (see Connecting Control Panels, later in this section).

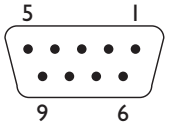


Table 2-7: Chassis Connector Pinout

Pin	Function
1	+12VDC Power Supply (input)
2	+ Transmit Data (output)
3	+ Receive Data (input)
4	12VDC Power Supply Return
5	Chassis Ground
6	+12VDC Power Supply (input)
7	– Receive Data (input)
8	– Transmit Data (output)
9	12VDC Power Supply Return

Note: Pins with the same name (1 and 6, 4 and 9) are tied together in the Control Panel chassis. Double pins are provided to reduce voltage losses with small gauge wire or long cable lengths. With heavier wire, you need use only one pin of each pair. Do not connect pin 5 (Chassis Ground) to pins 4 or 9 (12VDC Return).

Shot Box

This 9-pin female D subminiature connector has the same pin outs as the above chassis connector. Abekas no longer supplies the Shot Box option for Dveous/MX. A shotbox from a "classic" Dveous will work when connected to this port.

Loop Thru

Use this 9-pin female D subminiature connector to connect an additional Control Panel. The power is not supplied to this connector, only the communications lines. Each additional Control Panel must use the optional 5200-CPPS Control Panel power supply, part number 2800-0063. See Using a Local Control Panel Supply, later in this section.

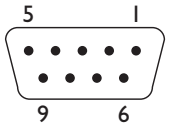


Table 2-8: Loop Thru Connector Pinout

Pin	Function
1	Not Used
2	+ Transmit Data (output)
3	+ Receive Data (input)
4	Signal Ground
5	Chassis Ground
6	Not Used
7	– Receive Data (input)
8	– Transmit Data (output)
9	Signal Ground

Power

This 5-pin female DIN connector accepts Control Panel power from the 5200-CPPS Control Panel remote power supply, P/N 2800-0063, and is used when the Dveous/MX chassis is located more than 33 feet (10 meters) from the Control Panel. See Using a Local Control Panel Supply, later in this section, for information on locally powering the Control Panel.

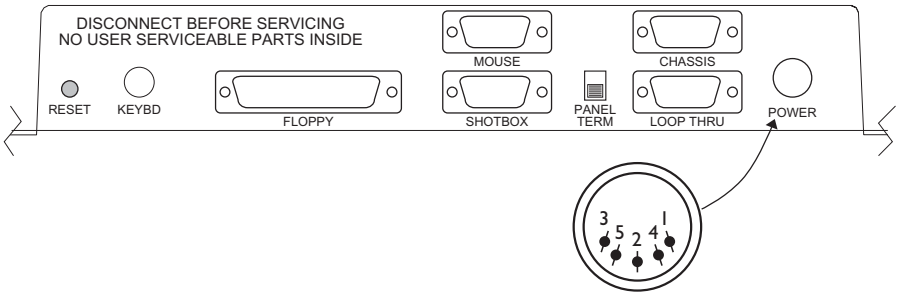


Table 2-9: Power Connector Pinout

Pin	Function
1	Shield
2	Ground
3	+12VDC
4	Ground
5	+12VDC

Note: Pins with the same name (2 and 4, 3 and 5) are tied together in the Control Panel chassis. Double pins are provided to reduce voltage losses with small gauge wire or long cable lengths. With heavier wire, you need use only one pin of each pair. Do not connect pin 1 (Shield) to pins 2 or 4 (Ground).

Connecting Control Panels

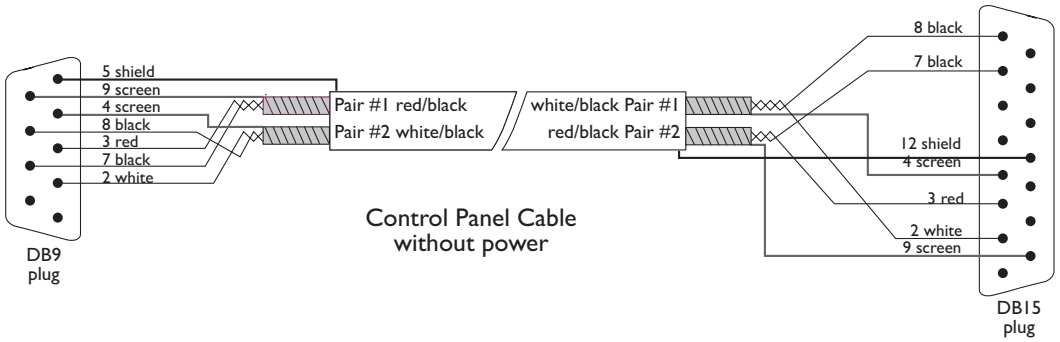
Abekas supplies a 33-foot (10-meter) cable for connecting a Control Panel to the Dveous/MX chassis. This cable carries RS-422 communications between the Control Panel and chassis, and +12VDC power to the Control Panel. The wiring of this cable is NOT standard RS-422 (see the pinout). It has a 15-pin male D connector on the chassis end and a 9-pin male D connector on the Control Panel end (Part number 9000-0204).

Instead of using an Abekas-supplied cable, you can construct a custom cable. There are two things to keep in mind:

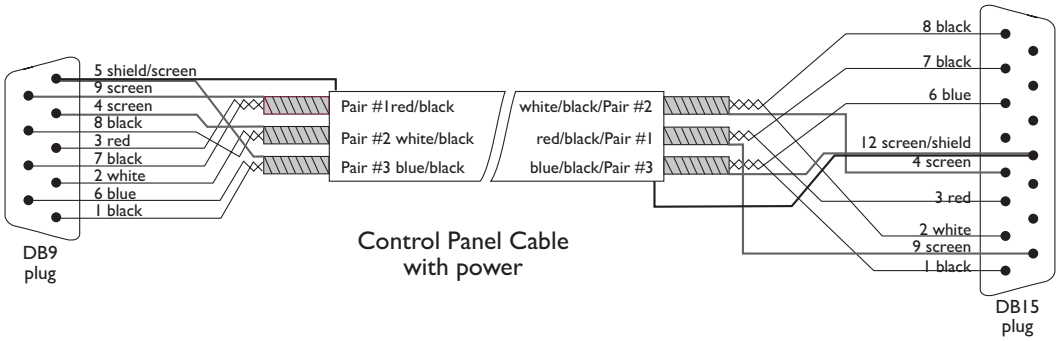
- The chassis 12VDC power supply can drive a Control Panel up to 33 feet (10 meters) away. Longer distances require a local power supply at the Control Panel location (Option 5200-CPPS).
- The RS-422 communications have a cable length limit of 2000 feet (610 meters).

A longer, non-power carrying cable available from Abekas is:
100 ft. (30 meters) – #9000-0207-01

The cable should be 22 gauge with twisted-pair conductors. An overall-shield cable or a cable with individual screened pairs with a shield can be used. Also, both power carrying and non-power carrying cables are shown.

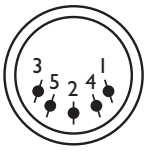


Control Panel Cable without power



Control Panel Cable with power

Control Panel Pin	Function	Chassis Pin
1	+12V Power Supply →	1
2	+ Receive Data ←	2
3	+Transmit Data →	3
4	Circuit Ground	4
N/A	Not Used	5
6	+12V Power Supply	6
7	-Transmit Data →	7
8	-Receive Data ←	8
9	12V Return	9
N/A	Not Used	10
N/A	Not Used	11
5	Chassis Ground	12
N/A	Not Used	13
N/A	Not Used	14
N/A	Not Used	15



Note: The termination switch should be in the down position (terminated) for single panel installations. For multiple panel installations, terminate only the last panel in the chain (switch in down position).

Using a Local Control Panel Supply

The Dveous/MX chassis supplies 12VDC to power the Control Panel. This is sufficient for cable runs of up to 33 feet (10 meters). Longer cable runs require the Abekas 5200-CPPS Control Panel power supply, P/N 2800-0063, which has the connector needed to plug into the rear of the Control Panel. It auto-senses for input voltages from 90 - 250 VAC and 47 - 63 Hz.

Because of possible damage to the Control Panel electronics, we strongly discourage using a local supply other than one from Abekas. If you connect your own supply to the Control Panel, you must use a 12VDC 2.5 amp supply.

Note: The Control Panel uses the input voltage directly. Do not connect a supply greater than 12VDC. There is no internal regulator.

The connector used is a 5-pin male DIN type. The connector pinout is as follows:

Table 2-10: Local Power Connector Pinout

Pin	Function
1	Shield
2	Ground
3	+12VDC
4	Ground
5	+12VDC

Note: Pins with the same name (2 and 4, 3 and 5) are tied together in the Control Panel chassis. Double pins are provided to reduce voltage losses with small gauge wire or long cable lengths. With heavier wire, you need use only one pin of each pair. Do not connect pin 1 (Shield) to pins 2 or 4 (Ground).

