

Matrox X.mio3

Installation Manual

June 30, 2016

matrox[®]
Digital Video Solutions

Y11324-101-0970

Trademarks

Matrox Electronic Systems Ltd.	Matrox [®] , DSX [™] , X.mio [™] , DSX.sdk [™] , DSX.utils [™]
Intel Corporation	Intel [®] , SpeedStep [®]
Microsoft Corporation.....	Microsoft [®] , Windows [®]
Linus Torvalds.....	Linux [®]
PCI-SIG	PCI-SIG [®] , PCI Express [®] , PCIe [®] , PCI-X [®] , PCI [™]

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

The hardware warranty for this product can be found at: <http://www.matrox.com/video/en/support/developer/private/warranty/>

Copyright © 2016 Matrox Electronic Systems Ltd. • All rights reserved.

Disclaimer Matrox Electronic Systems Ltd. reserves the right to make changes in specifications at any time and without notice. The information provided by this document is believed to be accurate and reliable. However, no responsibility is assumed by Matrox Electronic Systems Ltd. for its use; nor for any infringements of patents or other rights of third parties resulting from its use. No license is granted under any patents or patent rights of Matrox Electronic Systems Ltd.

Unauthorized recording or use of broadcast television programming, video tape, or other copyrighted material may violate copyright laws. Matrox Electronic Systems Ltd. assumes no responsibility for the illegal duplication, use, or other acts that infringe on the rights of copyright owners.

Matrox Electronic Systems Ltd.
1055 St. Regis Blvd., Dorval, Quebec, Canada H9P 2T4
Tel: (514) 685-2630 Fax: (514) 685-2853 World Wide Web: www.matrox.com

MATROX SOFTWARE LICENSE AGREEMENT

(HEREAFTER REFERRED TO AS LICENSE)

THIS IS A LEGAL AGREEMENT BETWEEN THE LICENSEE AND MATROX ELECTRONIC SYSTEMS LTD ("MATROX") CONCERNING THE USAGE OF THE MATROX SOFTWARE. BY DOWNLOADING, INSTALLING, COPYING, ACCESSING, CLICKING ON AN "ACCEPT" BUTTON, OR OTHERWISE USING THE SOFTWARE, THE LICENSEE AGREES TO THE TERMS OF THIS LICENSE. IF YOU ARE ACCEPTING THESE TERMS ON BEHALF OF YOUR COMPANY, ORGANIZATION, EDUCATIONAL INSTITUTION, OR AGENCY, INSTRUMENTALITY, OR DEPARTMENT OF THE FEDERAL GOVERNMENT AS ITS AUTHORIZED LEGAL REPRESENTATIVE, YOU REPRESENT AND WARRANT THAT YOU HAVE FULL AUTHORITY TO BIND LICENSEE TO THESE TERMS. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PLEASE RETURN YOUR MATROX PRODUCT. IF THE SOFTWARE WAS DOWNLOADED, DESTROY ALL COPIES OF THE SOFTWARE.

In this License "Software" refers to: any firmware, software, associated software components, media, printed materials, and "online" or electronic documentation related to Matrox products.

The Software is not sold, and instead is only licensed for use, strictly in accordance with this document. This License does not cover the sale of hardware, since it may not necessarily be sold as a package with the Software. This License sets forth the terms and conditions of the Software license only.

Any Software provided to Licensee is the copyrighted work of Matrox and/or third party software suppliers (if any). The present License does not give Licensee any intellectual property rights to the Software or its derivatives. The downloading and/or the use of any Software are subject to the following restrictions and limitations:

LICENSES:

If you are an end user, the "End User License" shall apply to you.

If you are an original equipment manufacturer (OEM), the "OEM License" shall apply to you.

END USER LICENSE

- 1 Licensee may install the Software on an unlimited number of computers owned or leased by Licensee in any location. The Software is subject to a restricted license therefore Licensee must use the Software on a single computer owned or leased by Licensee at a time, in conjunction with and for the purpose of, operating the Matrox hardware product. Use of the Software in conjunction with non-Matrox products is prohibited and not licensed hereunder. Licensee shall also have the right to make one copy of the Software in any computer-readable or printed form for back-up or archival purposes;
- 2 No right to recopy, publish, display, network, rent, loan, lend, assign, sell, distribute, license, sub-license, alter, modify, disassemble, de-compile, create derivative works or reverse engineer any Software in any manner whatsoever is hereby given, except as provided in this License. Violation may result in severe civil and/or criminal penalties, as violators will be prosecuted to the maximum extent possible;
- 3 Licensee agrees to treat the Software as confidential information, and shall protect said information by using the same degree of care Licensee uses to protect Licensee's own confidential information, but no less than a reasonable degree of care, to prevent the unauthorized use, dissemination, disclosure or publication of such, or to use this Software to: (i) develop inventions directly derived from confidential information to seek patent protection; (ii) assist in the analysis of Licensee's patents and patent applications; or (iii) modify Licensee's existing patents or patent applications;
- 4 Licensee may only provide and disclose parts of the Software to third parties who have a need-to-know for the purpose of installation, service integration and/or support of said Software within Licensee's product. In such event, Licensee may only disclose the relevant and necessary parts of the Software to permit the third party to accomplish his work provided that all such disclosures shall be subject to the terms and conditions of this License;
- 5 Licensee may not grant any sublicense, lease or other right in the Software to others;

- 6 Notwithstanding any other provision in this License, if Licensee provides any ideas, suggestions or recommendations to Matrox regarding the Licensed Software and/or Licensee's product ("Feedback"), Matrox is free to use and incorporate such Feedback in Matrox's products, without payment of royalties or other consideration to Licensee;
- 7 Licensee shall not have the right to alter or remove any Matrox or third party copyright, trademark or patent notices in the Software.

OEM LICENSE

Licensee may reproduce and distribute the Software only as an integral part of or incorporated in Licensee's product or as a standalone Software maintenance update for existing end users of Licensee's products, excluding any other standalone products, subject to these conditions:

- 1 This Software is subject to a restrictive license therefore it is licensed for use only in conjunction with the Matrox hardware product. Use of the Software in conjunction with non-Matrox products is prohibited and not licensed hereunder;
- 2 No right to recopy, publish, display, sell, network, rent, loan, lend, distribute, license, sub-license, alter, modify, disassemble, de-compile, create derivative works or reverse engineer any Software in any manner whatsoever is hereby given, except as provided in this License. Violation may result in severe civil and/or criminal penalties, as violators will be prosecuted to the maximum extent possible;
- 3 Licensee agrees to treat the Software as confidential information, and shall protect said information by using the same degree of care Licensee uses to protect Licensee's own confidential information, but no less than a reasonable degree of care, to prevent the unauthorized use, dissemination, disclosure or publication of such, or to use this Software to: (i) develop inventions directly derived from confidential information to seek patent protection; (ii) assist in the analysis of Licensee's patents and patent applications; or (iii) modify Licensee's existing patents or patent applications;
- 4 Licensee may only distribute the Software to Licensee's customers pursuant to a written license agreement. At a minimum such license shall safeguard Matrox's ownership rights to the Software and such agreement shall contain similar terms and obligations;
- 5 Licensee may only provide and disclose parts of the Software to third parties who have a need-to-know for the purpose of installation, service integration and/or support of said Software within Licensee's product. In such event, Licensee may only disclose the relevant and necessary parts of the Software to permit the third party to accomplish his work provided that all such disclosures shall be subject to the terms and conditions of this License;
- 6 Notwithstanding any other provision in this License, if Licensee provides any ideas, suggestions or recommendations to Matrox regarding the Licensed Software and/or Licensee's product ("Feedback"), Matrox is free to use and incorporate such Feedback in Matrox's products, without payment of royalties or other consideration to Licensee.
- 7 Licensee shall not have the right to alter or remove any Matrox or third party copyright, trademark or patent notices in the Software.

GENERAL LICENSE TERMS: (APPLICABLE TO BOTH END-USERS & OEM'S)

There are inherent dangers in the use of any software available for downloading on the Internet and Matrox cautions Licensee to ensure that Licensee completely understands the potential risks before downloading any of the Software. Licensee is solely responsible for adequate protection and backup of the data and equipment used in connection with any of the Software, and Matrox will not be liable for any damages that may be suffered in connection with use of the Software.

Licensee hereby acknowledges and agrees that this License, and all its terms and conditions, automatically applies, without other notice, to future updates of the Software, firmware, BIOS, drivers and associated utilities.

In addition, certain third party intellectual property may be provided with or included in the Software. The third party license terms accompanying such software, found at <http://www.matrox.com/video/licenses> and in the license.txt file located in the root installation directory, will govern your use of such software. Matrox does not warrant and is not

liable for such third party intellectual property. Licensee acknowledges and agrees to comply with the terms of all applicable third party software licenses if any. The terms and conditions of third party license agreements may be updated from time to time. It is the Licensee responsibility to verify that the agreement listed is current and applicable. Please note that this list of third party licenses is not exhaustive and was determined according to Matrox's understanding and to the best of its knowledge.

PRE-RELEASE LICENSE EXCLUSION: If you are using a version of the licensed Software that is designated, without limitation, as an alpha, beta, engineering sample, preliminary or early access version of the Software, then; (a) the Software is deemed to be pre-release code (e.g. alpha or beta, engineering sample, preliminary, early access, etc.), which may not be fully functional and which Matrox may substantially modify in development of a commercial version, and for which Matrox makes no assurances that it will ever develop or make generally available in a commercial version, and (b) Licensee shall have the right to use the Software only for the duration of the pre-release term or until the commercial release, if any, of the Software, whichever is shorter. For clarity, a remedy to any bug, defect, error or fault in any pre-release version of the Software will absolutely require upgrading to a new version of the Software. Matrox reserves the right to change any content of this new version of the Software at its sole discretion.

