Matrox M.Key/100
User Guide
January 29, 2007

matrox
Digital Video Solutions

Trademarks

Matrox Electronic Systems Ltd.	Matrox®, Axio™, Axio.utils™, DigiSuite™, DSX™, M.Key™
Adobe Systems Inc...	Adobe®, After Effects®, Premiere®
Advanced Micro Devices, Inc..	AMD Athlon™
Intel Corporation	Intel®, Pentium™
Microsoft Corporation...	Microsoft®, Windows®, Video for Windows™
Panasonic (Matsushita Electric Industrial Co.)................	Panasonic®, DVCPRO™, DVCPRO50™, DVCPRO HD™,
Sony Corporation	Sony®, DVCAM™, HDV™
Victor Company of Japan, Limited (JVC)	D-9™, HDV™

All other nationally and internationally recognized trademarks and tradenames are hereby acknowledged.

Matrox M.Key License Agreement, Warranty, and Service

A. Matrox software license agreement for single-user products

By installing the software, you, the original purchaser, indicate your acceptance of these terms. If you do not agree to the terms of this agreement, please return the package unopened.

This Matrox M.Key software, any included sample images and other files (the "Software"), is copyrighted by Matrox Electronic Systems Ltd. All rights are reserved. You are granted a license to use the Software only, subject to the following restrictions and limitations:

1 The license is to you the original purchaser only, and is not transferable without written permission of Matrox.

2 Subject to the limitations herein, you may install the Software on an unlimited number of computers owned or leased by you in any location. However, you must use the Software on a single computer owned or leased by you at a time, and this in conjunction with and for the purpose of operating the Matrox M.Key hardware.

3 For the purposes of clarity, notwithstanding the fact that you may install the Software on more than one computer owned or leased by you, you may not use the Software on more than a single machine at a time, even if you own or lease more than one machine, without the express written consent of Matrox.

4 You may make back-up copies of the Software for your own use only, subject to the use limitations of this license.

5 You may not engage in, nor permit third parties to engage in, any of the following:

a Providing or disclosing the Software to third parties.
b Providing use of the Software in a computer service business, network, time-sharing, multiple CPU, or multi user arrangement to users who are not individually licensed by Matrox.
c Making alterations or copies of any kind in the Software (except as specifically permitted above).
d Attempting to disassemble, decompile, or reverse-engineer the Software in any way.
e Granting sublicenses, leases, or other rights in the Software to others.
f Making copies, or verbal or media translations of the user's guide.
g Making telecommunication data transmissions of the Software.

Matrox reserves the right to terminate this license without prejudice to any additional recourses Matrox may have against you if you violate any of its terms and conditions.

B. Software limited warranty

MATROX WARRANTS TO YOU, THE ORIGINAL PURCHASER, WHO PROVIDES AN ADEQUATE PROOF OF PURCHASE, THAT THE MEDIA ON WHICH THE SOFTWARE IS RECORDED IS FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER NORMAL USE, AND THAT THE SOFTWARE WILL PERFORM SUBSTANTIALLY AS DESCRIBED IN THE RELATED DOCUMENTATION PROVIDED BY MATROX FOR A PERIOD OF NINETY (90) DAYS FROM THE DATE OF PURCHASE.

MATROX PROVIDES YOU THE SOFTWARE AND RELATED DOCUMENTATION ON AN "AS IS" BASIS WITHOUT ANY WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE AS WELL AS THE WARRANTY AGAINST HIDDEN OR LATENT DEFECTS, ALL OF WHICH MATROX SPECIFICALLY DISCLAIMS (AND YOU, THE ORIGINAL PURCHASER, BY ACCEPTING THE PRODUCT, SPECIFICALLY ACCEPTS SUCH DISCLAIMER AND WAIVER) TO THE MAXIMUM EXTENT PERMITTED BY LAW. THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE SOFTWARE IS ASSUMED BY YOU. SHOULD THE SOFTWARE PROVE DEFECTIVE, YOU (AND NOT MATROX, ITS DISTRIBUTORS OR DEALERS) ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

MATROX DOES NOT WARRANT THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, THAT DEFECTS IN THE SOFTWARE WILL BE CORRECTED, OR THAT THE SOFTWARE WILL MEET YOUR REQUIREMENTS OR PERFORM WITH ANY HARDWARE OR SOFTWARE PROVIDED BY THIRD PARTIES.

C. End-user registration

Before using your Matrox M.Key product, please take a moment to register your product in the Matrox M.Key Support section of our web site at www.matrox.com/video/support. The information you provide will assist Matrox to quickly diagnose and correct any problem that might arise when using the product. **Only registered end users are entitled to customer support**.