Quick Contents

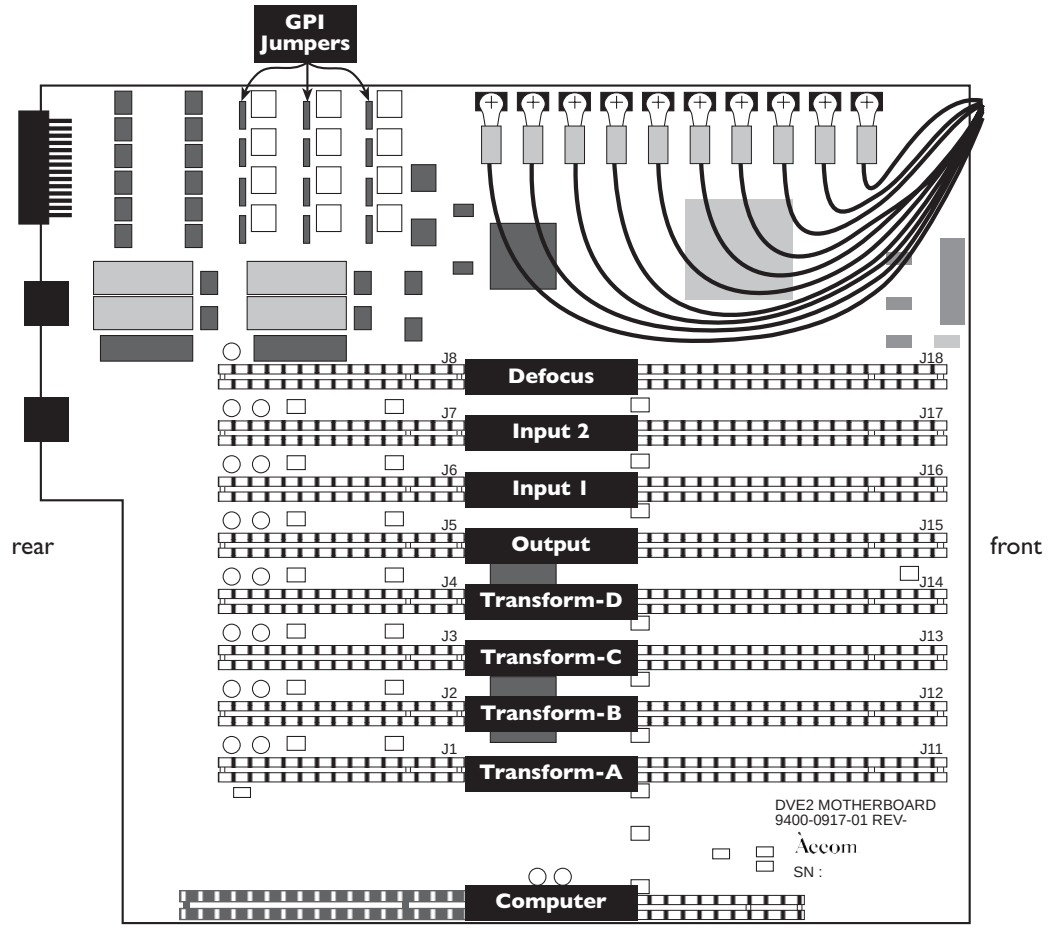
Section 3: System Overview

Abekas

Dveous/MX Main Chassis

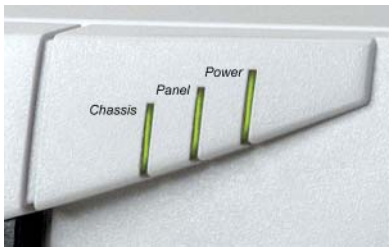
The Dveous/MX Main Chassis holds the primary circuit boards and the input and output cards.

Note: Do not insert or remove boards or modules when chassis is powered.



Removing the Front Bezel

The Dveous/MX front bezel can be removed by grasping and firmly pulling forward. However, there is no need to remove this bezel unless the chassis will be rack mounted.



There are 3 LEDs that can be seen through the front bezel (from left to right):

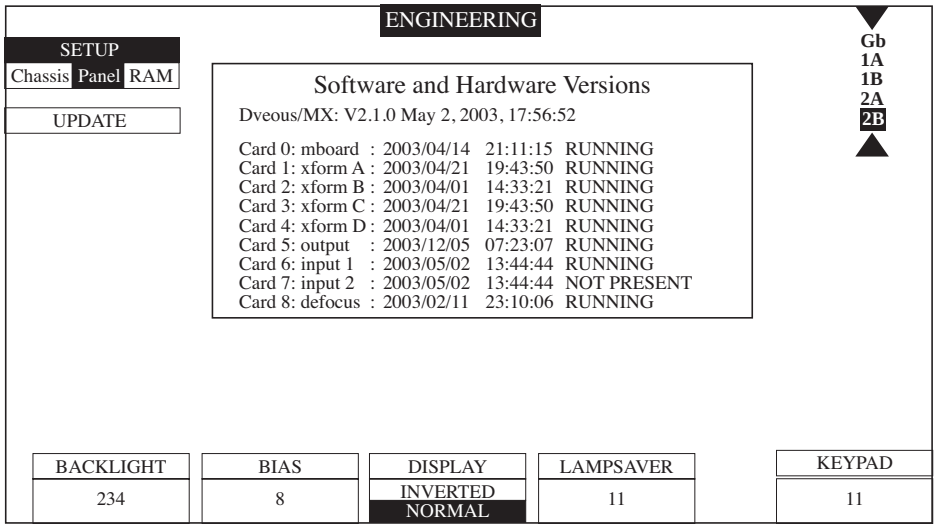
- Chassis - Flashes to show that the internal CPU is running. No LED or solid illumination indicates a problem. Contact Abekas technical support.
- Panel - Flashes to show communication between the control panel and the main chassis. No LED or solid illumination indicates a problem. Contact Abekas technical support.
- Power - Solid illumination shows that power is being supplied to the main chassis. Flashing or no LED indicates a problem. Contact Abekas technical support.

Configurations

There are three basic configurations of the Dveous/MX system (refer to Section 1, Introduction, System Description of this Technical Guide or the Dveous/MX Operations manual for more information).

The configuration is relevant to the number of HD channels present in the chassis. This is directly proportional to the number of transform boards present in the main chassis.

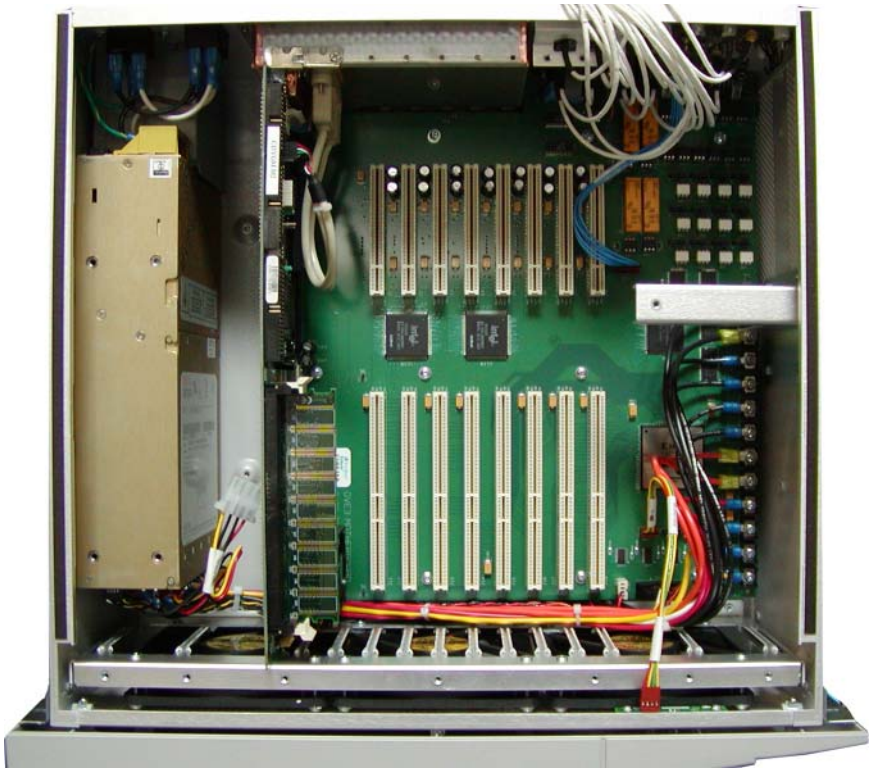
Select the ENG MENU to display a list of all the boards the system has detected in the chassis. The following illustration shows the ENG MENU of a Dveous/MX Dual Twin HD system.



All boards should display as RUNNING unless the board is not installed. If the panel displays NOT PRESENT, check to see that the board is installed. If needed, contact Abekas technical support.

Board Overview

This section discusses the functionality of each board in the Dveous/MX system from input to output. Shown below is a photo of the inside of the Dveous/MX chassis. For a detailed drawing of the motherboard, please see the drawing earlier in this section.



Input Board

Serial digital inputs 1-6 are located on input card #1. Optional inputs 7-12 are located on input card #2. The ENG Menu will list input card #2 as "Not Present" unless this optional board is installed.

All inputs in the Dveous/MX are independent. Input boards send video to the mother board.

Motherboard

The following features and functionality resides on the motherboard:

- Video Input Selection
- Pattern Store
- Color Corrector
- Color Modify
- Supermatte
- Remote Serial Ports
- GPI I/O

The motherboard receives video from the input card(s) and defocus card and sends video to the defocus and transform card(s).

Refer to the drawing earlier in this section for a picture of the motherboard. Refer to Section 2, Installation for more information on Dveous/MX GPIs.

Defocus Card

The defocus card provides two channels of wide range defocus. It receives video from and sends video to the motherboard.

Transform Cards

The number of transform cards present in a Dveous/MX chassis is dependent upon the system configuration. Transform card A is present in any Dveous/MX configuration. Transform card B is only present in Single and Dual Twin HD configurations. Transform cards C and D are only present in Dual Twin HD configurations.