COPYRIGHT

All title, including but not limited to copyrights, in and to the Software and any copies thereof are owned by Matrox or its suppliers. All title and intellectual property rights in and to the content which may be accessed through use of the Software is the property of the respective content owner and may be protected by applicable copyright or other intellectual property laws and treaties. This License grants you no rights to use such content. All rights not expressly granted are reserved by Matrox.

DISCLAIMER OF WARRANTIES

LICENSEE EXPRESSLY ACKNOWLEDGES AND AGREES THAT USE OF THE SOFTWARE IS AT LICENSEE'S SOLE RISK. THE SOFTWARE IS PROVIDED "AS IS" AND WITHOUT WARRANTY OF ANY KIND AND MATROX EXPRESSLY DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF ITS SOFTWARE AND ANY THIRD PARTY INTELLECTUAL PROPERTY. MATROX DOES NOT WARRANT THAT THE CONTENTS OF THE SOFTWARE WILL MEET LICENSEE'S REQUIREMENTS, OR THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT DEFECTS IN THE SOFTWARE WILL BE CORRECTED. THE ENTIRE RISK ASSOCIATED WITH THE USE OF THE SOFTWARE IS ASSUMED BY LICENSEE. FURTHERMORE, MATROX DOES NOT WARRANT OR MAKE ANY REPRESENTATIONS REGARDING THE USE OR THE RESULTS OF THE USE, OF THE SOFTWARE OR ANY THIRD PARTY INTELLECTUAL PROPERTY IN TERMS OF ITS CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE. SHOULD THE CONTENTS OF THE SOFTWARE PROVE DEFECTIVE, LICENSEE ASSUMES THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO LICENSEE.

LICENSEE ACKNOWLEDGES AND AGREES THAT LICENSEE IS SOLELY RESPONSIBLE FOR DETERMINING WHETHER ANY THIRD PARTY PATENT OR COPYRIGHT LICENSES, INCLUDING BUT NOT LIMITED TO VARIOUS AUDIO AND VISUAL STANDARDS, ARE NECESSARY TO USE, IMPLEMENT OR DISTRIBUTE THIS PRODUCT, WHICH INCLUDES ANY OR ALL SOFTWARE OR HARDWARE. LICENSEE IS RESPONSIBLE TO ADVISE LICENSEE'S CUSTOMERS OF THE LIMITATIONS PROVIDED HEREIN.

LIMITATION OF LIABILITY

UNDER NO CIRCUMSTANCES SHALL MATROX, ITS SISTER COMPANIES, ITS SUBSIDIARIES BE LIABLE FOR ANY DIRECT, INDIRECT, PUNITIVE, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES THAT RESULT FROM THE USE OF, OR INABILITY TO USE, THE SOFTWARE. THIS LIMITATION APPLIES WHETHER THE ALLEGED LIABILITY IS BASED ON CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR ANY OTHER BASIS, EVEN IF MATROX HAS BEEN ADVISED OF THE POSSIBILITY OF

SUCH DAMAGE. BECAUSE SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, MATROX'S LIABILITY IN SUCH JURISDICTIONS SHALL BE LIMITED TO THE MINIMUM REQUIRED BY LAW.

UNAUTHORIZED USE. THIS SOFTWARE RELATED THERETO ARE NOT DESIGNED, INTENDED, AUTHORIZED OR WARRANTED TO BE SUITABLE FOR USE OR RESALE IN ANY TYPE OF SYSTEM OR OTHER APPLICATIONS RELATED TO, HAZARDOUS OR POTENTIALLY HAZARDOUS ENVIRONMENTS OR APPLICATIONS REQUIRING HIGH-AVAILABILITY OR FAIL-SAFE PERFORMANCE, WHERE PERSONAL INJURY OR DEATH MAY OCCUR, SUCH AS MEDICAL SYSTEMS, LIFE SUSTAINING, LIFE SAVING SYSTEMS, OPERATION OF NUCLEAR FACILITIES, AIRCRAFT NAVIGATION OR COMMUNICATION SYSTEMS, AIR TRAFFIC CONTROL, PUBLIC WORKS, WEAPONS SYSTEMS, OR ANY OTHER APPLICATION IN WHICH THE FAILURE OF A PRODUCT COULD LEAD TO PROPERTY DAMAGE, ENVIRONMENTAL DAMAGE, OR PERSONAL INJURY. LICENSEE WILL NOT USE, OR PERMIT TO BE USED, THE PRODUCTS FOR SUCH HIGH-AVAILABILITY, FAIL-SAFE OR CRITICAL APPLICATIONS AND FURTHER, LICENSEE AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS MATROX AND ITS MANAGERS, DIRECTORS, OFFICERS, EMPLOYEES, AGENTS, AFFILIATES, SUCCESSORS, ASSIGNS AND ITS 3RD PARTY SUPPLIERS FROM AND AGAINST ANY ACTION, SUIT, PROCEEDING, COST, EXPENSE, DAMAGES, AND LIABILITY (INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES) ARISING OUT OF , OR RELATED TO, THE BREACH OF LICENSEE'S OBLIGATIONS RELATED HERETO, EVEN IF SUCH CLAIM ALLEGES THAT MATROX WAS NEGLIGENT REGARDING THE DESIGN OR MANUFACTURE OF THE SOFTWARE.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITIES FOR THIRD PARTY SOFTWARE INCLUDED WITH OR IN THE SOFTWARE. ALL THIRD PARTY SOFTWARE INCLUDED WITH THE SOFTWARE IS PROVIDED ON AN "AS IS" BASIS. MATROX AND ITS 3RD PARTY SUPPLIERS MAKE NO WARRANTY TO LICENSEE, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT, REGARDING ANY THIRD PARTY SOFTWARE, OR ITS USE AND OPERATION ALONE OR IN COMBINATION WITH LICENSEE PRODUCTS. NEITHER LICENSEE, NOR ITS EMPLOYEES, AGENTS, OR DISTRIBUTORS HAVE ANY RIGHT TO MAKE ANY OTHER REPRESENTATION, WARRANTY OR PROMISE WITH RESPECT TO ALL THIRD PARTY SOFTWARE INCLUDED WITH THE SOFTWARE.

MATROX HAS NO OBLIGATION TO INDEMNIFY, DEFEND OR HOLD LICENSEE HARMLESS FROM AND AGAINST ANY CLAIM THAT ANY THIRD PARTY SOFTWARE INFRINGES ANY THIRD PARTY PATENT, COPYRIGHT, TRADEMARK OR OTHER INTELLECTUAL PROPERTY RIGHT. LICENSEE WILL PROMPTLY NOTIFY MATROX IN WRITING OF ANY SUCH CLAIM.

MATROX HAS NO OBLIGATION TO INDEMNIFY, DEFEND OR HOLD LICENSEE HARMLESS FROM AND AGAINST ANY CLAIMS OF INFRINGEMENT OF INTELLECTUAL PROPERTY THAT READS UPON OR IS INFRINGED BY A GENERALLY RECOGNIZED AUDIO, VIDEO, TECHNOLOGY OR PATENT STANDARD OR RECOMMENDATIONS, INCLUDING WITHOUT LIMITATION AVC/H.264, IEEE 1394, JPEG, JPEG2000 AND MPEG-4.

IN ANY EVENT, MATROX'S TOTAL CUMULATIVE LIABILITY TO LICENSEE FOR ANY AND ALL CAUSE OF ACTION SHALL BE LIMITED TO THE AGGREGATE OF ALL AMOUNTS PAID BY LICENSEE TO MATROX, DURING THE TWELVE (12) MONTH PERIOD PRIOR TO OBTAINING A FINAL, NONAPPEALABLE JUDGMENT OR \$50,000.00 USD, WHICHEVER IS LOWER. THE FOREGOING LIMITATIONS WILL APPLY EVEN IF THE ABOVE STATED REMEDY FAILS OF ITS ESSENTIAL PURPOSE.

TERMINATION

This License will automatically terminate if Licensee fails to comply with any of the terms and conditions hereof. In such event, Licensee must destroy all copies of the Software and all of its component parts. Matrox reserves the right to terminate this License without prejudice to any additional recourses Matrox may have against Licensee if Licensee violates any of this Licenses' terms and conditions.

Matrox will not, by reason of the termination of this License, be liable for compensation, reimbursement or damages on account of the loss of prospective profits on anticipated sales, or on account of expenditures, investments, leases, or commitments in connection with the Licensee's business or goodwill or otherwise. If Licensee commences or participates in any legal proceeding against Matrox then Matrox may, in its sole discretion, suspend or terminate all license grants and any other rights provided under this License during the pendency of such legal proceedings.

MISCELLANEOUS

If any provision of this License is inconsistent with, or cannot be fully enforced under, the law, such provision will be construed as limited to the extent necessary to be consistent with and fully enforceable under the law. This License is the final, complete and exclusive agreement between the parties relating to the subject matter hereof, and supersedes all prior or contemporaneous understandings and agreements relating to such subject matter, whether oral or written. This License may only be modified in writing signed by an authorized officer of Matrox. Licensee agrees that it will not ship, transfer or export the Software into any country, or use the Software in any manner, prohibited by the United States Bureau of Industry and Security and shall fully comply with all United States relevant export laws, restrictions or regulations and any other applicable export and import laws.

Controlling Law. The validity, performance and construction hereof shall be governed by and interpreted in accordance with the laws of the Province of Quebec. Both parties hereby irrevocably submit to the exclusive jurisdiction of the Courts of the district of Montreal, Province of Quebec, Canada with regard to any dispute arising out of or in connection with this License.

Additional information may be available on the Matrox website. If used, this site may contain other proprietary notices and copyright information, the terms of which must also be observed and followed.