D. Hardware limited warranty

MATROX WARRANTS TO YOU, THE ORIGINAL PURCHASER, WHO PROVIDES AN ADEQUATE PROOF OF PURCHASE, THAT THE MATROX M.KEY HARDWARE PRODUCTS WILL BE FREE FROM FACTORY DEFECTS FOR A PERIOD OF ONE (I) YEAR FROM THE DATE OF PURCHASE. MATROX WILL REPAIR OR REPLACE, AT THE CHOICE OF MATROX, THE MATROX M.KEY HARDWARE PRODUCTS WHICH PROVE TO BE DEFECTIVE DURING THE WARRANTY PERIOD, PROVIDED THAT THEY ARE RETURNED TO MATROX, SUBJECT TO THE FOLLOWING LIMITATIONS:

Matrox's limited warranty covers only those defects which arise as a result of normal use of the hardware and does not apply to any:

- improper or inadequate maintenance;
- incompatibilities due to the user's hardware or software applications with or in which the Matrox product interfaces;
- product of a special or custom-made nature;
- unauthorized modification or misuse;
- improper installation, misapplication or negligence;
- operation outside the product's environmental specifications;
- improper site preparation or maintenance;
- software;
- other causes that do not relate to a product defect;
- defects or damage suffered as a result of force majeure (including theft);
- defects or damage suffered as a result of normal wear and tear, and/or
- stolen goods.

If Matrox receives from you, during the applicable warranty period notice of a defect in a warranted hardware product and the defective Matrox product in question, Matrox shall at its sole option, either repair or replace the product, and shall return the repaired product or a replacement product within a reasonable delay. The replacement product may not be new, provided that it has functionality at least equal to that of the product being replaced. This warranty is valid in any country where Matrox hardware products are distributed by Matrox or its authorized dealers.

This limited warranty statement gives you specific legal rights. You may also have other rights which vary from state to state in the United States, from province to province in Canada, and from country to country elsewhere in the world.

E. Limitations of warranty

EXCEPT FOR THE SOFTWARE LIMITED WARRANTY AND HARDWARE LIMITED WARRANTY STATEMENTS, NEITHER MATROX NOR ANY OF ITS THIRD PARTY SUPPLIERS MAKES ANY OTHER WARRANTY OF ANY KIND, WHETHER EXPRESSED OR IMPLIED, WITH RESPECT TO MATROX PRODUCTS. MATROX SPECIFICALLY DISCLAIMS (AND YOU, BY ACCEPTING THE MATROX PRODUCT, SPECIFICALLY ACCEPTS SUCH DISCLAIMER AND WAIVES) ALL OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR OR INTENDED PURPOSE OR USE AND THE WARRANTY AGAINST LATENT DEFECTS, WITH RESPECT TO THE HARDWARE AND/OR SOFTWARE. MATROX FURTHER DISCLAIMS ANY WARRANTY THAT MATROX PRODUCTS, IN

WHOLE OR IN PART, WILL BE FREE FROM INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY OR PROPRIETARY RIGHTS.

TO THE EXTENT THAT THESE LIMITED WARRANTY STATEMENTS ARE INCONSISTENT WITH THE LAW OF THE LOCALITY WHERE YOU PURCHASED THE MATROX PRODUCT, THESE LIMITED WARRANTY STATEMENTS SHALL BE DEEMED MODIFIED TO BE CONSISTENT WITH SUCH LOCAL LAW. UNDER SUCH LOCAL LAW, CERTAIN LIMITATIONS OF THESE LIMITED WARRANTY STATEMENTS MAY NOT APPLY TO YOU.

TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES PROVIDED IN THESE LIMITED WARRANTY STATEMENTS ARE YOUR SOLE AND EXCLUSIVE REMEDIES.

F. Limitations of liability

EXCEPT FOR THE OBLIGATIONS SPECIFICALLY SET FORTH IN THE SOFTWARE LIMITED WARRANTY AND HARDWARE LIMITED WARRANTY STATEMENTS, IN NO EVENT SHALL MATROX BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, FORESEEABLE OR UNFORESEEABLE, OR PUNITIVE DAMAGES, WHETHER BASED ON CONTRACT, TORT, DELICT OR ANY OTHER LEGAL THEORY AND WHETHER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND/OR DAMAGES ARISING FROM THE LOSS OF USE, DATA, PRODUCTION REVENUE AND/OR PROFIT OF IN CONNECTION WITH THE MATROX PRODUCT OR ANY BUSINESS INTERRUPTION. WITHOUT PREJUDICE TO THE FOREGOING, ANY LIABILITY OF MATROX FOR ANY BREACH OF WARRANTY SHALL BE LIMITED TO THE AMOUNT PAID BY YOU FOR THE DEFECTIVE HARDWARE IN QUESTION.