The following features and functionality resides on the transform cards:

- Lighting
- Textures
- Borders
- Horizontal and Vertical Filtering
- Blur
- Freeze
- Motion Detection
- Warps

- 2D and 3D Global Transforms
- Crop
- Mosaic and Multipic

The transform card(s) receive video from the motherboard and sends video to the output board.

Output Card

The following features and functionality are functions of the output card:

- All Combiner Functionality
- Target Frame Store
- Cursor
- Z Address Generators
- Output Selection
- Shadow Matte for Video, Key and Shadow
- Reference and Master Oscillator

The output card receives video from the transform card(s), receives the background from the motherboard and sends video to the six SDI video outputs.

Powering Up Dveous/MX

This section assumes that your Dveous/MX system is properly installed. Power up Dveous/MX as follows:

1. The main power switch is located on the rear of the Signal Chassis. The Signal Chassis takes less than two minutes to load its operating software. Then it is ready for use.

Dveous/MX initially powers up in Standard Definition format. This also occurs after giving the system a First Birthday. After this initial startup or First Birthday, Dveous/MX will power up in the format you last used.

When you power up Dveous/MX, channel 1A appears full size at the video output, with input 1 as its source video. The key output is a full-raster white field that duplicates the size of the transformed source video. You can change this default by reconfiguring the channels, as described in the Operations Manual.

2. If the cable connecting the Signal Chassis to the Control Panel is less than 33 ft. (10 meters), the Control Panel gets its power from the Signal Chassis, and boots up at the same time as the Signal Chassis.

   If the Control Panel cable is more than 33 ft. (10 meters) long, an external power supply is necessary. The external supply (Abekas P/N 2800-0063) DIN connector plugs into the Control Panel connector labeled "POWER." The external supply AC cord then plugs into a standard AC socket to power the Control Panel. (The external power supply is auto-ranging, abekasmodating 115 or 230 VAC at 50 or 60 Hz.) The Control Panel takes about five seconds to load its operating software, then is ready for use.

3. When both the Signal Chassis and Control Panel are powered up and running, the local 3D Trans menu appears in the Control Panel display.

Note: If the Signal Chassis and Control Panel are not communicating, the menu display remains blank or states that communication is lost. If this is the case, check the cable connection at both the Control Panel and the Chassis.

4. If a single Control Panel is connected to the Signal Chassis, its ACQUIRE button LED lights automatically. If there is more than one Control Panel connected, the first Control Panel to communicate with the Signal Chassis has control of the system, and its ACQUIRE button LED lights. To use another Control Panel, hold the lit ACQUIRE button on the active Control Panel and press the Chassis menu softkey to release control and turn off its LED. Then press and hold the ACQUIRE button on the Control Panel you want to use and press the Chassis menu softkey. Dveous/MX is now ready to use.

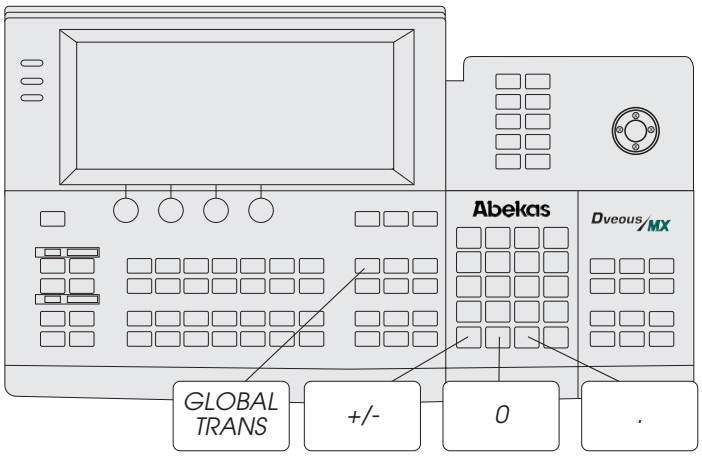
Updating Software

Chassis Software Installation

1. Insert the first Chassis Software Diskette.
2. Go to the Engineering Menu and select Chassis under the SETUP softbutton.
3. Press UPDATE. You will be prompted to enter the first of five diskettes.
4. Press CONFIRM to read in the contents of that diskette. A progress meter will be displayed on the control panel, with an ABORT soft-button if you want to exit this procedure prematurely. Each diskette takes approximately eight minutes to load.
5. After the first diskette completes you will be prompted for the second. Load that diskette and press UPDATE and CONFIRM again. Repeat for all five diskettes. Once all five are loaded press UPDATE and CONFIRM once more to finalize the installation and reboot the machine.

Panel Software Installation

1. Insert the Control Panel Software Diskette.
2. Press and hold the red GLOBAL button and the three buttons along the bottom row of the numeric keypad (+/-,0 and .) simultaneously to reboot the Control Panel. Alternately, in the Engineering menu, go to Setup, select Panel and press the Update Software softkey.



3. When the Control Panel reboots, Press the B button (on the numeric keypad) immediately to load the new software. It will take approximately three minutes to load the software from the diskette.
4. Remove the diskette and reboot the panel.

Performing a First Birthday

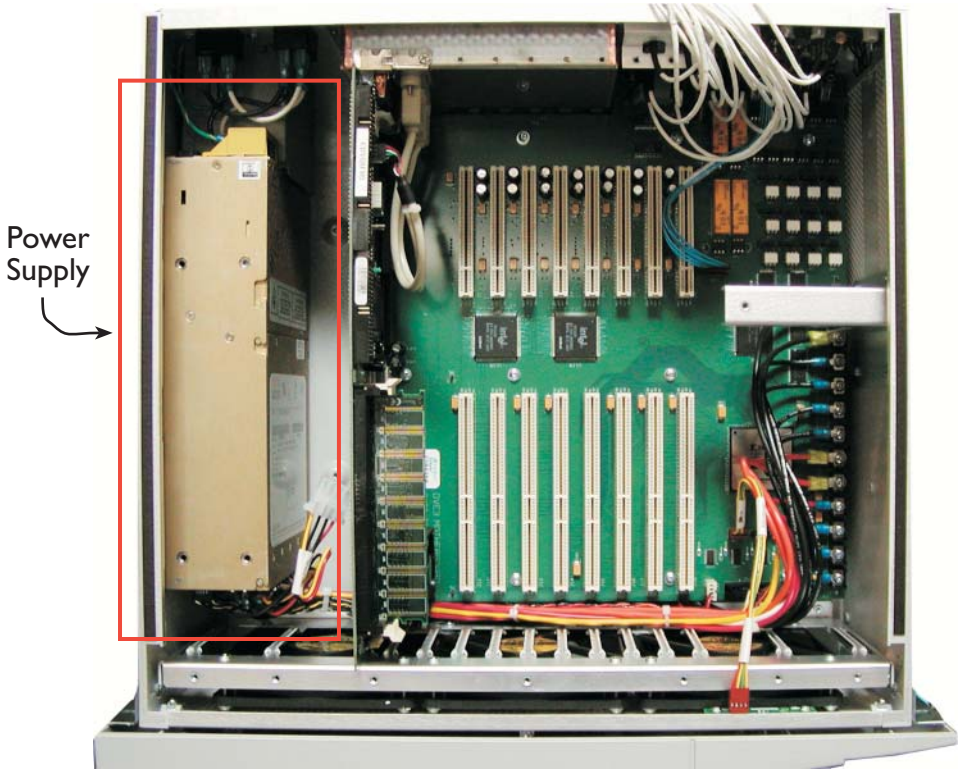
First Birthday is the process for resetting the Dveous/MX to factory settings. To perform a First Birthday:

1. Go to the *Engineering* menu.
2. Select RAM under the Setup softbutton.
3. Press UPDATE and then CONFIRM. All modified system parameters will be set to original values.
4. The machine will reboot automatically.

Note: After performing a First Birthday, the system powers up in Standard Definition format.

Power Supply Removal

Follow the steps below to change the power supply in the Dveous/MX chassis. The photograph below shows the location of the power supply.



Note: Proper static guard precautions MUST be observed throughout this procedure. Allow 1 hour for this procedure.

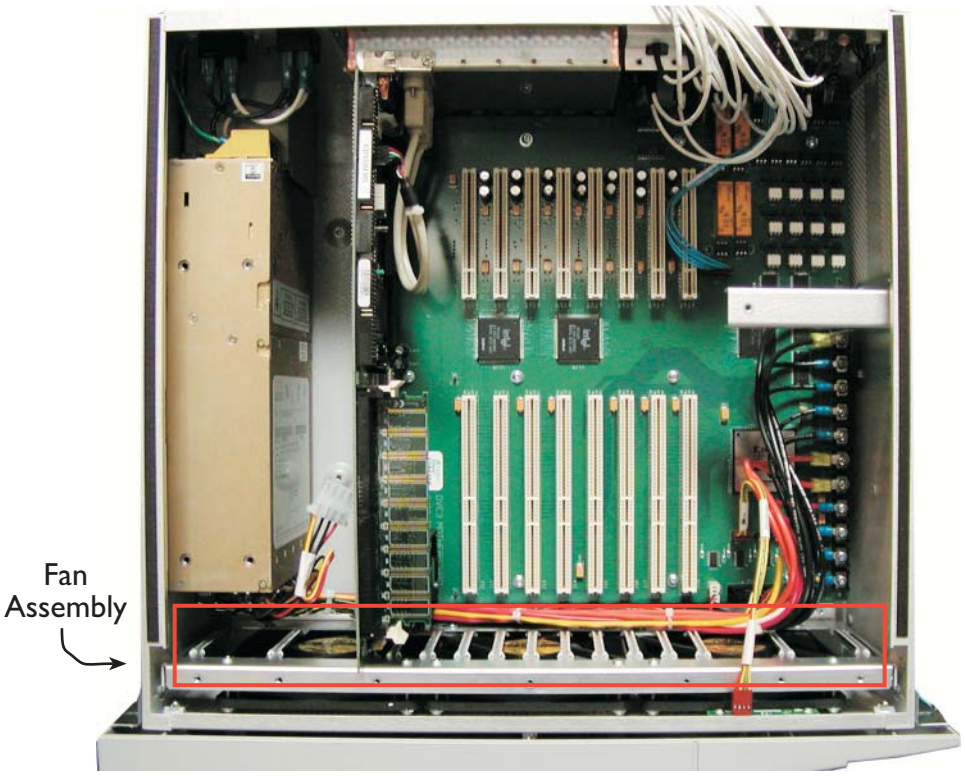
1. Disconnect all cables from Dveous/MX and remove chassis from rack. Place on clean static free workspace with front of chassis facing you.
2. Make sure NO POWER IS CONNECTED!
3. Remove 5 screws from rear of chassis that hold top cover in place. Remove top cover by sliding towards rear of unit then lifting off of chassis.
4. Remove the board retaining bar across the board set and set aside.
5. Remove the board edge retainer at the front of the boards.
6. Disconnect the 4-wire cable harness (red, yellow and 2 black wires) from the disk drive on the left side of the chassis.