The failure of Matrox to enforce at any time any of the provisions of this License, or the failure to require at any time performance by the Licensee of any of the provisions of this License, shall in no way be construed to be a present or future waiver of such provisions, nor in any way affect the right of Matrox to enforce each and every such provision thereafter.

Any and all articles and/or sections which by their nature are required to survive termination of this License shall survive.

ANY INTERPRETATION OF THE CONTENTS, RIGHTS AND OBLIGATIONS OF THE CONTENTS OF THIS NOTICE AND/OR MATROX WEB SITE SHALL BE INTERPRETED IN ACCORDANCE WITH THE LAWS OF QUEBEC.

All rights reserved by Matrox.

Matrox reserves the right to change Software specification without notice. All intellectual property, including without limitation, trademarks and copyrights are the property of their respective owners and any unauthorized use thereof is strictly prohibited.

COPYRIGHT © 2015 Matrox is a trademark of Matrox Electronic Systems Ltd.

Your notes

Contents

Chapter 1

Introducing Matrox DSX

Matrox DSX Topology API overview	2
Supported operating systems and development platform.....	2
Validated systems and devices.....	2
DSX system recommendations	2

Chapter 2

Preparing for the DSX Installation

Before you install your DSX cards	4
Start with a functioning system.....	4
Configuring your system's power management.....	4
BIOS power management configuration.....	4
Windows power management configuration.....	4
Linux power management configuration	5
Avoid costly damage	5
Plan for adequate ventilation	6

Chapter 3

Installing and Configuring Your Matrox X.mio3 FH and X.mio3 LP Hardware

Connecting the audio and LTC cables to your X.mio3 FH card	10
Audio and LTC connections for X.mio3 FH /4 models	10
Audio and LTC connections for X.mio3 FH /6, /8, and /X2 models.....	11
Connecting the GPI cable bracket to your X.mio3 FH card	12
GPI cable bracket connections.....	13
GPI connector pinouts.....	13
CMOS circuit connection to GPI cable bracket.....	14
Installing your X.mio3 FH and X.mio3 LP card.....	15
Before restarting your computer.....	16
Connecting your video cables to the X.mio3 FH and X.mio3 LP card.....	17
Configuring the X.mio3 FH and X.mio3 LP inputs and outputs.....	18
Upgrading your X.mio3 FH and X.mio3 LP card	19
Enabling safety recovery mode after a failed firmware update	19

Chapter 4**Installing Your Matrox X.mio3 IP Hardware**

Installing your X.mio3 IP card.....	22
Before restarting your computer	23
Connecting your SFP+ transceivers to the X.mio3 IP card	23
Connecting your fiber optic cables to the X.mio3 IP card	24
Understanding the Matrox X.mio3 IP LEDs.....	25
Upgrading your X.mio3 IP card	25
Enabling safety recovery mode after a failed firmware update.....	26

Chapter 5**Installing Your DSX Software for Windows**

Installing the Matrox software	30
Installing the Matrox software in silent mode	31
Installing the Matrox SDK.....	31
Uninstalling the Matrox software	32
Updating the Matrox Firmware	32
Running the Matrox Firmware Updater	33
Running the updater manually	33
Running the updater in silent mode	34
Additional installation information	35
Ignoring the Found New Hardware Wizard	35
Disabling Sleep and Hibernate modes in Windows 10, 8, and 7.....	35
Windows notification area error messages	36
Installing the Matrox VFW software codecs on a system without DSX hardware	36

Chapter 6	
Installing Your DSX Software for Linux	
Installing the Matrox software	38
Installing libdispatch.....	38
Installing the Matrox software installation package	41
Installing the Matrox SDK	42
Uninstalling the Matrox software	42
Updating the Matrox Firmware	43
Running the Matrox Firmware Updater.....	44
Running the updater in silent mode.....	44
Additional installation information	46
Disabling suspend mode	46
Chapter 7	
Monitoring Your DSX System in Windows	
Overview	48
Using X.info to display DSX information	48
Displaying system information	48
Displaying hardware information	50
Monitoring your DSX hardware operating temperatures	51
Error notification	51
Chapter 8	
Monitoring Your DSX System in Linux	
Overview	54
Using mveXinfo to display DSX information	54
Monitoring your DSX hardware operating temperatures	55
Error notification	55
Appendix A	
DSX Specifications	
X.mio3 FH card	58
General.....	58
Dimensions.....	58
Typical operating voltages and current consumption	59
Connector types.....	59
Video input signals.....	59
Video output signals	59

Environmental specifications	60
X.mio3 LP card	61
General	61
Dimensions.....	61
Typical operating voltages and current consumption	62
Connector types.....	62
Video input signals	62
Video output signals	62
Environmental specifications	63
X.mio3 IP card	64
General	64
Dimensions.....	64
Typical operating voltages and current consumption	65
Connector types.....	65
Input signals	65
Output signals	66
Environmental specifications	66
Appendix B	
Validated Transceivers	
X.mio3 IP validated transceivers.....	68
Validated 1310 and 1550 nm single-mode SFP transceivers	68
Validated 850 nm multi-mode SFP transceivers	69
Appendix C	
DSX Technical Support	
Registration	72
DSX OEM technical support	72
DSX applications engineering	72
Contacting us by telephone	72
Matrox Video Products Developer Forum	72
Index	73

1

Introducing Matrox DSX

This chapter provides an overview of Matrox DSX Topology API hardware.

Matrox DSX Topology API overview

Matrox DSX Topology API hardware includes a comprehensive selection of high-density video and audio cards that provide a full range of broadcast-quality I/O. This PC-based hardware is available in various form factors, and offers advanced hardware processing capabilities, such as up/down/cross conversion, video compositing, audio mixing, frame synchronization, and fail-safe capabilities that allow OEMs to build a range of solutions that meet the requirements of diverse markets. For the latest information on available DSX products, see the Matrox Video Developer Products website at www.matrox.com/video/products.

Supported operating systems and development platform

For a list of the supported operating systems and the development platform required for the current DSX release, see your *Matrox DSX Release Notes*.

Validated systems and devices

For an updated list of validated motherboards, systems, and devices for use with Matrox DSX, refer to the Matrox Private Developer Support website at www.matrox.com/video/support/developer/private_support/login.cfm.

DSX system recommendations

For optimal system performance with Matrox DSX hardware, it's recommended that you have at least 1 GB of RAM per core (for example, 16 GB of RAM for a 16-core system). You must also configure your system's power management in your computer's BIOS and in your Windows power options as explained in “[Configuring your system's power management](#)” on page 4.

2

Preparing for the DSX Installation

This chapter explains how to prepare for installing your DSX hardware.

Before you install your DSX cards

Read the following information carefully before attempting to install DSX cards in your computer system.

Start with a functioning system

Before attempting any DSX installation, you should have a computer with a DSX-supported operating system fully installed and functioning smoothly. This will avoid potential problems later on.

Configuring your system's power management

Before installing DSX hardware, you must configure your system's power management to optimize the performance of your DSX system. Your system's power management is configured in your computer's BIOS and, on a Windows operating system, in your Windows power options.

BIOS power management configuration

Some computers provide advanced power management settings in the BIOS. If these settings are available in your computer's BIOS, you must configure them as follows:

- For **Intel Dynamic power Technology**, set **Enhanced Intel SpeedStep Technology** to **Disable**.
- For **System Power Options**, set **PCIe ASPM Support** to **Disable**.

For details on how to configure your computer's BIOS settings, see your computer's documentation.

Windows power management configuration

The procedure for configuring your Windows power management settings depends on your version of Windows as explained below.

⇒ On Windows 10, 8, 7, Server 2012, or Server 2008:

- 1 In **Control Panel**,
 - On Windows 10, 8, or 7, choose **Hardware and Sound** or **System and Security > Power Options**.
 - On Windows Server 2012 or 2008, choose **Hardware > Power Options**.



Note On Windows 10, 8, or 7, **Hardware and Sound** and **System and Security** appear if you are in the default **Category** view. Otherwise, only **Power Options** appears.

- 2 Select **High performance** as the power plan, and click **Change plan settings**.
- 3 Click **Change advanced power settings**, and customize the settings (if available) as follows:
 - For **Hard disk**, set **Turn off hard disk after** to **Never**.
 - For **USB settings**, set **USB selective suspend setting** to **Disabled**.

- For **PCI Express**, set **Link State Power Management** to **Off**.
- For **Processor power management**, set **Minimum processor state** and **Maximum processor state** to **100%**.

4 Click **Apply** to save your settings, then click **OK**.

For details on how to configure your Windows power management settings, see your Windows documentation.

Linux power management configuration

The procedure for configuring your Linux power management settings depends on your Linux operating system as explained below.

⇒ On Ubuntu 14.10 or earlier:

- Type the following:
\$ **sudo update-rc.d ondemand disable**

⇒ On CentOS 7:

- In */etc/tuned/active_profile*, replace *balanced* by *throughput-performance* and save the file.

Avoid costly damage

Static electricity from your body can damage your DSX cards or your computer. Although you may not notice it, static electricity is generated every time you move. It's often too small to cause a spark, but it can still cause damage to sensitive electronic components or at least reduce their lifespan.

To avoid damage, please observe the following precautions:

- Do not remove DSX cards from their antistatic bags until you're ready to install them. Before removing the cards, place the packages within easy reach of the area where you intend to perform the installation.
- You should avoid touching the chips and other components on the circuit boards. Try to handle the cards by their edges.
- Try to work in an area where the relative humidity is at least 50%.
- Do not wear wool or synthetic clothing. These fabrics tend to generate more static electricity than cotton, which is best for this kind of work.
- Turn off the power switches on your computer and its connected components.

Once you've opened your computer, drain static electricity from your body by touching a bare metal surface on your computer chassis before you install or remove any parts of your system. If you have a grounding wrist strap, use it while handling and installing any components in your computer.