TO THE EXTENT ALLOWED BY LOCAL LAW, MATROX'S ENTIRE LIABILITY AND YOUR EXCLUSIVE REMEDY SHALL BE THE REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCT DURING THE WARRANTY PERIOD. MATROX DOES NOT OFFER ANY OTHER WARRANTY WITH RESPECT TO MATROX HARDWARE OR SOFTWARE OR ANY OTHER HARDWARE OR SOFTWARE.

YOU SHALL BE RESPONSIBLE FOR ALL APPLICABLE TAXES, DUTIES AND CUSTOMS FEES ON ANY REPLACEMENT UNIT, AS WELL AS ALL TRANSPORT, INSURANCE, STORAGE AND OTHER CHARGES INCURRED ON ALL RETURNED PRODUCTS.

G. Indemnification disclaimer

Matrox disclaims and shall have no obligation to indemnify or defend you or any third party in respect of any actual or alleged infringement of any actual or pending patents, copyright or other intellectual property rights. Matrox shall have no liability arising out of any such actual or alleged intellectual property infringement.

MATROX SPECIFICALLY MAKES NO REPRESENTATION AND DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

H. Procedure for returning goods

No returned goods, for service or otherwise, will be accepted without prior authorization from Matrox. To obtain return authorization, contact Matrox M.Key Customer Support (see the contact information at www.matrox.com/video/support). Once approved, Matrox will contact you with your Returned Merchandise Authorization (RMA) number. Matrox cannot be responsible for units returned without an RMA number. Matrox will advise you of the shipping address. The packaging must indicate the RMA number on the outside. It is strongly recommended that a copy of the original packing slip which states the serial number of the items you're returning be included with the returned merchandise. This will speed up processing.

Each individual, returned unit or group of units MUST have an RMA number issued by Matrox. Matrox must authorize the number of units grouped under one RMA number. Any units received without prior approval by Matrox will be returned to you freight collect.

You shall be responsible for the cost of consolidated freight (one way only) for warranty units from your location to the location designated by Matrox. Once repaired, Matrox will incur the cost of consolidated freight for warranty units to your location.

Contents

Your notes

Contents

What is Matrox M.Key/100?

Matrox M.Key/100 is a USB dongle with associated software that allows you to use all the Matrox Video for Windows (VFW) software codecs on a system that doesn't have Matrox video hardware. With Matrox M.Key/100 connected to your computer's USB port, all the Matrox VFW codecs are available on your system and behave as though you have Matrox video hardware, such as Matrox Axio or Matrox DSX, installed in your computer.

This means that you can render and play back Matrox *.avi* files with your VFW programs using any Matrox VFW codec, including those codecs that are available only to users that have Matrox video hardware. The following Matrox VFW codecs are available with Matrox M.Key/100:

- Matrox DV/DVCAM.
- Matrox DVCPRO.
- Matrox DVCPRO5O.
- Matrox DVCPRO HD[1].
- Matrox MPEG-2 I-frame in SD or HD resolution[1].
- Matrox MPEG-2 I-frame + Alpha in SD or HD resolution[1].
- Matrox Uncompressed in SD or HD resolution.
- Matrox Uncompressed + Alpha in SD or HD resolution.
- Matrox Offline HD.
- Matrox M-JPEG (for legacy DigiSuite files).
- Matrox HDV (for playback only of Matrox HDV files)[1].

Because the Matrox VFW codecs will behave as though you have Matrox video hardware, Matrox offline HD files will be upscaled to full-screen size for playback with your VFW program, and you'll have full support of the Matrox MPEG-2 I-frame HD codec to create *.avi* files with or without alpha in all supported HD formats, including 720p, HDV 1080i (1440×1080), and full-size 1080i (1920×1080). For details on using the Matrox VFW codecs, see "Using Matrox M.Key/100 with VFW programs" on page 5.

ⓘ **Important**   If M.Key/100 is not connected to your computer's USB port when you render or play back Matrox clips, any clips that use a video compression format that requires the Matrox video hardware, such as MPEG-2 I-frame HD + Alpha, will display as invalid video.

---

[1] The Matrox DVCPRO HD, MPEG-2 I-frame + Alpha, and HDV VFW codecs require Matrox video hardware and are available with M.Key/100. Unless you have Matrox video hardware or M.Key/100, the Matrox MPEG-2 I-frame HD codec supports HDV 1080i (1440×1080) files only.