7. Disconnect the ribbon cable from the SBC board (this is the far left board) and note the correct connector for replacement later.
8. Disconnect the 4 pin connector from the SBC to the USB ports.
9. Starting from the SBC board (far left) remove the screw in the rear mounting bracket and carefully remove the board from the system by carefully lifting straight up. Set this board aside on static free station.
10. Repeat step 9 with the next 4 boards from left to right. These are the transform boards A-D. Not all boards may be present in your particular Dveous/MX system.
11. Remove the 3 screws connecting the disk drive assembly. There are two screws into the bottom of the chassis as well as two screws on the outside left panel. Remove assembly and set aside.
12. Disconnect the black and the white AC cables from the rear power switch that go to the supply. Also disconnect the green ground cable from the rear of the chassis.
13. Remove the 4 screws from the outside left panel that hold the power supply in place. You should now be able to lift the power supply carefully out of the unit, far enough to gain access to the front and rear connectors. (Be careful of the DC power harness as you lift the supply out as not to damage cables or boards).
14. On the front of the supply, disconnect the three multi-pin cables (P1,P2, P3) from the supply.
15. Disconnect all DC cables from front of supply as well as 4-wire multi-connector for disk drive. You may now remove the old supply from the system.

Reverse these steps to install the new power supply.

Fan Assembly Removal

Follow the steps below to change the fan assembly in the Dveous/MX chassis. The photograph below shows the location of the fan assembly.



Note: Proper static guard precautions MUST be observed throughout this procedure. Allow 1 hour for this procedure.

1. Disconnect all cables from Dveous/MX and remove chassis from rack. Place on clean static free workspace with front of chassis facing you.
2. Make sure NO POWER IS CONNECTED!
3. Remove 5 screws from rear of chassis that hold top cover in place. Remove top cover by sliding towards rear of unit then lifting off of chassis.
4. Remove the board retaining bar across the board set and set aside.
5. Remove the board edge retainer at the front of the boards.
6. Disconnect the ribbon cable and USB cables from SBC board.

7. Remove all video cables from the input and output boards and move out of the way. Make note of cable labeling to insure proper reconnection.
8. Remove the 4 pin connector (for the front bezel LEDs) from inside front right of chassis.
9. Remove all boards from the system. You must unscrew the retaining screw at the rear of each board.
10. Disconnect the fan power cable from connector J36 on the bottom of the motherboard.
11. Remove the 6 screws holding fan assembly in place. Four can be accessed from the bottom of the chassis and the other two from the sides (1 on each side).
12. Carefully slide fan assembly up and out of the chassis.

Quick Contents

Section 4:
Option Installation

Abekas

Overview

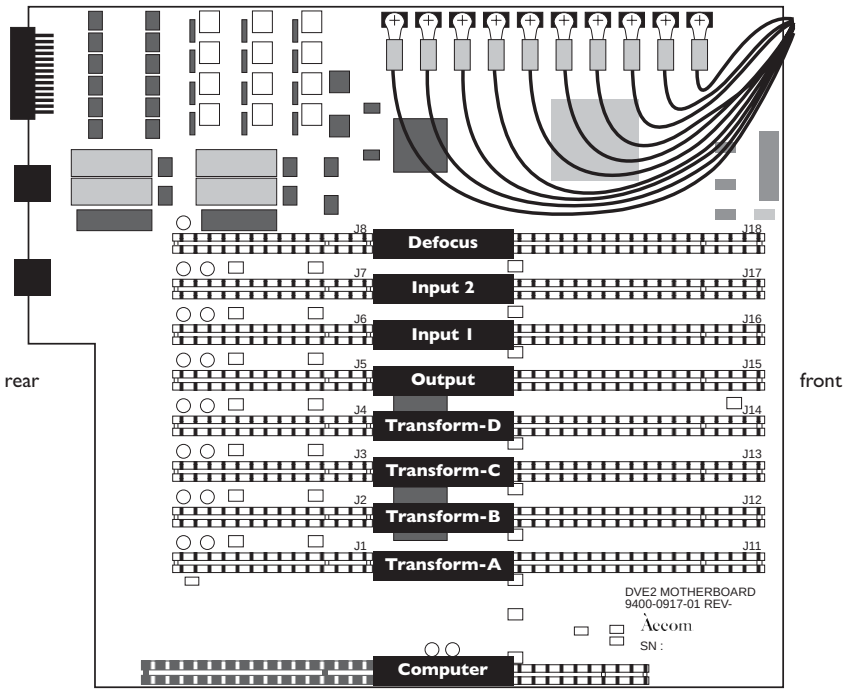
Dveous/MX's optional features include the following:

- Additional transform boards can be installed for extra HD channels.
- Additional input card can be added to increase the total inputs from 6 to 12.
- An external floppy drive can be connected to the Dveous/MX control panel when console mounting blocks access to the on-board drive.
- Additional control panels can be connected to the Dveous/MX chassis to allow control from other users. Only one panel can be active at one time.

Transform Boards

Overview

Additional transform boards can be installed to add more channels to the standard system. Dveous/MX is available in three configurations that can work in SD or HD and is software configured in the user interface.



The following is a table listing the Dveous/MX configurations and possible transform and channel combinations.

Table 4-1: Transform Boards

Configuration	Total # Boards	# Channels	
		SD	HD
Dual Twin SD	1	4 (1A/1B.2A/2B)	1 (1A)
Single Twin HD	2	4 (1A/1B.2A/2B)	2 (1A/1B)
Dual Twin HD	4	4 (1A/1B.2A/2B)	4 (1A/1B.2A/2B)

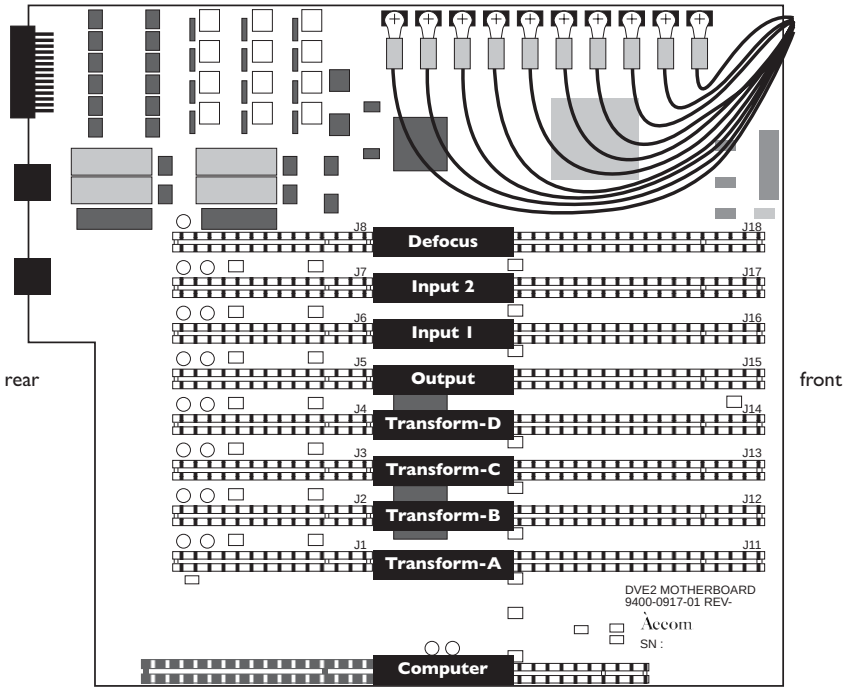
Installing Transform Boards

Each optional transform board is installed in the same manner. To install a transform board in the Dveous/MX chassis:

1. Power down and disconnect the power cable from the rear of the chassis.
2. Remove the chassis from the rack and place on static free workspace.
3. Remove 5 screws from the rear of the chassis that holds the top cover in place.
4. Slide top cover backwards and remove from chassis.
5. Remove retaining bar across middle of boards.
6. Remove retaining strip across front of boards.
7. Locate slot(s) where board(s) will be positioned and remove board retaining screw.
8. Insert board(s) in correct slots with the same positioning as existing transform board(s).
9. When board is fully seated, screw down at rear with screw removed in step 7.
10. Reattach the retaining strip and retaining bar that were removed in steps 5 and 6.
11. Put top cover back on and replace screws removed in step 3.
12. Power up Dveous/MX chassis.
13. Go to ENG MENU on the control panel and confirm that all boards are running.
14. The Dveous/MX is now ready for use.