Plan for adequate ventilation

Before using your DSX-equipped system, you must ensure adequate ventilation in your computer. Because your DSX components are positioned closely together, they produce a significant amount of heat. Forced air ventilation is therefore extremely important. Inadequate ventilation may result in erratic operating behavior.

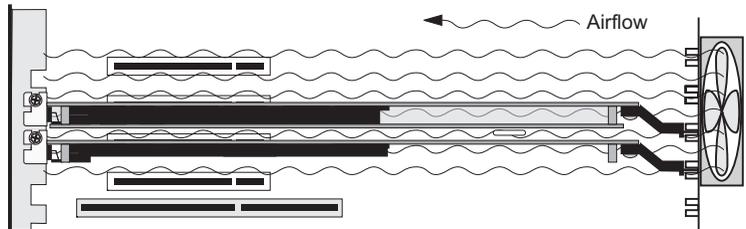
Your DSX system is equipped with numerous temperature sensors to let you monitor the operating temperature of your various DSX hardware components. These temperatures are displayed in the Matrox X.info program on a Windows operating system (see [Chapter 7, “Monitoring Your DSX System in Windows”](#) for more information) and in the Matrox mveXinfo program on a Linux operating system (see [Chapter 8, “Monitoring Your DSX System in Linux”](#)).

The best solution is to provide as much airflow as possible between the cards. We recommend that you install a fan, as explained below:

- Position a fan directly facing the end of the DSX cards, as shown in the illustration below. You should make sure that the fan directs air between the various circuit boards. When installed, this fan works in conjunction with your PC exhaust fan (located at the back of the PC case) to evacuate warmed air away from your DSX cards.



Note The illustration below does not represent a specific Matrox card. It is only used to show proper fan positioning.



- Choose a fan that has a minimum rating of 60 to 80 CFM (CFM stands for cubic feet of air displaced per minute and is a measurement standard for fans).



Note It is mandatory to provide sufficient airflow so that the temperature sensors on your DSX hardware remain within acceptable levels at all times. To determine the amount of airflow to provide, monitor the temperature sensors while all the system processing is maximized on your DSX system at the maximum expected ambient temperature, and adjust the airflow, as required.

- Some computers may require you to increase the speed of your cooling fan by configuring the computer’s BIOS settings. For details about configuring your computer’s BIOS settings, see your computer’s documentation.
- Make sure to mount the fan as close to the cards as possible. In most systems, you should be able to place the fan directly behind the card guide slots.

- Make sure to close your computer's cover once you've finished installing your hardware. This ensures that the airflow generated by the fan is directed through the cards and does not escape through the top of your system.



Caution Fan installation should be done by a qualified technician. Improper installation procedures can result in damage to your DSX components and/or your computer system. Matrox Electronic Systems Ltd. is not responsible for any damage caused by faulty installation.

Your notes

3

Installing and Configuring Your Matrox X.mio3 FH and X.mio3 LP Hardware

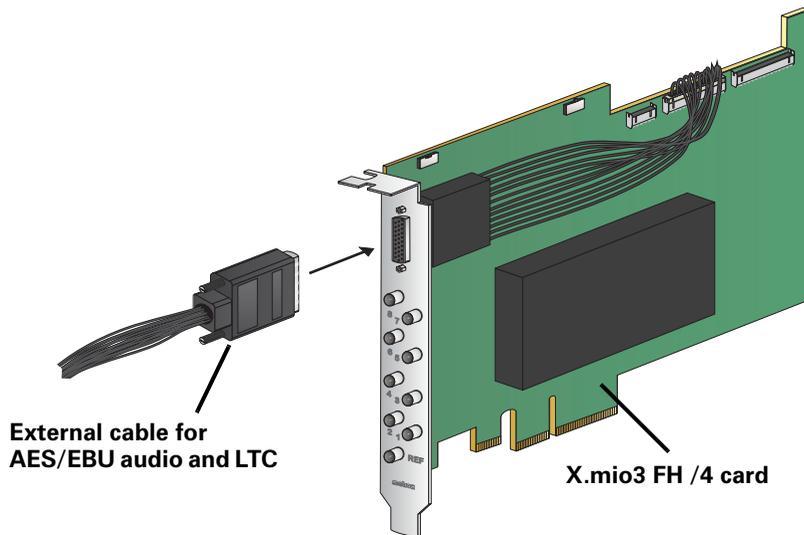
This chapter explains how to install the hardware for a Matrox X.mio3 FH and X.mio3 LP system, and how to configure the inputs and outputs.

Connecting the audio and LTC cables to your X.mio3 FH card

With the X.mio3 FH models, AES/EBU audio and LTC (Linear Time Code) support is included in a single cable connection. The cable connection is slightly different depending on which X.mio3 FH model you have.

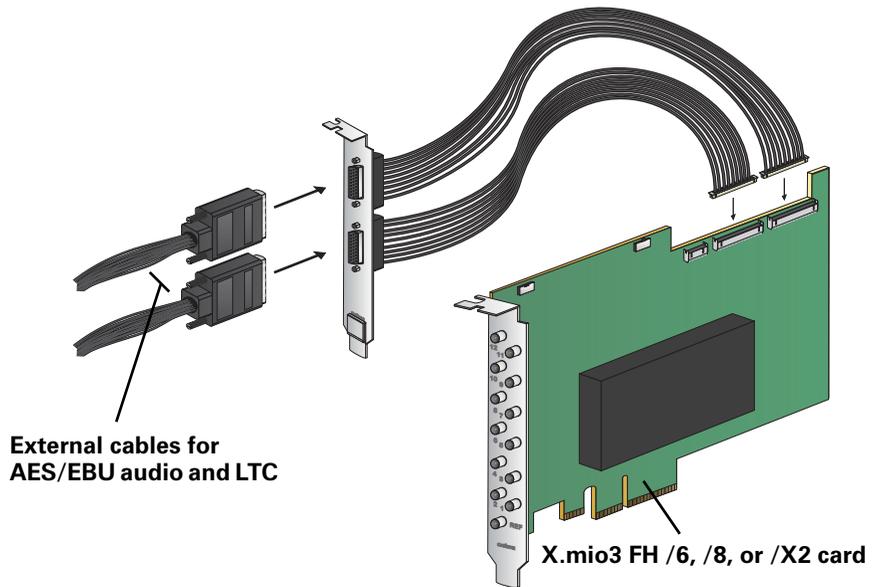
Audio and LTC connections for X.mio3 FH /4 models

If you have an X.mio3 FH /4 card (8 SDI connectors and one REF connector for genlock), connect the AES/EBU audio and LTC cable as shown below.



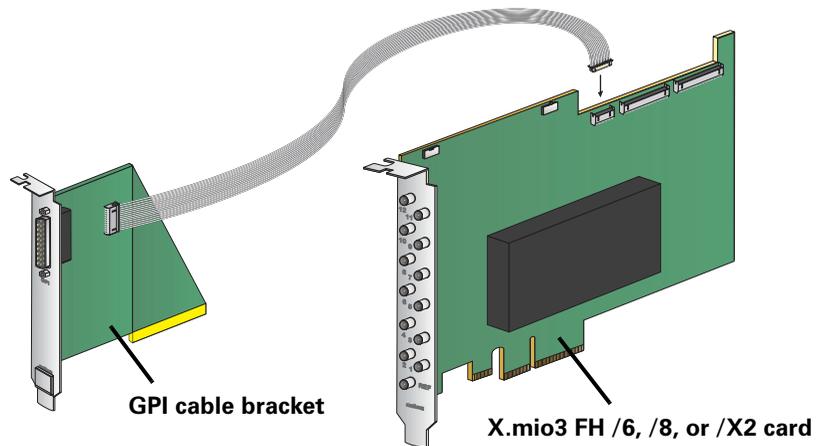
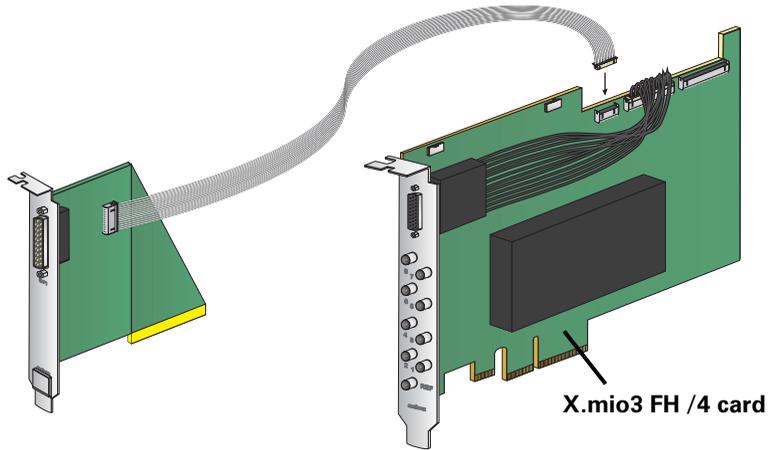
Audio and LTC connections for X.mio3 FH /6, /8, and /X2 models

If you have an X.mio3 FH /6, /8, or /X2 card (12 SDI connectors and one REF connector for genlock), connect the AES/EBU audio and LTC cable as shown below.



Connecting the GPI cable bracket to your X.mio3 FH card

A GPI cable bracket is available for connecting general purpose input/output (GPIO) devices to your X.mio3 FH card.

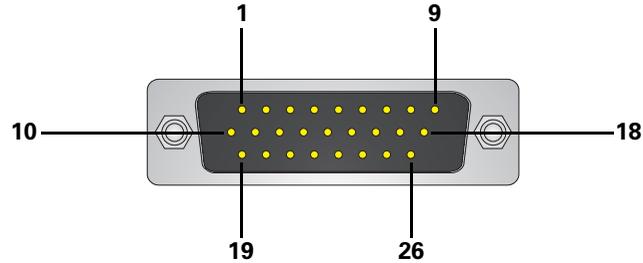


GPI cable bracket connections

This section shows how to connect external devices directly to the GPI cable bracket.