Hardware supplied for Matrox M.Key/100

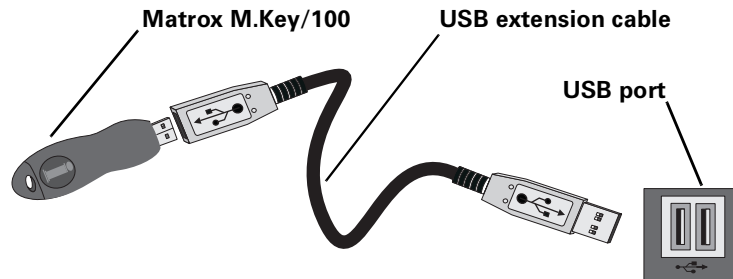- M.Key/100 dongle.
- USB extension cable.

Matrox M.Key/100 system requirements

Matrox M.Key/100 requires a computer with the following minimum system configuration:

- A computer that supports SIMD Extensions 2 (SSE2), such as an Intel Pentium 4 or AMD Athlon 64 or later.
- Windows XP Professional operating system with Service Pack 2.
- Free USB port.
- A CD-ROM or DVD-ROM drive to install the M.Key/100 software.

Connecting Matrox M.Key/100 to your computer

You can plug Matrox M.Key/100 directly into your computer's USB port, or use the provided USB extension cable. With the wide variety of USB port designs on desktop and notebook computers, you may find that the extension cable provides greater convenience and flexibility for connecting M.Key/100 to your USB port.

Matrox M.Key/100   **USB extension cable**

USB port

Note   USB port designs may vary, but you can always identify your computer's USB port by the following symbol:

Hardware detection

The first time you connect Matrox M.Key/100 to your computer's USB port (and your computer is on), the Windows "Found New Hardware Wizard" will detect your M.Key/100 hardware. Because the Matrox M.Key/100 Setup program will automatically install the appropriate drivers for your M.Key/100, you must press **ESC** or click **Cancel** to close the "Found New Hardware Wizard" and then install the Matrox M.Key/100 software as explained in the next section.

Installing the Matrox M.Key/100 software

(i) **Important**   You cannot install the M.Key/100 software on a computer that already has Matrox video hardware and drivers, such as a Matrox Axio system with Axio.utils. If you don't have Matrox video hardware but you've installed the Matrox Video for Windows software codecs on your computer, you must remove these codecs using **Add or Remove Programs** in Windows Control Panel before installing the M.Key/100 software.

⟹ **To install the Matrox M.Key/100 software:**

1 Plug the M.Key/100 dongle into your computer's USB port as explained in "Connecting Matrox M.Key/100 to your computer" on page 2. Windows will detect M.Key/100 and the "Found New Hardware Wizard" will appear.

2 Press **ESC** or click **Cancel** to close the "Found New Hardware Wizard." To ensure a smooth software installation, it is essential that you do not let the wizard try to install any drivers.

3 Insert the Matrox M.Key/100 installation CD into your computer's CD-ROM or DVD-ROM drive. The Matrox M.Key/100 Setup program will start (the Setup program refers to Matrox M.Key/100 as Matrox M.Key).

4 Follow the on-screen instructions to install the software.

The "Found New Hardware Wizard" may appear during installation. If this happens, ignore it and continue with the Matrox M.Key/100 Setup program. The wizard will close automatically when installation is complete. If you have Adobe Premiere Pro installed on your computer, Matrox Desktop project presets will be installed for use with Matrox M.Key/100. For details on using these presets, see the next section.

📝 **Note**   If you later want to install Matrox video hardware on a computer that already has M.Key/100 installed, you must first uninstall the M.Key/100 software. To uninstall the M.Key/100 software, choose **Start > Programs > Matrox M.Key > Uninstall Matrox M.Key**.

If you plug M.Key/100 into a different USB port

After you have installed the M.Key/100 software, it is recommended that you always use M.Key/100 in the same USB port that you used when you installed the software. If you plug M.Key/100 into a different USB port, the "Found New Hardware Wizard" will appear again. You won't need to re-install the M.Key/100 software, but you'll need to use the "Found New Hardware Wizard" to install the required drivers. For each driver, select **Install the software automatically (Recommended)**, then click **Next**. Repeat this step until the "Found New Hardware Wizard" has finished installing all the required drivers.

Using Matrox M.Key/100 with Adobe Premiere Pro

Matrox M.Key/100 includes project presets for Adobe Premiere Pro that you can load to immediately apply appropriate settings to create a project using the Desktop editing mode for working with Matrox *.avi* files in any supported video compression format. For example, you can select a preset to create a 1080i @ 29.97 fps project for working with Matrox MPEG-2 I-frame HD files.