Input Card

An additional input card can be installed to increase the number of digital video inputs from the standard 6 to a total of 12.



The option kit for the Dveous/MX Input 2 install includes the following. Please allow two hours for this install.

Table 4-2: Input Card Option Kit

Part Name	Part Number	Quantity	Description
Input 2 Board	9400-0915-02	1	
Cable Assy.	9000-0939-13	1	input7
Cable Assy.	9000-0939-14	1	input8
Cable Assy.	9000-0939-15	1	input9
Cable Assy.	9000-0939-16	1	input10
Cable Assy.	9000-0939-17	1	input11
Cable Assy.	9000-0939-18	1	input12
Small wire ties		6	

Installing an Input Card

Follow the steps below to install an additional input card.

1. Turn off power and disconnect all cables from rear of chassis.
2. Remove Dveous/MX from rack and place on static free work environment.
3. Remove 5 screws from top rear of top cover and remove the top cover by sliding the cover backwards slightly and then lifting off of the chassis.
4. Remove the 2 screws holding the retaining arm across the middle of the board set. Remove retaining arm.
5. Remove the 3 screws on the front edge board support and remove this support from chassis.
6. Remove the retaining screw at rear of defocus board (far right board) and carefully remove this board from system.
7. The next slot to the left will be empty (this is where the new Input 2 board will reside). There is a retaining screw in the rear that you will need to remove and use when putting board into chassis.
8. Disconnect the 6 coax cables from the top of Input 1 board and fold over the rear of chassis to give you clear access to the rear inputs.
9. Remove rear retaining screw from Input 1 board and remove input 1 from system.
10. On the right side of chassis there is a middle retaining bar support. This can be removed by taking out the 4 screws from the right side of chassis that hold this support in place. This will offer a clearer work access for installing the input cables.
11. Disconnect the 6 pin blue wire from the motherboard to the LED board at rear of chassis between inputs 1-6 and 7-12.
12. You should now have a very clear access to all inputs.
13. Using a pair of needle nose pliers, remove the 6 plugs that are in inputs 7-12. To do this, bend the tabs on the inside enough so you can pop out the plugs by pushing from the inside. The plugs will come out the rear of the chassis.
14. Starting with cable assembly 9000-0939-18 (this will be for input 12. It is easier to work from 12 then to 7 for access reasons), remove the end cap holding the cable to the BNC connector. This should be hand tight and requires no tools. Pull the cable apart from the BNC.
15. Remove the 1/2” nut and washer from the BNC connector.
16. From rear of chassis insert threaded end of BNC into input 12.

17. Secure this BNC to input 12 with the washer and nut removed in step 15. Use a 1/2" wrench to tighten securely. Be careful not to over tighten and strip the threads.
18. Insert pin end of cable back into rear of BNC and secure with end cap. A 3/8' wrench can be used to tighten snugly.
19. Repeat steps 14-18 for inputs 11-7. All cables are labeled as to which inputs they go to.
20. Once all the cables are installed, using the existing Input 1 cables as a guide, run the new cables in the same fashion and secure with wire ties as needed. There will be two runs of cables. Inputs 7-10 will be the longer run and inputs 11-12 will be shorter.
21. Reinstall Input 1 board into chassis and secure with rear retaining screw.
22. Install Input 2 board into the next slot and secure with rear retaining screw removed in step 7.
23. Reinstall Defocus board into last slot and secure with rear retaining screw.
24. Reattach all 6 coax cables to Input 1 that were removed in step 8.
25. Attach all newly installed cables to Input 2 in the same fashion as they are connected to Input 1. All cables are marked with J#'s to match the corresponding connector on the board.
26. Reattach 6 pin blue cable to LED board and Motherboard that was removed in step 6.
27. Reattach retaining bar support removed in step 10.
28. The longer cable runs should be run along right side of chassis and under the retaining bar support.
29. Visually inspect all cables to be assured that none are damaged or will be damaged once cover is replaced.
30. Reattach front board support removed in step 5.
31. Reattach middle retaining bar removed in step 4.
32. Put top cover back in place and secure with 5 screws.
33. Connect power to system and attach control panel.
34. Power up system and after bootup, go to ENG menu and confirm that all system boards are PRESENT.

Note: Depending on your system configuration up to 3 Transform boards may be shown as "NOT PRESENT" in ENG menu.

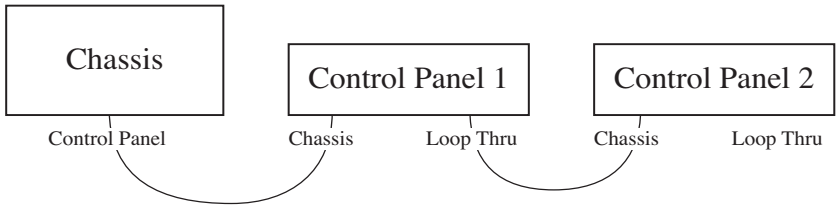
External Floppy Drive

An external floppy drive can be connected to the control panel for use when the control panel is counter sunk. In this case, the floppy drive located on the control panel is not accessible. Please refer to Section 2 - Installation for more information on connector pinout for an external floppy drive.

Additional Control Panel

Additional control panels can be connected to the Dveous/MX chassis to allow control from other users. Only one panel can be active at one time. Control panel cable and connector information can be found in Section 2 - Installation.

Use the loop-through connection from the first panel to the chassis connection of the additional panel. Loop through cable has no power (see pin outs in Section 2 of this manual) and there fore all additional panels will require an external power supply (Abekas part #2800-0063).



Note: The termination switch should only be terminated at the last panel in the chain.

Quick Contents

Section 5: Applications

Abekas

Overview

This section provides setup instructions for interfacing Dveous/MX to other video systems. Dveous/MX is a highly flexible and powerful digital video effects processor, equally capable of being used directly on-air, live-to-tape, or in a post production environment. Topics covered are:

- External Aux Bus control
- GVG CPL(Control Protocol Language)
- Timeline Control

More information on Dveous/MX settings can be found in Section 6 - Setup Menus.

Note: Please contact the manufacturer of the system you would like to connect to Dveous/MX for complete information on connection and operation.

External Aux Bus Control

The Dveous/MX remote ports can be used to make source selections on the aux buses of the many video switchers. Most of them use a standard protocol and cable to communicate. Dveous/MX can control Aux Buses of the following switchers:

- GVG200
- GVG300
- Abekas 8150
- Sony DVS
- Sony MVS

and any switcher able to emulate the above protocols

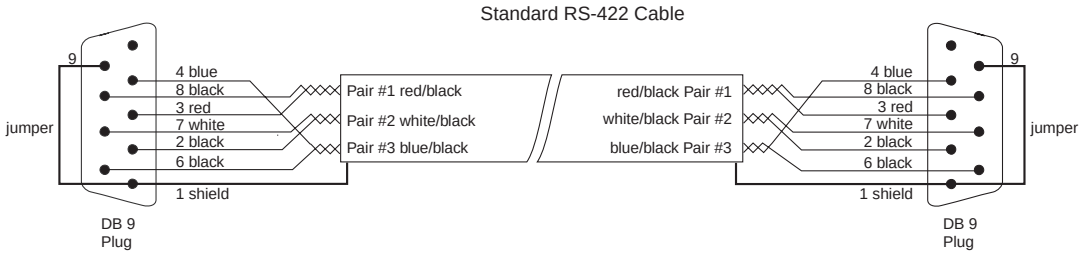
When properly configured, Dveous/MX allows you to select a switcher Aux Bus for source input. You can then control up to 128 crosspoints of the switcher from the Dveous/MX input menu by using the A softknob.

To configure Aux Bus Control you will:

- Use a standard RS-422 cable to connect Dveous/MX to the switcher serial control port.
- Connect the switcher Aux bus outputs to Dveous/MX input 1, input 2, input 3 and input 4.
- Configure the Dveous/MX remote port for Aux Bus protocol.
- Configure the video switcher remote port.
- Select Aux Bus as input on Dveous/MX.

RS-422 Control Cable

The remote port, when set for Aux Bus protocol is internally configured for RS-422 communication. We recommend twisted-pair cable be used as shown below.



Aux Bus Video Cabling

- When Aux Bus control is selected in the Dveous/MX, each DVE channel defaults to one external input. (some switcher aux buses may be designated 1A, 1B, etc. rather than Aux 1, Aux2, etc.).

Dveous/MX allows you to remap Aux Buses to use different ones than described below. This funcion appears in the REMOTE SETUP menu when Aux Bus protocol is selected.

The following is a basic setup using switcher Aux Buses 1-4.

- Dveous/MX channel 1A controls Aux 1 or 1A, which must be connected to Input 1
- Dveous/MX channel 1B controls Aux 2 or 1B, which must be connected to Input 2
- Dveous/MX channel 2A controls Aux 3 or 2A, which must be connected to Input 3
- Dveous/MX channel 2B controls Aux 4 or 2B, which must be connected to Input 4

Configure the Dveous/MX REMOTE Port

Note: For settings to take effect, you must change Protocol back to Sony or SMPTE, set the Baud Rate to 38400 and Parity to Odd.