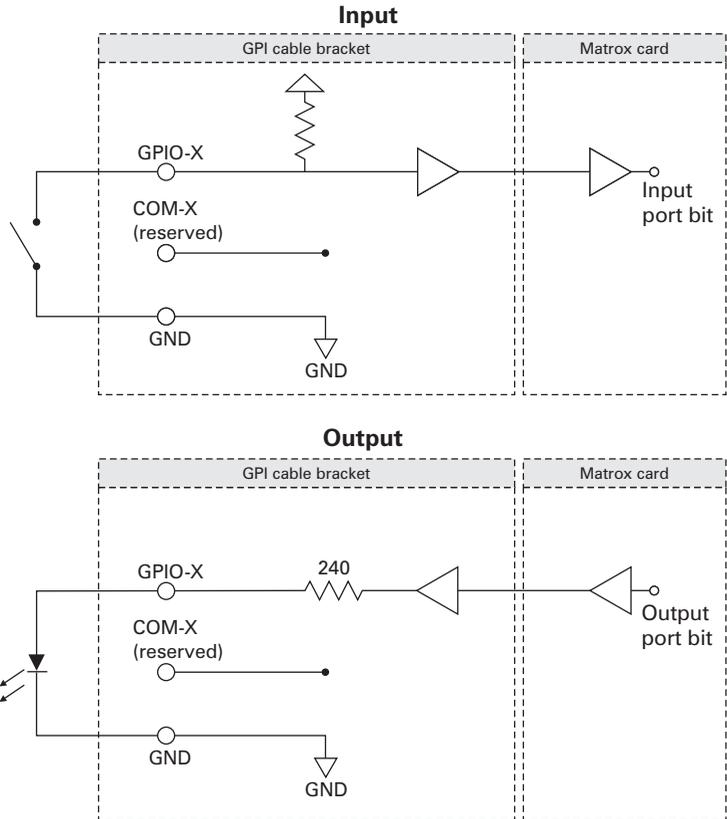
GPI connector pinouts

This section shows the GPIO pinout placement and functionality of the HD26 connector on the GPI cable bracket. For a diagram on connecting to the GPI cable bracket, see [“CMOS circuit connection to GPI cable bracket”](#) on page 14.



Pin	Function	Direction
1	COM-1 (reserved)	—
2	GPIO-8	Output
3	GPIO-2	Input
4	GPIO-7	Output
5	GPIO-3	Input
6	GPIO-4	Input
7	GPIO-6	Input
8	COM-5 (reserved)	—
9-10	Ground	—
11	GPIO-1	Input
12	COM-2 (reserved)	—
13	COM-8 (reserved)	—
14	COM-7 (reserved)	—
15	COM-3 (reserved)	—
16	COM-4 (reserved)	—
17	COM-6 (reserved)	—
18	GPIO-5	Input
19-26	Ground	—

CMOS circuit connection to GPI cable bracket



	Characteristic	Symbol	Minimum	Typical	Maximum
Input	Low voltage	V_{IL}	0 V	0 V	1 V
	High voltage ¹	V_{IH}	2.5 V	5 V	12 V
Output	Low voltage ($I_{OUT} = 1 \text{ mA}$)	V_{OL}	—	0.3 V	—
	Low voltage ($I_{OUT} = 0 \text{ mA}$)	V_{OL}	—	0 V	—
	High voltage ($I_{OUT} = -5 \text{ mA}$)	V_{OL}	—	3.8 V	—
	High voltage ($I_{OUT} = -1 \text{ mA}$)	V_{OL}	—	4.8 V	—
	Low current	I_{OL}	0 mA	—	40 mA
	High current	I_{OH}	0 mA	—	-20 mA
	Series resistance	R_{OUT}	—	240 Ω	—

¹ An open circuit will trigger a high condition.

Installing your X.mio3 FH and X.mio3 LP card

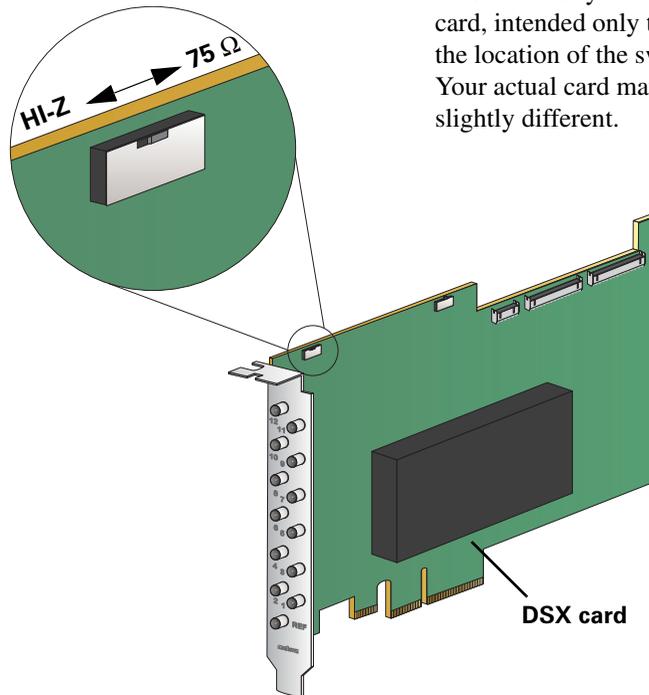
The Matrox X.mio3 FH and X.mio3 LP card can operate in a PCI Express (PCIe) Gen2 x8 or x16 slot, wired electrically with 8 or 4 lanes (8 lanes are recommended for optimal performance). If the slot in which you'll be installing your Matrox card contains another card, either move it to an unused slot or remove it completely. The Matrox card is available with either a low-profile or full-height bracket to accommodate different types of computer chassis.

⇒ To install your Matrox card:

- 1 Make sure the genlock termination switch on your card is set to **75Ω** to terminate the reference input.



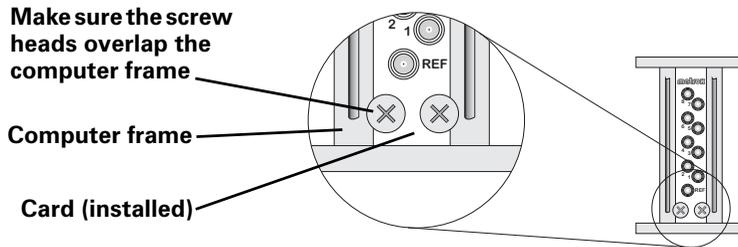
Note This is a generic illustration of your Matrox card, intended only to show the location of the switch. Your actual card may look slightly different.



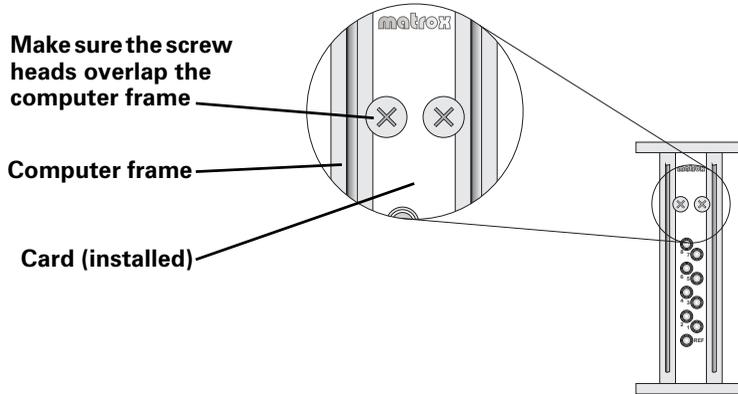
- 2 Remove the metal plate located at the back of the slot you'll be using for your Matrox card.
- 3 Position your Matrox card over the slot that you've chosen and push it in firmly and evenly until it is fully seated in the slot.
- 4 Secure the Matrox card to the computer frame.

- 5 Using the two small screws provided with your card, secure the bracket to the computer frame as shown below.

Card with low-profile bracket



Card with full-height bracket

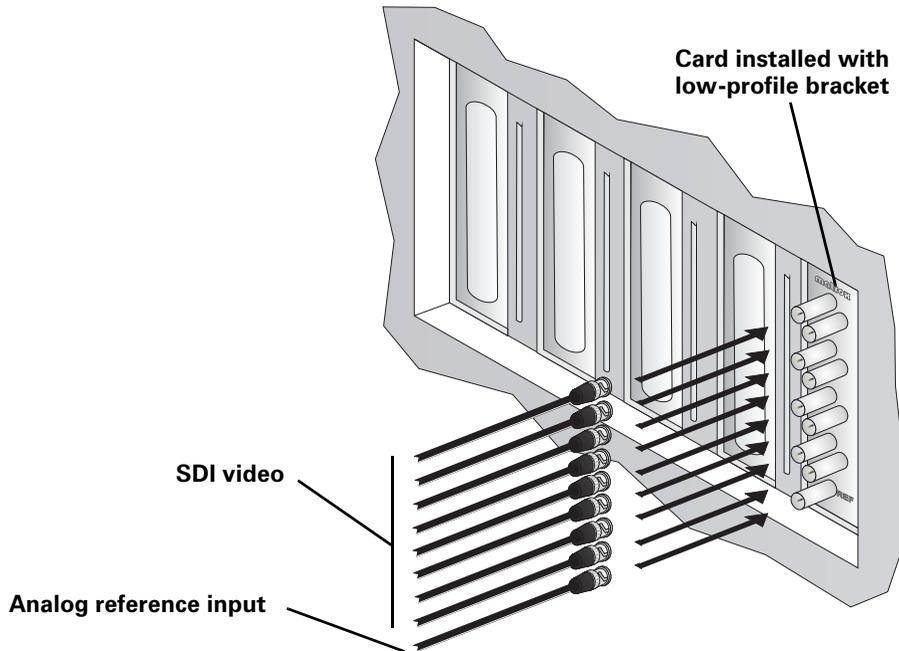


Before restarting your computer

Once you've finished installing all your DSX hardware, replace your computer's cover. You should connect your external devices before attempting to restart your computer. The following section shows you how to connect the video cables to the X.mio3 FH and X.mio3 LP card so that you can connect external devices to your Matrox system.