⇒ **To load a Matrox Desktop project preset:**

1 Start Adobe Premiere Pro. The **New Project** dialog box appears.

2 From the appropriate **Matrox Desktop** folder (**Matrox Desktop - SD** to create an SD project, or **Matrox Desktop - HD** to create an HD project), select the preset that matches the type of project you want to create. For example, if you want to create an NTSC project for playing back DV/DVCAM clips in a standard 4:3 editing environment, expand the **NTSC** and **Standard** folders under **Matrox Desktop - SD**, then select the **DV** preset.

3 Under **Location**, specify where you want to save the project on your hard drive.

4 Under **Name**, specify a name for your project.

5 Click **OK** to apply the settings.

📝 **Note** When a project uses the Desktop editing mode, Adobe Premiere Pro works like a VFW program as explained in "Using Matrox M.Key/100 with VFW programs" on page 5.

Important: If you unplug M.Key/100 when using Adobe Premiere Pro

Make sure that M.Key/100 is connected to your USB port when working with your Matrox Desktop project. If M.Key/100 is accidentally unplugged from your USB port while you are working in Adobe Premiere Pro, you must do the following:

1 Save your project.

2 Quit Adobe Premiere Pro and all other programs.

3 Reconnect M.Key/100 into the same USB port you were using.

4 Restart Adobe Premiere Pro and re-open your project.

Always reconnect M.Key/100 **before** starting Adobe Premiere Pro. If you reconnect M.Key/100 after starting Adobe Premiere Pro, your Matrox clips may appear as "offline" when you re-open your project. If this happens, unplug M.Key/100 and follow the above steps.

Using Matrox M.Key/100 with VFW programs

When using VFW programs to render material to an *.avi* file, such as in the case of a completed video production or an animation, you can use a Matrox codec to create a Matrox *.avi* file. For example, you may want to render an animation to Matrox DV/DVCAM format so that you can record it onto DV tape. You could also use your VFW program to render video to a Matrox *.avi* file so that you can import the file as a realtime clip into your Adobe Premiere Pro projects on Matrox Axio.

When rendering compositions or animations that have an alpha channel, you can select a "+ Alpha" Matrox VFW codec to render to a Matrox uncompressed or MPEG-2 *.avi* file that includes the alpha-key information. This *.avi* file will play back in real time on your Axio system, and will be automatically keyed when you place the clip in your Adobe Premiere Pro sequence.

Note Although Matrox has tested many VFW programs, there may be certain operational limitations when using Matrox M.Key/100 with some of these programs (as well as with untested programs).

Before you start rendering

Before you start rendering material to a Matrox *.avi* file, make the following settings in your Video for Windows program:

- Set the appropriate frame rate for the video format to which you are rendering. For example, if you are rendering to PAL format, set the frame rate to 25 fps.
- Set the frame size of your rendered material to full-screen:
  - 720 × 480 if you are rendering to NTSC or 486p @ 23.98 fps format using the DV/DVCAM, DVCPRO, DVCPRO50, or MPEG-2 I-frame codec (with or without alpha).
  - 720 × 576 if you are rendering to PAL format using the DV/DVCAM, DVCPRO, DVCPRO50, or MPEG-2 I-frame codec (with or without alpha).
  - 720×486 or 720 × 576 if you are rendering to Matrox uncompressed SD or Matrox M-JPEG format.
  - 1920×1080 or 1280×720 if you are rendering to uncompressed HD or DVCPRO HD format.
  - 1440×1080, 1920×1080, or 1280×720 if you are rendering to MPEG-2 I-frame HD format.
  - 480×270 or 320×180 if you are rendering to offline HD format. If you're rendering clips for use in an Adobe Premiere Pro project on Matrox Axio, set the frame size to 480×270 for an HDV 1080i, 1080i, or 1080p project, or 320×180 for a 720p project. For more information, see "Using the

Matrox Offline HD Codec" in your *Matrox Axio Installation and User Guide*.

- To render video using the same compression format, frame size, and frame rate as your source video but using a different video quality (data rate), scanning mode (interlaced or progressive), or bit depth (8-bit or 10-bit), such as to export uncompressed 1080i @ 29.97 fps clips to uncompressed 1080p @ 29.97 fps format, you must select the **Recompress Always** option so that your video will be recompressed during the export.

- If you'll be rendering audio, set the audio sample rate to 48 kHz and the sample size to 16-bit (mono or stereo).

- For best results, make sure you clear your program's **Data rate limit** option for rendered material. This ensures that your *.avi* files will be rendered at the particular video quality you select.

- If you're using Adobe Premiere Pro, set the **Fields** for rendering to **Lower Field First** for NTSC video, **Upper Field First** for PAL and interlaced HD video, or **No Fields (Progressive Scan)** for progressive video.