Note: When making any changes to Dveous/MX remote settings, it is recommended that you first turn the port off, make your changes, then turn the port back on in order to not lose communications.

On the Dveous/MX main control panel, use the Remote Enable menu to turn on the serial port you are using (remote 1, 2 or 3) and select:

- Protocol - Aux Bus
- Config - Switcher Type
    - 8150 (Abekas)
    - GVG 200
    - GVG 300
    - Sony
- Control - (Leave as default unles you wish to remap Aux Buses as described earlier.)

Configure the Switcher Remote Port

Check with switcher manufacturer for exact setups required. Protocol, baud rate and parity settings on switcher must match those on Dveous/MX.

Select Aux Bus as Input

In the Dveous/MX Input Menu, scroll softknob A (Type), to Aux Bus. When this is selected, the Xpnt (crosspoint) selection appears on the B softknob. Here you can choose one of 128 crosspoints on your video switcher (0-127) for use as an input to Dveous/MX.

GVG CPL Control

Dveous/MX includes CPL Protocol that allows devices to control Dveous/MX. It allows you to recall and run DVE effects as part of the switcher timeline. It allows Dveous/MX to select sources on the switcher Aux bus outputs and tally them at the switcher when they are visible in the DVE video output.

Cable Connections

A cable is required to be connected between the desired Dveous/MX remote port and the Grass Valley switcher serial remote port. This is a standard 422 cable.

Configure the Dveous/MX REMOTE Port

Note: When making any changes to Dveous/MX remote settings, it is recommended that you first turn the port off, make your changes, then turn the port back on in order to not lose communications.

On the Dveous/MX main control panel, use the Remote Enable menu to turn on the serial port you are using (remote 1, 2 or 3) and select:

- Protocol - CPL

When CPL protocol is selected, Dveous/MX automatically sets the Baud Rate to 79800 and Parity to Odd.

Switcher configurations vary. Please check with the switcher manufacturer or switcher operations manual for proper CPL setup.

Timeline Control

Along with Aux Bus and CPL, Dveous/MX also supports Sony, SMPTE, Peripheral and A53D protocols. Use these for timeline control of the Dveous/MX as a VTR from your external device.

A53D protocol is used by Thomson DD series, XTendd, Seraph and XTenHD for timeline control of the Dveous/MX.

Peripheral is used by GVG and Sony switchers operating under P-Bus control.

Contact Abekas technical support or your switcher manufacturer for more detailed information on interconnecting these devices.

Quick Contents

Section 6: Setup Menus

Abekas

Overview

Dveous/MX lets you make almost all engineering adjustments and configurations from the Control Panel. Since Dveous/MX controls these setups in software, you can save and recall them to and from floppy disk or hard drive. This lets you quickly access multiple engineering setups as needed.

This section covers all the System buttons to the right of the control panel's display. These menus are used for timing and configuration of the Dveous/MX. The disk menu, used for saving and/or recalling effects, JPEGs and setups to floppy or hard drive are also discussed.

This involves the following menus:

- The Input Setup menu allows adjustment of blanking on an input-by-input basis. The internal matte generator can also be selected as an input and adjusted in this menu.
- The Output Setup menu lets you set output timing, horizontal blanking type, reference, output configurations and SD/HD Video formats.
- The Remote Setup menu lets you change the editor timecode offset and configure GPIs.
- The Engineering menu lets you:
  - Select the edge processing (shaped or unshaped) for the program (main video) outputs
  - Bypass the internal background keyer (background on/off)
  - Set the menu display brightness, contrast, and screen saver timeout
  - Perform software updates and first birthdays
- The Remote Enable menu lets you enable the three Remote Serial ports and select their serial remote protocol.
- The Personality menu lets you set Field Dominance. This allows you to determine the field your effect will start on when operating in a timing sensitive environment such as post production.

  You can also set Run mode which determines if all channels run when running a timeline or only delegated (selected) channels. Pattern autoload can be set for textures to load automatically when recalling an effect.

  The Personality menu also allows you to change the current aspect ratio through the Anamorph settings.
- No X-Point (crosspoint) allows you to turn off or on Dveous/MX's ability to recall source information as part of an effect.

- The Acquire button allows users to turn off or on multiple control panels attached to one chassis.
- Use the Disk menu for all floppy disk or hard drive functions, including naming, saving, recalling, copying, and deleting files; formatting disks; and setting the system clock.

Input Setup Menu

Press the INPUT SETUP button to bring up this menu.

Channel Softkey

Input Softknob

Press the Channel Softkey to bring up the Input # softknob. This allows you to select the input you want to set up. The range is 1 through 12.

Blanking Softknob

Normal mode Allows you to set different blanking compensation for each input individually. Normal maintains a true aspect ratio for the image by stretching the aspect ratio of the input video so that the blanking edges are not visible. The advantage to this method is that each input can have its own blanking compensation. The disadvantage is that the video is now stretched slightly, preventing you from transitioning or match-framing back to the original, unstretched image, either in Dveous/MX or in some external device, without seeing a visible difference between the two images.

Crop (A57) Blanks all inputs by the same amount by simply cropping in the edges to remove the offending blanking areas. The advantage to this method is that all images maintain their original aspect ratios so there is no visible difference between the original and the cropped image, allowing match-framing between the two. A disadvantage to this method, however, is that blanking compensation applies to all external inputs equally, and not individually.

H & V Blank Allows the blanking of width and height compensation. Dveous/MX lets you compensate for input video with overly wide blanking, which results in horizontal and/or vertical black edges on the input video. To adjust the blanking, go to the Input Setup menu and press the ***Channel*** softkey. Use **Input** to select the video source. Then select either *Normal* or *Crop (A57)* with the **Blanking** softknob. Adjust the horizontal and vertical edges with the **H Blank** and **VBlank** softknobs Note that these adjustments apply only to video routed to the DVE channels and not to video selected as a background source.

Note: If you will be using Solid Builder to construct slabs and need to match unity size, you must use Crop (A57) mode.

Matte Softkey

This softkey enables an internal matte to be selected as any input source. Press Matte to bring up controls for selecting external video or the internal color matte generator for the currently selected input, and to adjust the matte's color. All twelve inputs have matte mode available.

Matte Enable The default setting for this softknob is Off, which passes the video connected to this input to Dveous/MX's crosspoint matrix. If set to On, it disables the selected input's video and replaces it with a color matte generator.

Hue / Sat / Lum Use these softknobs to set the color for the matte generator. The Hue softknob controls the tint, the Sat softknob controls the chrominance saturation, and the Lum softknob controls the brightness. Note that it is possible to create "illegal" colors that fall outside the RGB, NTSC, and/or PAL color ranges if saturation is set to 100%. However, colors are correct if saturation is set to 75%. It is a good idea to use a waveform monitor or vectorscope when creating a color matte with this feature.

Output Setup Menu

Press the OUTPUT SETUP button to bring up this menu. Here you can set the output timing, horizontal blanking width, output bit rounding.

Timing

Press this softkey to bring up controls for adjusting the program (video) and key output timing. Note that the program output timing affects all outputs equally.

Program Coarse Phase Use this softknob to set the horizontal output timing by lines in coarse steps.

Program Fine Phase Use this softknob to fine tune the horizontal output timing by full pixels.

Digital

Press this softkey to bring up controls for setting the horizontal blanking width outputs. You can select different blanking widths and bit resolutions for the program (video) and key outputs. Select Video for Program output adjustments or toggle to Key for Key output adjustments.

Program Blanking / Key Blanking Use the Program Blanking softknob to select a blanking width for the digital video outputs. Use Key Blanking to select a blanking width for the digital key outputs. Both softknobs have the same settings.

- Crop—Passes the full digital active line with blanking edge risetimes of about 150 nsec.
- Shape—Filters the transition from blanking to active video to avoid ringing, with blanking edge risetimes of about 300 nsec.

Z-Data Since some external devices can process Z, or depth, key information, you can enable this data to be included in the digital key output in the Output Setup menu under the Digital softkey.

Config

Press this softkey to toggle between SD or HD mode. Switching modes requires a reboot. This config softkey also brings up the following adjustments:

Output # — the output number you select is tied to the mode type you then choose with the Mode softknob. Each of the 6 outputs can be configured independently

Mode — You may select a different output mode for each output number. The following modes are available — 1A Fill, 1B Fill, 2A Fill, 2B Fill, 1AB Comp, 2AB Comp, 1/2 Comp, 1/2 Bgnd, 1A Key, 1B Key, 2A Key, 2B Key, 1AB Key, 2AB Key, 1/2 Key, 1/2 TFS Key. The default is 1/2 Bgnd which selects everything.

Note: Background can also be turned off and on in the ENG Menu. If you use the Output Menu's Mode setting of 1/2 Comp to turn the background off, remember this setting does not include the Target Frame Store (TFS).

Reference — allows you to sync with other devices. Choices include: Tri Level or Bi Level. If feeding Bi Level sync, it must be 300mv Analog sync with or without burst (i.e. black or black burst).

Format — allows you to set resolution and frame rate. The standards which are supported now include:

Table 6-1: Field/Frame Rates

Mode	Standard	Field/Frame Rate				
HD	1080p	30	29.97	25	24	23.98
	1080s	30	29.97	25	24	23.98
	1080i	60	59.94	50		
	1035i	60	59.94			
	720p	60	59.94			
SD	625i	50				
	525i	59.94				

Remote Setup Menu

Press the REMOTE SETUP button to bring up this menu. Here you can change the editor timecode offset and setup GPI input and output functions.