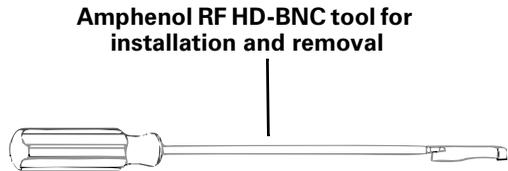
Connecting your video cables to the X.mio3 FH and X.mio3 LP card

Your Matrox X.mio3 FH and X.mio3 LP card provides SDI video input and/or output connectors and a REF IN connector. You can use your SDI cables to connect to your SDI video devices. You can use the REF IN connector to connect an analog black burst reference input source.



Remarks

- The connectors on the card are HD-BNC connectors. If your devices have standard BNC connectors, BNC to HD-BNC adapter cables are needed for you to connect to the HD-BNC connectors.
- An Amphenol RF HD-BNC tool for installation and removal (part number 227-T2000) can be used to facilitate installing and/or removing the HD-BNC connectors. For more information on this tool, visit www.amphenolrf.com/227-t2000.html.



Configuring the X.mio3 FH and X.mio3 LP inputs and outputs

The particular connectors available on the bracket of your Matrox X.mio3 FH and X.mio3 LP card depend on the model and configuration of your card. The tables in the *Matrox X.mio3 LP Connector Mapping Reference*, and the *Matrox X.mio3 FH Connector Mapping Reference* documents show the relationship between the physical input and/or output connectors and their corresponding video channels for each card model.

The X.mio3 FH and X.mio3 LP card can be reconfigured to different I/O configurations. For example, a /8 card can be configured as 80 (eight inputs and no outputs), 71, 62, 53, 44, 35, 26, 17, or 08, and a /4 can be configured as 40 (four inputs and no outputs), 31, 22, 13, or 04. You use a CMD shell to change the I/O configuration of the card.

Remarks

- The X.mio3 LP/44 and X.mio3 LP/22 cards with video relay bypass are not reconfigurable.
- If you change the I/O configuration:
 - The permanent memory containing the default states will be cleared.
 - The new configuration will be retained until the next time it is changed.
- In Linux, run the *mvConnectorConfig.exe* application with sudo (for example, **sudo ./mvConnectorConfig.exe -8in0out**) or while logged in as the root user.



To configure the X.mio3:

- 1 From the folder that contains the *mvConnectorConfig.exe*, open the Command Prompt (Windows) or Terminal (Linux).

The default installation folder is *C:\Program Files\Matrox DSX.utils\drivers* in Windows, and */opt/MatroxVideo/DSX.utils/bin* in Linux.

- 2 Configure the inputs and outputs as follows:

In Windows:

```
mvConnectorConfig.exe -XinYout=XXXXXXX
```

In Linux:

```
./mvConnectorConfig.exe -XinYout=XXXXXXX
```

Where:

X number of inputs

Y number of outputs

XXXXXXX Serial number of the card you want to configure. If you do not specify the serial number, all the cards in your system will be configured.



Note The serial number is case sensitive and can be obtained from X.info in Windows (see “Using X.info to display DSX information” on page 48) or mveXinfo in Linux (see “Using mveXinfo to display DSX information” on page 54).

3 Press **ENTER**.

To update the card with the new I/O configuration, you must reboot your system.

4 Follow the onscreen instructions to reboot your system.

The new configuration will only be applied after the reboot.

Upgrading your X.mio3 FH and X.mio3 LP card

The X.mio3 FH and X.mio3 LP card has a built-in dongle, which specifies the model and capabilities of the card. This dongle can be upgraded to change the capabilities of the card without needing to remove the card from the system. For example, you can purchase a particular card model, and later upgrade it to a different model without removing the card from the system. You can also upgrade to unlock specific features that may not have been available when the card was first purchased.

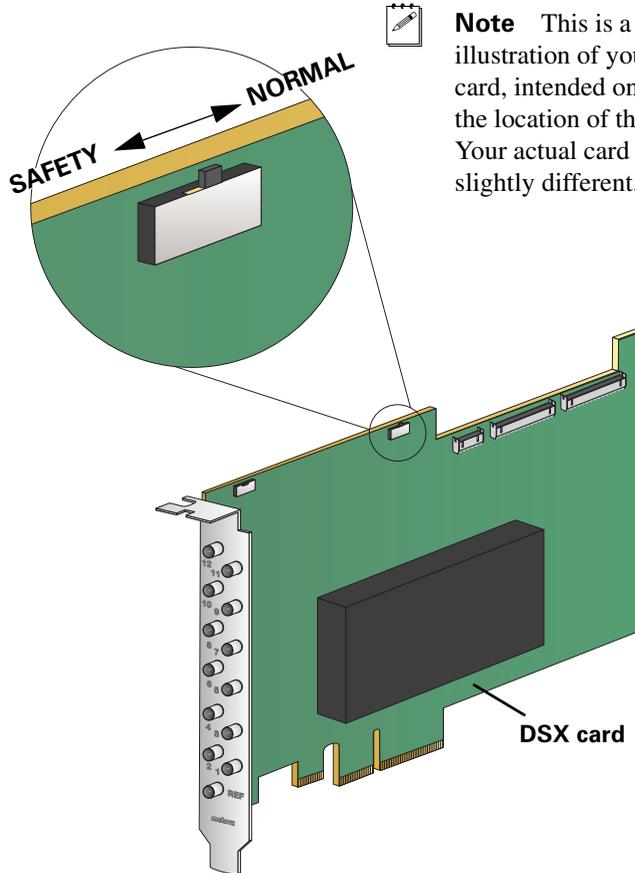
The information for field upgrading your DSX card is covered in the “Dongle Field Upgrade Procedure” series of application notes available on our website at <http://www.matrox.com/video/en/support/developer/private/tools/applications/>.

Enabling safety recovery mode after a failed firmware update

If a firmware update fails because of a system malfunction, you can enable the X.mio3 FH and X.mio3 LP card’s safety recovery mode to complete the firmware update. For example, if the system loses power when the Matrox Firmware Updater is running, a firmware update will fail. After a failed update, you can enable safety recovery mode to initiate an automatic firmware update.

➔ **To enable safety recovery mode after a failed firmware update:**

- 1 Shut down your computer.
- 2 On the DSX card, move the safety recovery switch to the **SAFETY** position.



Note This is a generic illustration of your DSX card, intended only to show the location of the switch. Your actual card may look slightly different.

- 3 Start your computer and log on to Windows.
After you log on to Windows, Matrox X.info will issue an error notification that informs you the DSX card is in safety recovery mode. This will trigger an automatic FPGA update.
- 4 After the automatic FPGA update is complete, shut down your computer again.
- 5 On the DSX card, move the safety recovery switch to the **NORMAL** position.
- 6 Start your computer and log on to Windows.

Your DSX card should now be using the proper firmware. You can confirm this in the Matrox X.info program.

4

Installing Your Matrox X.mio3 IP Hardware

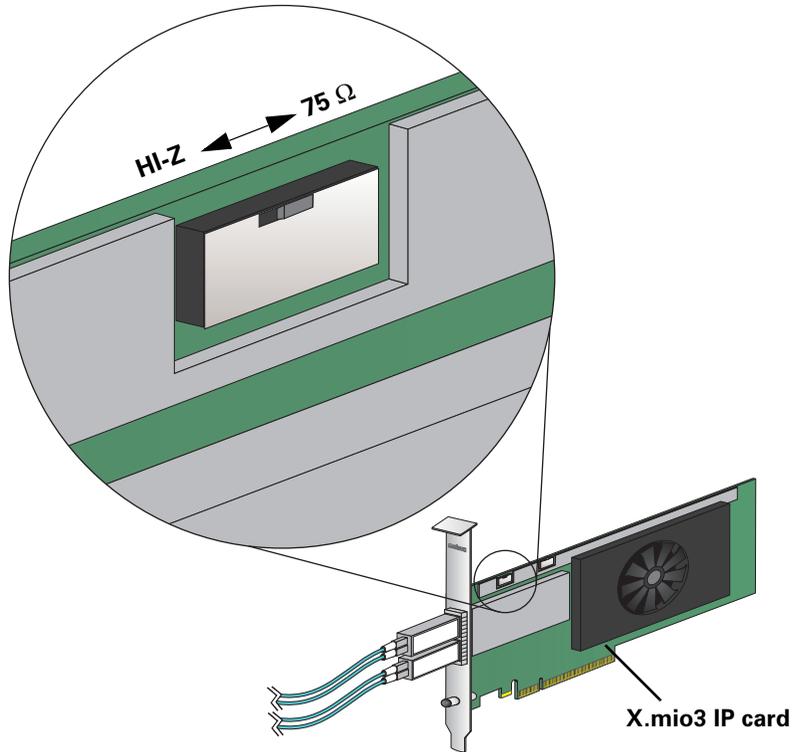
This chapter explains how to install the hardware and configure a Matrox X.mio3 IP system.

Installing your X.mio3 IP card

The Matrox X.mio3 IP card can operate in a PCI Express (PCIe) Gen2 x8 or x16 slot, wired electrically with 8 or 4 lanes (8 lanes are recommended for optimal performance). If the slot in which you'll be installing your Matrox card contains another card, either move it to an unused slot or remove it completely.