📝 **Note** Before rendering a lot of material, check that your rendered animations and transitions such as wipes and slides play back smoothly. If they appear jumpy, try adjusting the field dominance or field order for your rendered material. For example, if your transitions appear jumpy with the field dominance set to **Odd field** or **Field 1**, try switching the setting to **Even field** or **Field 2**.

Selecting color space conversion options

When you render material to an *.avi* file using a Matrox VFW codec, you can determine how you want the luminance levels and chroma information to be processed during the color space conversion that's performed during the render.

📝 **Note** The default settings for color space conversion provide good results for most applications. We recommend that you change these settings only when needed for special purposes.

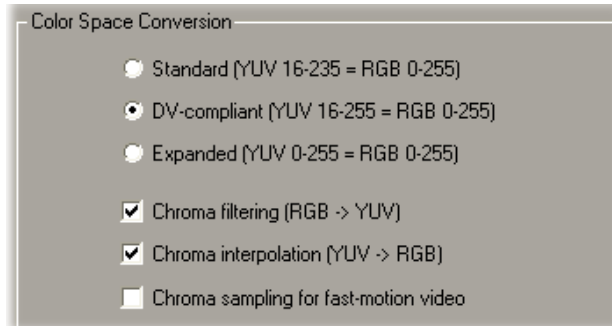⇒ **To select the color space conversion options you want:**

1 Right-click **My Computer**, then choose **Manage**, and double-click **Device Manager**.

2 Under **Sound, video and game controllers**, double-click **Video Codecs**.

3 Click **Properties**, then select one of the Matrox VFW codecs.

📝 **Note** All the available Matrox VFW codecs will be listed. You can select **Matrox VFW Software Codecs** to configure all the Matrox DV, M-JPEG, MPEG-2 I-frame SD, and offline HD codecs.

4 Click **Properties**, and then **Settings**.

5 In the provided dialog box under **Color Space Conversion**, select the options you want:

✎ **Note** If an option isn't supported by the particular codec(s) you are configuring, that option will not be available. Most options, however, are common to all the Matrox Video for Windows codecs. When these options are set for a particular codec, they are also set for the other codecs that support those options.

- **Standard** Renders video using standard broadcast luminance levels. Super black and super white luminance levels are clipped.
- **DV-compliant** Renders video using luminance levels appropriate for DV material. This ensures that the super white luminance levels of your video are retained.
- **Expanded** Renders video using the full range of luminance levels. Super black and super white luminance levels are retained. You may want to use this setting, for example, to render material on which you'll be applying luminance key effects.

ⓘ **Important** When rendering RGB graphics, selecting **Expanded** or **DV-compliant** will create super black and/or white in your rendered images. For example, if you select **Expanded**, all black in your RGB graphics will become super black, and white will become super white. To render your RGB graphics with standard black and white levels, set your luminance range to **Standard**.

- **Chroma filtering** and **Chroma interpolation** Select these options to adjust the chroma bandwidth of RGB graphics. This improves images that have abrupt changes between different colors, such as a blue box on a black or white background. You should select these options for most animation and compositing work (computer-generated material). For most video editing programs, however, it's best that you **not** select these options. If you find that your rendered images appear to be blurred, try clearing one or both of these options.

Using Matrox M.Key/100 with VFW programs

– **Chroma sampling for fast-motion video**   Select this option to help eliminate artifacts such as jagged edges and unwanted lines at the edges of fast-motion video (for PAL video only).

(i) **Important**   When rendering graphics and titles, make sure that **Chroma sampling for fast-motion video** is **not** selected, as this option can cause jagged edges to appear in your rendered images.

6 Click **OK** to save your settings. Any change you make to your selected luminance range setting (such as switching from **Standard** to **Expanded**) will only take effect the next time you start your VFW program.

Rendering material to a Matrox VFW .avi file

When you render material to an *.avi* file, such as when you render a finished video production or an animation, you must select the compressor (codec) you want to create the file. The compressor determines the quality of your rendered video. Refer to your program's documentation for instructions on how to select a compressor for your *.avi* file.

✎ **Note**   When specifying your Export Movie settings in Adobe Premiere Pro, you must set the **File Type** to **Microsoft AVI** on the **General** page, then select the compressor you want on the **Video** page.