Setup

Offset Use this softknob to change the timecode values that Dveous/MX sends to an edit controller or other device via the remote ports. Since all timeline effects start at a timecode value of 00:00:00:00, this is the typical "in point" for Dveous/MX when under editor control. You may need a timecode value greater than 00:00:00:00, for example, to prevent the editor from having to preroll "before midnight" (meaning across the boundary between 23:59:59:24/29 and 00:00:00:00). Use the Offset softknob to add a fixed offset to the default timecode value. The default offset value is 0:00. You can enter an offset of any value up to 43,200:00, or 12 hours. A field two number is indicated by a *.

GPI In The following softmenus appear when GPI In is selected:

GPI Funct scrolls through the following GPI Input functions:

Table 6-2: GPI Input Functions

Run Forward	Run Reverse
Pause	Jog 1 Frame Forward
Jog 1 Frame Reverse	Jog 1 Field Forward
Jog 1 Field Reverse	Next Keyframe
Previous Keyframe	Rewind
Fast Forward	Freeze Channel 1A
Freeze Channel 1B	Freeze Channel 2A
Freeze Channel 2B	Freeze All Channels
Unfreeze Channel 1A	Unfreeze Channel 1A
Unfreeze Channel 1B	Unfreeze Channel 2A
Unfreeze All Channels	Toggle Freeze Ch1A
Toggle Freeze Ch 1B	Toggle Freeze Ch 2A
Toggle Freeze Ch 2B	Toggle Freeze All chnls
Toggle Cursor On/Off	

GPI Type allows you to select the type of GPI trigger being sent.

- Hi-Low—GPI triggers on a falling edge
- Low-Hi —GPI triggers on a rising edge
- Toggle—GPI triggers on either a falling or rising edge

GPI Out There are three modes for the GPI outputs that you can select in the Remote Setup menu.

Mode 1 assigns functions to the 12 GPI outputs as follows:

- GPIs 1 to 4—Programmable on a keyframe-by -keyframe basis in the Events menu. You can fire any combination of these four GPI outputs on any keyframe of the Global timeline.
- GPIs 5,7,9, and 11—These GPI outputs provide front/back switch tallies for each of the four DVE channels (5 = Ch 1A, 7 = Ch 1B, 9 = Ch 2A, 11 = Ch 2B). A high output indicates that the channel's "Front" side is visible, while a low output indicates that the channel's "Back" side is visible. These outputs are useful for connection to a switcher that accepts Front/Back toggles for switching Aux Bus outputs. By allowing the switcher to perform Front/Back switching, only two switcher Aux outputs are needed to feed each twin channel (1A/1B or 2A/2B).
- GPIs 6, 8, 10, and 12—These GPI outputs provide on-air tallies for each of the four DVE channels (6 = Ch 1A, 8 = Ch 1B, 10 = Ch 2A, 12 = Ch 2B). An on-air tally is low whenever that channel is visible on the Dveous/MX main output, and high otherwise.

Mode 2 is identical to Mode 1 except GPI 6, 8, 10 and 12 provide on air tallies for each of the four aux buses feeding the DVE when under external aux ctrl interface.

Tally mode allows the 12 GPI outputs to function as on-air tallies for the 12 inputs. An on-air tally is low whenever that input is visible in the Dveous/MX main output, and high otherwise.

Network This menu allows you to set the following Dveous/MX networking parameters: IP Address, Subnet Mask, Gateway, and Host.

Engineering Menu

Press the ENG button to bring up this menu. Here you can select the edge processing for the main video output, bypass the internal background keyer, adjust Control Panel setups, and perform software updates. This is also where you may perform "first birthday" or RAM reset. This menu also displays the current software versions, and hardware option currently installed.

Setup

Press this softkey to bring up controls for turning the internal background keyer on and off, for shaping the output video's edge, for adjusting the Control Panel menu display, and for setting the timeout for the Control Panel lamp saver. Setup toggles Chassis, Panel and RAM. With Chassis highlighted, the Video Out and Background softknobs appear. With Panel highlighted, the Backlight, Bias, Display, and Lamp Saver softknobs appear. RAM has no functions assigned to any softknobs.

Chassis Softkey

Video Out Use this softknob to select the edge processing for Dveous/MX's program (video) outputs.

- Shaped—(the default) Multiplies, or shapes, the program output edges so that they exactly match the key output edges. Use this setting when viewing the transformed video keyed over Dveous/MX's own background, or when feeding Dveous/MX's output to a keyer that can perform a "matte" (or additive) key. This type of keyer does not process the key fill before compositing it over a background.
- Unshaped—Does not process the program output edges. Use this setting when feeding Dveous/MX's program and key outputs to a normal multiplicative keyer, which processes the key fill before compositing it over a background. Note that if the transformed video is keyed over Dveous/MX's own background in this mode, the edges appear to overlap the background because they have not been correctly processed to fill the key shape.

Background Use this softknob to turn Dveous/MX's background keyer on and off. To view the transformed video over the internal background, leave the background keyer turned On. To key the transformed video externally (for example, in a switcher), turn the background keyer Off to avoid double-keying the transformed video. You may also want to use Unshaped mode, described above, when using an external keyer.

Note: Background must be set to Off if video out is set to unshaped.

Panel Softkey

Backlight Use this softknob to adjust the menu display's overall brightness.

Bias Use this softknob to adjust the contrast between the menu characters and the background.

Display Use this softknob to select dark menu characters over a light background (Normal) or light menu characters over a dark background (Inverted).

Lamp Saver Use this softknob to set the timeout for the lamp saver. The lamp saver turns off the menu display and all LEDs if the Control Panel is idle for a set length of time. The default timeout is ten minutes. You can set a timeout between one minute and 255 minutes (four hours 15 minutes), or turn the lamp saver function off.

Ram Softkey

RAM can be selected for doing "first birthday." See Section 3 for first birthday instructions.

Update Softkey

Use this softkey to install system software updates. See Section 3 for Software Update instructions.

Remote Enable Menu

Press the REMOTE ENABLE button to bring up this menu. Here you can enable and disable the remote ports and select their serial remote protocol.

Remote 1, Remote 2 and Remote 3

Use these softkeys to bring up controls for setting the communications protocol, baud rate, parity, and address (if applicable) for the RS-422 ports labeled remote 1, remote 2 and remote 3. The highlighted On or Off setting indicates whether the selected port is active. Any of the remote ports can be used for any protocol.

Note: Before making any changes to a remote port, it is recommended that you first use the remote softkey to toggle the port off, make your changes, then toggle it back on. This procedure greatly reduces the chances of loosing communications between Dveous/MX and the remote device.

Protocol Use this softknob to select the protocol needed to communicate with edit controllers and switchers, or to control switcher Aux Bus outputs. These are the available settings:

- Sony—emulates Sony VTR communications to allow control by a Sony editor.
- SMPTE—emulates SMPTE VTR communications to allow control by editors that transfer data and commands using this protocol. This setting also brings up the SMPTE Addr control, described below.
- Periph—emulates Grass Valley Group Peripheral protocol, for control by Grass Valley Group switcher Effect Memories (E-MEMs). This lets Dveous/MX learn effect register recalls as part of a switcher E-MEM. This setting also brings up the Periph Addr setting, described below.
- Aux Bus— allows Dveous/MX to control switcher Aux Bus outputs. Use this when feeding Dveous/MX's inputs from switcher Aux Bus outputs. This setting also brings up the Function softknob with Config and Control settings described below.
- CPL—allows control of switchers and other devices using the CPL protocol.
- A53D VTR—allows Thomson (DD series, Exten series and Seraph HD) switchers to control Dveous/MX as if it were an Abekas A53-D, emulating VTR commands.

Baud Use this softknob to set the baud rate for the serial remote control port. The default baud rate of 38400 is typical, but 1200, 2400, 9600, and 76800 are also available.

This parameter must be set to the correct rate when using Sony or SMPTE protocol to allow proper Aux Bus control.

Parity Use this softknob to set the parity for the serial remote control port. The default parity is Odd, but Even and None are also available.

Address

Under SMPTE protocol, this softknob sets the SMPTE address for the serial remote port. Most edit controllers require a SMPTE address of 1, but you can select any address from 1 to 64. Abekas device addresses correspond to SMPTE addresses as follows:

Abekas SMPTE address 1 = true SMPTE address 80A2
Abekas SMPTE address 2 = true SMPTE address 80A4
Abekas SMPTE address 3 = true SMPTE address 80A6
Abekas SMPTE address 4 = true SMPTE address 80A8
and so on, through
Abekas SMPTE address 64 = true SMPTE address 8120

Under Periph protocol, select 0-23 for PBUS-I or 24-64 for PBUS-II.

Function

Config - Under AUX protocol, this allows you to select the switcher type (swr type). The options include ASWR 8150, GVG 200, GVG 300 and SONY.

Control - Under AUX protocol, the Chnl Select and Aux Select softmenus appear allowing you to map Dveous/MX channels to Aux Bus IDs. This enables you to change or remap switcher aux buses for use by Dveous/MX without reconfiguring your edit suite.

No Xpnt Button

Toggling the No Xpnt (crosspoint) button on, tells Dveous/MX to ignore the input type and source selections for the current effect. This allows you to run an effect using different sources or crosspoints than were used when the effect was saved.

Personality Menu

Misc Softkey

When this softkey is selected, the following softknobs appear:

Axis Mode On (default), Off

Run Mode All Chnls (default), Delegated
This setting determines which channels will run under timeline control. Either All Chnls or only those channels Delegated (selected) by the Channel Select buttons will run as part of the effect timeline.