⇒ To install your Matrox card:

- 1 Make sure the genlock termination switch on your card is set to **75Ω** to terminate the reference input.



- 2 Remove the metal plate located at the back of the slot you'll be using for your Matrox card.
- 3 Position your Matrox card over the slot that you've chosen and push it in firmly and evenly until it is fully seated in the slot.
- 4 Secure the Matrox card to the computer frame.

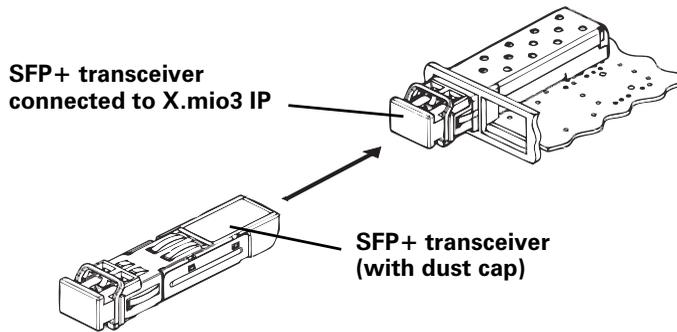
Before restarting your computer

Once you've finished installing all your DSX hardware, replace your computer's cover. You should connect your external devices before attempting to restart your computer. The following section shows you how to connect the video cables to the X.mio3 IP card so that you can connect external devices to your Matrox system.

Connecting your SFP+ transceivers to the X.mio3 IP card

Your Matrox X.mio3 IP card provides dual SFP+ cages for a total of 4 video inputs and 4 video outputs for fiber optic cable connections. There is also a REF IN connector to connect an analog black burst reference input source.

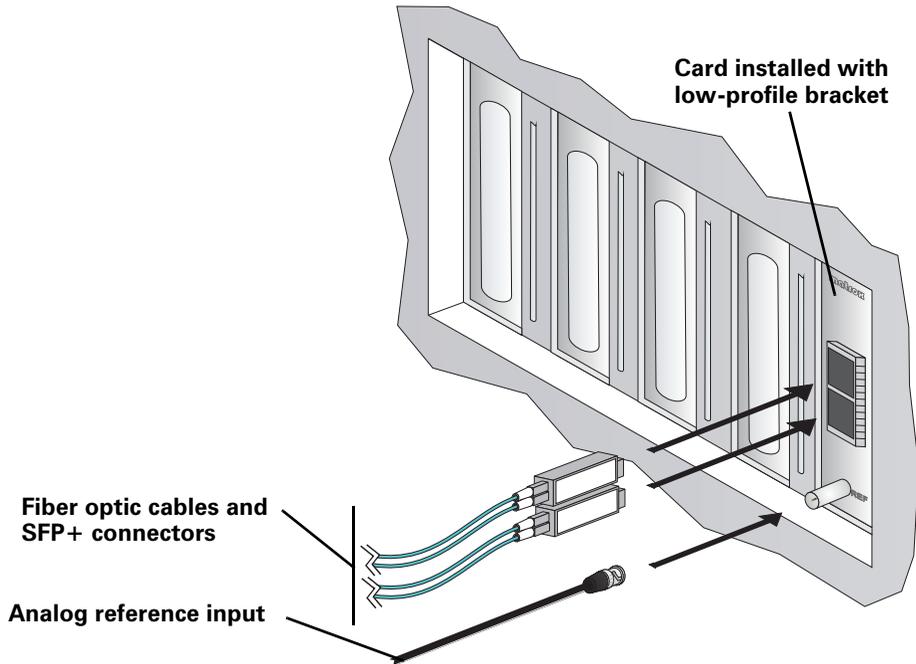
The SFP+ transceivers connect to the X.mio3 IP as follows:



The transceivers are sold separately but several models have been validated for use with the Matrox X.mio3 IP card. For more information, see [Appendix B, “Validated Transceivers,”](#) on page 67.

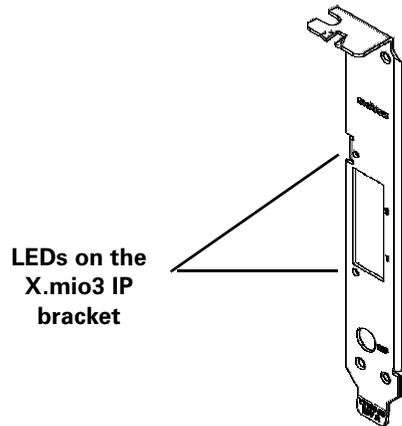
Connecting your fiber optic cables to the X.mio3 IP card

After you have connected your SFP+ transceivers to the X.mio3 IP card, you can connect the fiber optic cables for video transfer. You can use the REF IN connector to connect an analog black burst reference input source.



Understanding the Matrox X.mio3 IP LEDs

The Matrox X.mio3 IP card has two LEDs, one for each SFP+ transceiver connection, that are visible on the bracket.



The LEDs are used to indicate the following:

- If the drivers on the Matrox X.mio3 IP card are booting, the LEDs are off.
- If there are no SFP+ transceivers connected to the Matrox X.mio3 IP card, the LEDs are off.
- If an SFP+ transceiver is connected to the Matrox X.mio3 IP card, the corresponding LED is green.

Upgrading your X.mio3 IP card

The X.mio3 IP card has a built-in dongle, which specifies the model and capabilities of the card. This dongle can be upgraded to change the capabilities of the card without needing to remove the card from the system. For example, you can purchase a particular card model, and later upgrade it to a different model without removing the card from the system. You can also upgrade to unlock specific features that may not have been available when the card was first purchased.

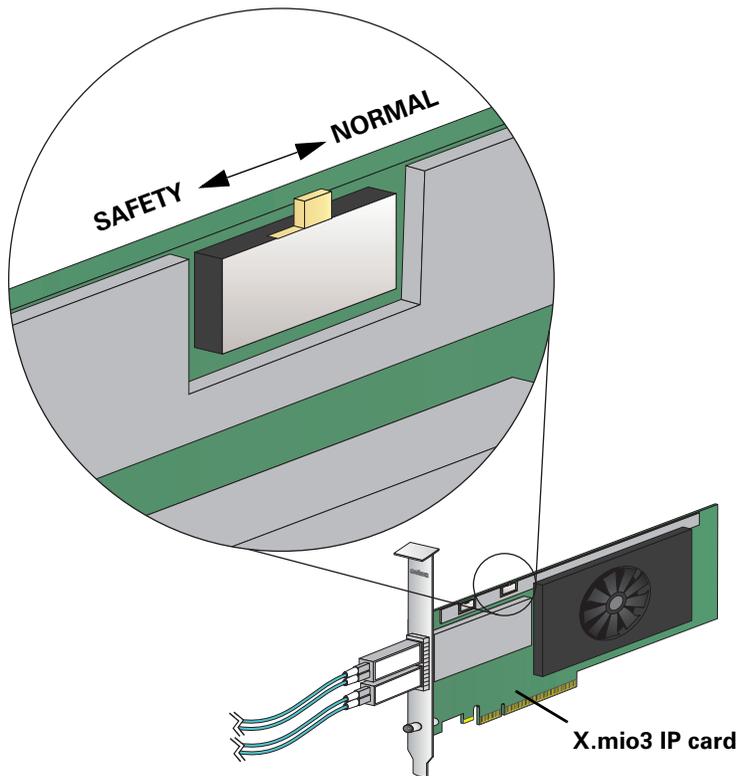
The information for field upgrading your DSX card is covered in the “Dongle Field Upgrade Procedure” series of application notes available on our website at <http://www.matrox.com/video/en/support/developer/private/tools/applications/>.

Enabling safety recovery mode after a failed firmware update

If a firmware update fails because of a system malfunction, you can enable the X.mio3 IP card's safety recovery mode to complete the firmware update. For example, if the system loses power when the Matrox Firmware Updater is running, a firmware update will fail. After a failed update, you can enable safety recovery mode to initiate an automatic firmware update.

⇒ **To enable safety recovery mode after a failed firmware update:**

- 1 Shut down your computer.
- 2 On the DSX card, move the safety recovery switch to the **SAFETY** position.



- 3 Start your computer and log on to Windows.

After you log on to Windows, Matrox X.info will issue an error notification that informs you the DSX card is in safety recovery mode. This will trigger an automatic FPGA update.

- 4 After the automatic FPGA update is complete, shut down your computer again.
- 5 On the DSX card, move the safety recovery switch to the **NORMAL** position.
- 6 Start your computer and log on to Windows.

Your DSX card should now be using the proper firmware. You can confirm this in the Matrox X.info program.

Your notes

5

Installing Your DSX Software for Windows

This chapter explains how to install the Matrox DSX software, and update the Matrox DSX firmware for Windows.

Installing the Matrox software

Once you've installed your Matrox DSX hardware and properly connected your devices, you can proceed with the software installation.

Remarks

- Refer to the *Matrox DSX Release Notes* for supported operating systems and other important information.
- To install the DSX software, you must log onto an account on your Windows system that has Administrator privileges.
- To help ensure proper functionality of all Matrox cards, it is recommended to disable **Sleep** and **Hibernate** modes (e.g. fast startup) in Windows. For more information on how to do this, see [“Disabling Sleep and Hibernate modes in Windows 10, 8, and 7”](#) on page 35.
- When you first start Windows after installing DSX hardware, the “Found New Hardware Wizard” appears. Press **ESC** or click **Cancel** to close the wizard. The installation program installs all the required drivers. For more information, see [“Ignoring the Found New Hardware Wizard”](#) on page 35.
- During installation, the Windows notification area may display messages indicating that your devices are ready to use, or that the device driver software was not successfully installed. Ignore these messages and allow the Setup program to complete the entire installation. For more information, see [“Windows notification area error messages”](#) on page 36.