⟹ **To create a Matrox Video for Windows *.avi* file:**

1 Select one of the following codecs from your program's list of available compressors:
   – **Matrox DV/DVCAM**   Renders video to DV or DVCAM format.
   – **Matrox DVCPRO**   Renders video to DVCPRO format.
   – **Matrox DVCPRO50**   Renders video to DVCPRO50 or D-9 format.
   – **Matrox DVCPRO HD**   Renders video to DVCPRO HD format (for 1080i and 720p video only).
   – **Matrox MPEG-2 I-frame**   Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ Main Level at a selected data rate (SD resolution only).
   – **Matrox MPEG-2 I-frame + Alpha**   Renders video to MPEG-2 intra-frame format with alpha using the 4:2:2 Profile @ Main Level at a selected data rate (SD resolution only).
   – **Matrox MPEG-2 I-frame HD**   Renders video to MPEG-2 intra-frame format using the 4:2:2 Profile @ High Level at a selected data rate.
   – **Matrox MPEG-2 I-frame HD + Alpha**   Renders video to MPEG-2 intra-frame format with alpha using the 4:2:2 Profile @ High Level at a selected data rate.
   – **Matrox Uncompressed SD**   Renders video to 8-bit or 10-bit uncompressed SD format.

- **Matrox Uncompressed SD + Alpha** Renders video to 8-bit or 10-bit uncompressed SD format with alpha.
- **Matrox Uncompressed HD** Renders video to 8-bit or 10-bit uncompressed HD format.
- **Matrox Uncompressed HD + Alpha** Renders video to 8-bit or 10-bit uncompressed HD format with alpha.
- **Matrox Offline HD** Renders video to a proxy HD video format for offline editing purposes.
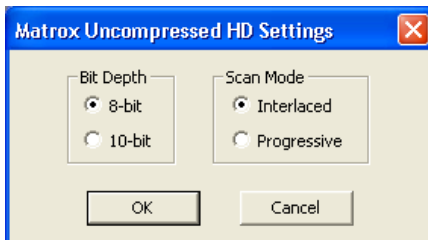
Note The Matrox M-JPEG codec will also be available to create clips for use on Matrox DigiSuite or DigiSuite LE. For information about configuring the Matrox M-JPEG codec, see your Matrox DigiSuite documentation.

2 If you've selected a Matrox codec that requires configuration, such as to select a data rate (video quality), click the **Configure** button. For details, see the following sections.

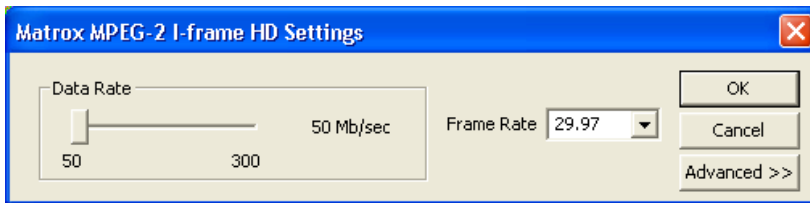### Configuring the Matrox Uncompressed codecs

When you click your program's **Configure** button to configure a Matrox Uncompressed (SD or HD resolution, with or without alpha), a dialog box similar to the following appears:

1 Under **Bit Depth**, select the bit depth you want for your video.
2 Under **Scan Mode**, select the scan mode of your video.
3 Click **OK** to save your selection. The settings you selected will be used each time you render material with your program, until you change the settings again.

Configuring the Matrox MPEG-2 I-frame codecs

When you click your program's **Configure** button to configure a Matrox MPEG-2 I-frame codec (SD or HD resolution, with or without alpha), a dialog box similar to the following appears:

1 Drag the **Data Rate** slider until your desired data rate is displayed. The higher the data rate you select, the better the video quality will be. Depending on the capabilities of your system, however, you may not be able to smoothly play back video at a high quality using your Video for Windows program.

2 Beside **Frame Rate**, select a frame rate from the list. Make sure the frame rate you select is appropriate for the format to which you are rendering.
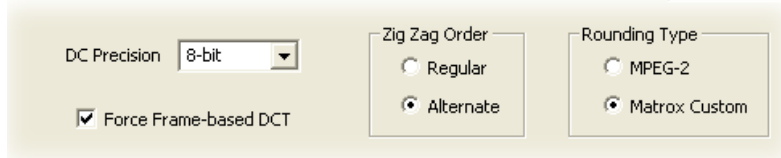
Note   The **Frame Rate** setting is not available if you're rendering to MPEG-2 I-frame SD format without alpha.

3 To apply advanced settings to your MPEG-2 I-frame file, click the **Advanced** button.

Note   The **Advanced** button is not available if you're rendering to MPEG-2 I-frame SD format without alpha. The default advanced settings should provide good results for most applications. We recommend that you change these settings only when needed for special purposes.

4 Beside **DC Precision**, select the bit-depth precision of the DC intra block. The higher the DC precision value that's used to render your video, the more likely that the DC content will be increased at the expense of the AC content in the encoded stream. This may result in lowering the overall quality of the compressed stream at a specified data rate.