Run Dom. Off (default), Field 1 or Field 2
When set to Off, this setting allows an edit controller to establish the starting field dominance when effects are run. Field 1 or Field 2 forces the starting field dominance.

Pattern Autoload Off (default), On
When set to ON, the corresponding pattern or texture will be loaded when an effect is recalled. This will slow down the recall process.

Orbital Effects When Orbital FX is selected, the RunEnv softknob is enabled.

Run Env - This setting allows you to set how the OrbitalFX will run. The options are: *Post* - recalls the saved OrbitalFX state when run. *Live* - allows the live user to have an OrbitalFX effect running, then hit run to start a timeline portion of the effect.

Anamorph Softkey

This softkey allows you to set the horizontal and vertical units applied to the video. You must press MODIFY and CONFIRM to enable this setting. The default for Dveous/MX is 1 x .75 in SD mode and 16 x 9 in HD mode.

Note: Anamorph changes might take a moment to update the workspace effect.

Film Softkey

Under this softkey you can set various run time Motion Update modes for the system. These modes are intended for use when working with video footage originated on film and other equipment requiring motion other than the default field motion interpolation.

The following softknobs appear when Mode and/or Motion are selected.

- Film Softknob - with either A or B modes enable, the system runs an effect by updating the Dveous/MX picture position only at the frame boundaries. This appears jerky when run, but when used to track an object originally shot on film, it eliminates the object-to-effect mistracking problem observed when the effect is run at field rate. Mode A uses Field 1 to update its position during the effect and B mode uses Field 2.
- 3:2 Softknob - allow you to set a frame boundary phase of A - E. The phases behave as follows:
  - Phase A - gives the sequence 2:3:2:3...
  - Phase B - gives the sequence 3:2:3:2...
  - Phase C - gives the sequence 1:2:3:2:3...
  - Phase D - gives the sequence 1:3:2:3:2...
  - Phase E - gives the sequence 2:2:3:2:3...

Acquire Button

This button is only used for multiple control panel systems.

Press and hold the acquire button and a Chassis softkey will appear on the LCD screen. Toggling this softkey so that Chassis is no longer displayed releases control of the chassis by this control panel. Once the chassis has been released, any other control panel can gain control by using the same procedure.

Disk Menu

Press the DISK button to bring up this menu, which controls all floppy disk and hard drive functions, including naming, saving, recalling, copying, and deleting files, and formatting disks.

Disk

Press this softkey to bring up the controls for saving, recalling, copying, moving, and deleting files, and for formatting floppy disks. Disk toggles Save, Recall, and Misc.

File Use this softknob to scroll through the list of files on the disk. The list shows only the files that are the currently selected file type (Effect, Setup, or All). The highlight in the list indicates the currently selected file.

File Type Use this softknob to select the type of file (Effect, Setup, JPEG or All) that you want to save, recall, copy, move, or delete. When the file type is Effect, the Reg # softknob appears.

Reg # (This softknob only appears when File Type is Effect.) When saving effects, use this softknob to select the on-line effect register (WorkSpace or 0 – 99) you want to save to disk. Use All Reg #s to save all registers containing keyframes to disk, using a common file name. When recalling effects, use this softknob to select the on-line effect register (WorkSpace or 0–99) you want to recall the disk effect to. Use Original to automatically restore the disk effect to the effect register from which it was saved.

Show Effect Name This softkey will toggle between showing the Effect Name or File Name for the selected effect.

Floppy Use this softknob to select the drive (Internal or External) to which you want to save a file, or from which you want to recall or delete a file. The internal drive is the one built into the Control Panel. The external drive is an optional disk drive that you can connect to the Control Panel Ext Floppy port. You cannot select External unless there is an external floppy drive connected to the Control Panel.

Dest Drive (This softknob only appears with Disk/Misc and Action/Copy highlighted.) Use this softknob to select the destination drive (Internal, External or Hard drive) for a file copy. The Internal drive is the one built into the Control Panel. The External drive is an optional disk drive that you can connect to the Control Panel Ext Floppy port. The source drive's file list appears in the menu display.

Letter Use this softknob to name a file when you save, copy, or move it. Use the softknob to select a character, then press the D keypad softkey to enter the character in the name, which appears in the keypad buffer. If you have a PC/AT compatible keyboard connected to the Control Panel Keyboard port, you can use it to name the destination file instead. Filenames use DOS conventions, and Dveous/MX adds an extension based on the file type currently selected: EFF for effect files, ENG for engineering setup files. To type a number, enter the number from the numeric keypad.

Save (This softkey only appears with Disk /Save highlighted.) Press this softkey to enable the save file function. It brings up the Confirm Save softkey. To save a file to the selected drive with the current name and comment, press Confirm Save. Saving a setup file saves the settings in the Input Setup, Output Setup, Remote Setup, Remote Enable, and Engineering menus, except the Control Panel settings, which are saved in the Control Panel flash EEPROM, as they may be different for each Control Panel.

Confirm Save

(This softkey only appears with the Save softkey highlighted.) Press this softkey to save the currently selected register (if the file type is Effect) or the system setup (if the file type is Setup) to floppy disk. Dveous/MX uses the currently entered name and comment when it saves to disk.

Note: You can also view disk file comments on a DOS compatible PC by inserting the disk in the PC floppy disk drive and entering the command `type filename.ext` at the prompt. Be sure to use the actual file name and extension when entering this command, which displays the comment saved with the file.

Dveous/MX uses default comments if you save on-line effects registers without adding your own comments. If you save an effect with no keyframes, the default comment is "no keyframes." Otherwise, the default comment is the effect register number and the time and date you first saved it.

Recall

(This softkey only appears with Disk/Recall highlighted.) Press this softkey to enable the recall file function. It brings up the Confirm Recall softkey. To recall a file from the selected drive to the selected effect register (if the file type is Effect), press Confirm Recall. Recalling a setup file resets Dveous/MX to the settings in the Input Setup, Output Setup, Remote Setup, Remote Enable, and Engineering menus, except the Control Panel settings, which are saved in the

Control Panel flash EPROM, as they may be different for each Control Panel. You are also allowed to toggle between the currently selected floppy and the hard drive.

Save

This softkey allows you to select between the currently selected floppy and the hard drive for saving. When selected it brings up the Confirm softkey.

Confirm Recall

(This softkey only appears with the Recall softkey highlighted.) Press this softkey to recall the currently selected file from the floppy disk.

Action

(This softkey only appears with Disk/Misc highlighted.) Press this softkey to toggle the other disk functions: Copy, Move, Del (delete), and Frmt (format). When you select a function, a softkey labeled Confirm [function] appears to let you execute the selected function.

Copy You can copy file(s) from one directory or disk to another using the File, File Type, Dest Drive, and Letter softknobs, described earlier. Press Confirm Copy to execute the copy.

Move You can move file(s) from one location to another on the same disk using the File, File Type, and Letter softknobs, described earlier. Moving a file is similar to copying it, except that the source file is deleted after the copy. Press Confirm Move to execute the move.

Del (Delete) You can deleted file(s) using the File, File Type, and Drive softknobs, described earlier. Press Confirm Delete to execute the delete.

Format (Frmt) You can format the disk in the floppy drive selected with the Drive softknob, described earlier. Dveous/MX formats floppy disks using a standard DOS formatting process, so you can read them on a DOS compatible PC. Press Confirm Format to execute the format.

WARNING: Formatting a disk erases ALL files and directories on it. Before formatting a disk, make sure that there are no files on it that you want to keep.

Set Clock

(This softkey only appears with Disk Misc highlighted.) Press this softkey to bring up controls for setting the system clock. Dveous/MX uses the clock to "stamp" disk files and for the default effect register comments when you save them. Set Clock toggles Time (which has Hour, Minute, and AM/PM softknobs) and Date (which has Month, Day, and Year softknobs).

Time

Hour Set the current hour with this softknob.

Minute Set the current minute with this softknob.

AM_PM Select AM (before 12:00 noon) or PM (after 12:00 noon) with this softknob.

Date

Month Set the current month with this softknob.

Day Set the current day of the month with this softknob.

Year Set the current year with this softknob.

Quick Contents

Appendix A: Common Part Numbers

Abekas

Overview

This section provides a list of Dveous/MX common used part numbers divided into the following categories:

- Main Chassis
- Control Panel

Main Chassis

Table A-1: Main Chassis Part Numbers

Description	Part Number
Power Supply	2800-0112
Transform Board	9400-0914-02
Input Board	9400-0915-02
Output Board	9400-0916-02
Defocus Board	9400-0930-02
Maxtor Hard Drive	1600-0122
Power Switch	3200-0100
Motherboard	9400-0917-02
SBC board with disk on chip	9500-0361-00
120mm Fan	1700-0069
Rack Ear	8900-1300-01
Rack Slides	1902-0499

Control Panel

Table A-2: Control Panel Part Numbers

Description	Part Number
CP CPU Board	9400-0693-04
CP Main Switch Board	9400-0692-02
CP Keyboard switch, no LED	3200-0043
CP Keyboard switch, w/LED	3200-0083
Internal Floppy Disk Drive	1600-0060
External Floppy Disk Drive	9500-0204
Joystick Assembly	9800-0201
LCD Screen Display	1500-0037
Shaft Encoder Assembly	9400-0694
Softkey Keyboad	9400-0763-02
Softkey Keyboard Switch, no LED	3200-0048
Local Power Supply	2800-0063
CP Cable 33”	9000-0204-01
CP Cable 100’	9000-0207-01

U

V