5 Under **Zig Zag Order**, select one of the following:

  – **Regular**   Sets the regular (default) zig zag scanning pattern of the AC coefficient of the DCT block as defined in the ISO/IEC 13818-2 (figure 7-2) specification documentation.

Using Matrox M.Key/100 with VFW programs

- **Alternate**   Sets an alternate zig zag scanning pattern of the AC coefficient of the DCT block as defined in the ISO/IEC 13818-2 (figure 7-3) specification documentation. Use this setting when capturing or rendering video at a high data rate (for example, at a data rate of 100 Mb/sec or higher).

6 Under **Rounding Type**, select one of the following:

- **MPEG-2**   Rounds the AC coefficients up to the nearest whole number when calculating the quantization coefficient.

- **Matrox Custom**   Truncates the AC coefficients to the lowest whole number when calculating the quantization coefficient. In some cases, this setting may yield less artifacts in graphics.

7 Select the **Force Frame-based DCT** setting to render macroblocks as frames rather than as fields. In some cases, graphics will yield less artifacts if this option is selected.

8 Click **OK** to save your settings. The settings you selected will be used each time you render material with your program, until you change the settings again.

Matrox M.Key/100 specifications

General

USB interface	As defined in Chapter 7 of the USB specification
Regulatory compliance	FCC Class B, CE Mark Class B, RoHS Directive 2002/95/EC, WEEE Directive 2002/960/EC
Dimensions	68.48mm (L) × 24.94mm (H)
Total power consumption	58mA in USB active mode, and 0.5 mA in suspend mode

Environmental specifications

- Minimum/maximum ambient operating temperatures: 0 to 70º C

- Operating humidity: 20 to 80% relative humidity (non-condensing)

- Minimum/maximum storage temperature: –10 to 85º C

- Storage humidity: 5 to 95% relative humidity (non-condensing)

Compliance Statements

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide   These devices have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna • Increase the separation between the equipment and receiver • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected • Consult the dealer or an experienced radio/TV technician for help.

WARNING   Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment. The use of shielded cables for connection of the equipment is required to meet FCC requirements.

Declaration of conformity of a Class B digital device according to the FCC rules

We, the Responsible Party   Matrox, 625 State Route 3, Unit B, Plattsburgh, NY 12901-6530 • Telephone: (514) 822-6000 (ext. 2026) • Attention: Conformity Group

Declaration   The Matrox hardware products supported by this guide comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation. Any question regarding this declaration should be forwarded to the above coordinates.

Canada

(English) Industry Canada Compliance Statement
Remark for the Matrox hardware products supported by this guide   These digital devices do not exceed the Class B limits for radio noise emission from digital apparatus devices set out in the Radio Interference Regulation of Industry Canada.

(Français) Conformité avec les exigences du ministère de l'Industrie Canada

Remarque sur les produits matériels Matrox couverts par ce guide   Ces appareils numériques n'émettent aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Europe

(English) European user's information – Declaration of Conformity
Remark for the Matrox hardware products supported by this guide   These devices comply with EC Directive 89/336/EEC for a Class B digital device. They have been tested and found to comply with EN55022/CISPR22 and EN55024/CISPR24. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet EC requirements, shielded cables must be used to connect the equipment.

(Français) Informations aux utilisateurs Européens – Déclaration de conformité

Remarque sur les produits matériels Matrox couverts par ce guide   Ces unités sont conformes à la directive communautaire 89/336/EEC pour les unités numériques de classe B. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55022/CISPR22 et EN55024/CISPR24. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre l'équipement doivent être blindés.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch   Diese Geräte entsprechen EC Direktive 89/336/EEC für ein digitales Gerät Klasse B. Sie wurden getestet und entsprechen demnach EN55022/CISPR22 und EN55024/CISPR24. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des ausrüstung abgeschirmte Kabel verwendet werden.

(Italiano) Informazioni per gli utenti europei – Dichiarazione di conformità

Nota per i prodotti hardware Matrox supportati da questa guida   Questi dispositivi sono conformi alla direttiva CEE 89/336/EEC relativamente ai dispositivi digitali di Classe B. Sono stati provati e sono risultati conformi alle norme EN55022/CISPR22 e EN55024/CISPR24. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, l'apparecchiatura vanno collegati alla scheda grafica con cavi schermati.

(Español) Información para usuarios europeos – Declaración de conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual   Estos dispositivos cumplen con la directiva de la CE 89/336/EEC para dispositivos digitales de Clase B. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55022/CISPR22 y EN55024/CISPR24. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el equipo.

matrox

Digital Video Solutions

www.matrox.com/video