To install the Matrox software:

- 1 Run *DSX.utils.exe*.
- 2 Follow the onscreen instructions to install the software on your computer.
 - A **Windows Security** dialog box may appear asking if you want to install the device software. If you want to skip this step for future installation of Matrox software, select **Always trust software from “Matrox Electronic Systems”**, and then click **Install** to continue the Matrox software installation.
 - On certain Windows systems, Windows will check the Microsoft Windows Update website for the latest device drivers, which will slow down the installation. To prevent this, click the status message that appears in the Windows notification area during the driver installation, and in the displayed dialog box, click **Skip obtaining driver software from Windows Update**.
- 3 After the Matrox software has been installed, the Matrox X.info program will verify if any of your DSX hardware needs a firmware update. If an update is required, the updater will be launched automatically at this point. For more information on the Matrox firmware updater, see [“Updating the Matrox Firmware”](#) on page 32.

- 4 If necessary, the Setup program will restart your computer at the end of the installation when you click **OK**.

The Matrox software is installed.

Installing the Matrox software in silent mode

When launched with the */silent* command line switch, the only thing displayed to the user during the installation is the progress bar. All prompts and messages are bypassed. If needed, your system is automatically restarted when the installation is complete. Silent mode is useful when you do not have a user present to confirm the various prompts that appear during a standard installation. For example, you can use silent mode to install the Matrox software on multiple systems over a network.

Remarks

- On certain Windows systems, you must disable User Account Control before attempting silent mode installation.
- A **Windows Security** dialog box may appear asking if you want to install the Matrox device software. In this case, you will need to select **Always trust software from “Matrox Electronic Systems”**, and then click **Install** to continue the Matrox software installation.
- Although the Matrox DSX License Agreement is only displayed during a standard installation, acceptance of the agreement is implied when installing in silent mode.

Installing the Matrox SDK

In order to install the *Matrox Programming Reference Library* and *Matrox DSX Topology API Programming Reference Library* online Help, and the compiled source code for the DSX sample applications included in the Matrox SDK installation, you must have Microsoft Visual Studio installed on your computer.

- 1 Run *DSX.sdk.exe*.
- 2 Follow the onscreen instructions to complete the installation of the Matrox SDK on your computer.

Uninstalling the Matrox software

You can remove the various Matrox software components (software or SDK) by choosing the “Uninstall” option that is available for each component, such as **Uninstall Matrox DSX.utils**.



Note Make sure to close all running applications, especially Google Chrome, before uninstalling the Matrox software, otherwise you will be forced to reboot your system.

On a Windows 10, Windows 8.1, or Windows Server 2012 system, the tiles for uninstalling Matrox DSX.sdk and Matrox DSX.utils may not be added to the Apps view. If this occurs, you can uninstall Matrox DSX.sdk or Matrox DSX.utils as follows:

- 1 In **Control Panel**, switch to **Small icons view**, then choose **Program and Features**.
- 2 Choose **Matrox DSX.sdk** or **Matrox DSX.utils**.
- 3 Click **Uninstall**, then click **Next**.

After Matrox DSX.sdk or Matrox DSX.utils has been successfully removed from your computer, click **OK**.

Updating the Matrox Firmware

All Matrox DSX cards run firmware (onboard software) that is stored in their permanent memory. When a Matrox DSX card receives power, its firmware will execute. The firmware version installed on the card must match the Matrox DSX.utils version installed on the computer system. The Matrox Firmware Updater is the application used by the Matrox X.info program (included with DSX.utils) to update the firmware if needed when a newer version of DSX.utils is installed. A system reboot is required when the firmware of a Matrox DSX card is updated.

Typical uses for the Matrox Firmware Updater are as follows:

Basic setup After you install DSX.utils, the Matrox X.info program verifies if a Matrox DSX card is installed. If there is a card installed, X.info launches the Matrox Firmware Updater to check the version of the card’s firmware and update it, if required. After updating the DSX card’s firmware, X.info will check at each bootup to see if a firmware update is required.

Basic setup with no card installed When you install DSX.utils on a system with no Matrox DSX card installed, the setup program installs all the software, but the Matrox X.info program does not run the Matrox Firmware Updater. X.info will wait to run the Matrox Firmware Updater on next bootup if it detects that a Matrox DSX card is installed. The updater checks the version of the firmware and automatically updates it, if required. After updating the DSX card’s firmware, X.info will check at each bootup to see if a firmware update is required.

Replacing Matrox DSX cards Care must be taken when replacing a Matrox DSX card in a system. If the existing Matrox DSX card is replaced by another card because of a malfunction or in order to use a different variation of the card, the firmware installed on the new card might not match the installed DSX.utils software. X.info launches the Matrox Firmware Updater on next bootup to check the version of the card's firmware and update it, if required.

System clones When installing multiple systems it might be useful to clone each system's hard disk. Doing so is enough to ensure that the same software is installed on all systems. However, this does not update the firmware of every Matrox DSX card. On the next bootup after cloning each system's hard disk, X.info launches the Matrox Firmware Updater to check the version of the card's firmware and update it, if required.

Running the Matrox Firmware Updater

The name of the executable is *mvDriverFPGAUpdater.exe*, and unless you changed the install path, it can be found at *C:\Program Files\Matrox DSX.utils\Drivers*. The application is copied into this directory during the installation of DSX.utils and is not removed at the end of the software installation. There are a number of different ways to launch the Matrox Firmware Updater. It can be called from within another application, it can be launched by double-clicking the file, it can be started by adding the .exe file to the Startup folder, or by using the Run folder of the system's registry. For information on adding keys in the system registry's Run folder, see Article 314866 in the Microsoft Support Knowledge Base at www.support.microsoft.com.

Running the updater manually

You can manually start the Matrox Firmware Updater with no command-line switches by double-clicking the file's icon to check if everything is fine with the firmware. This method is not suitable for automated startup because it displays a message box regarding the firmware version.

Here are the different steps performed by the Matrox Firmware Updater when launched manually without a command-line switch:

- 1 Checks for the presence of a Matrox DSX card and displays an error message box if no card is detected.
- 2 Checks the version of the firmware and displays a message box if the firmware is up to date.
- 3 Displays a progress bar while updating the firmware.
- 4 Displays a message box after the update and initiates a system reboot.

The firmware is updated. If the firmware update fails, see the section "[Enabling safety recovery mode after a failed firmware update](#)" on page 19 for more information.

Running the updater in silent mode

When launched with the *-silent* command line switch, the only thing that the Matrox Firmware Updater will display to the user is a progress bar while updating the firmware.

The different steps performed by the Matrox Firmware Updater when launched with the *-silent* command-line switch are as follows:

- 1 Checks for the presence of a Matrox DSX card.
- 2 Checks the version of the firmware.
- 3 Displays a progress bar while updating the firmware (if an update is required).
- 4 Restarts your system when the update is complete.

The firmware is updated. If the firmware update fails, see the section [“Enabling safety recovery mode after a failed firmware update”](#) on page 19 for more information.

Because error messages are not displayed in this mode, the Matrox Firmware Updater returns error codes to the application instead. Therefore, in order to use the *-silent* command-line switch correctly, the Matrox Firmware Updater should be called from within another application to allow for the monitoring of the error codes and the initialization of a system reboot if necessary. Otherwise, the firmware update would not be completed until a system reboot.

The following list describes the different error codes returned by the Matrox Firmware Updater when launched with the *-silent* command-line switch:

- 1 Indicates that a system reboot is required (the firmware has been updated).
- 2 The installed firmware is already up to date (no popup).
- 3 No card is detected (no popup).
- 4 The application is already running another instance.
- 5 The firmware download driver could not be started (not logged on as an Administrator).
- 6 Indicates a hardware malfunction during the firmware update (this requires a powerdown and a restart of the Matrox Firmware Updater).
- 7 Indicates access to the system’s PCI bus has failed, and the Matrox Firmware Updater cannot check for installed Matrox cards.
- 8 Indicates that an incorrect command-line parameter was provided.
- 9 Indicates that a system reboot is required.
- 10 Indicates that a full system shutdown is required.
- 11 Indicates that a full system shutdown is required and that the connection to the external power box must be removed.
- 12 Indicates that the application did not start properly (MFC was not properly initialized).

Additional installation information

This section includes supporting information that is related to installing the DSX software.

Ignoring the Found New Hardware Wizard

Turn on your computer. Once Windows starts, your DSX hardware will be detected. If the “Found New Hardware Wizard” appears, press **ESC** or click **Cancel** to close the wizard because the Matrox DSX.utils Setup program will automatically detect your devices and install the appropriate drivers. The wizard only appears the first time you start your computer after installing your DSX hardware.

If Windows launches the “Found New Hardware Wizard,” it will appear for each of your DSX hardware components. Close the wizard each time it appears. To ensure a smooth DSX software installation, it is essential that you do not let the wizard try to install any drivers.

Disabling Sleep and Hibernate modes in Windows 10, 8, and 7

On a Windows operating system, sleep or hibernate modes can be used as alternatives to a full shutdown of your system. On a system with Matrox DSX installed, these alternative shutdown states can cause your system to become unstable and must be disabled.

You can disable Sleep and Hibernate modes from the Windows Control Panel.

- 1 In **Control Panel**, choose **Hardware and Sound** or **System and Security** > **Power Options**.



Note On Windows 10, 8, or 7, **Hardware and Sound** and **System and Security** appear if you are in the default **Category** view. Otherwise, only **Power Options** appears.

- 2 Under your selected power plan, click **Change plan settings**, then click **Change advanced power settings**.
- 3 Under **Sleep**, set **Sleep after** and **Hibernate after** to **Never**.
- 4 Under **Power buttons and lid**, set all the options to either **Shut down** or **Do nothing**.
- 5 Click **Apply** to save your settings, then click **OK**.
- 6 On a Windows 10 or 8 system, click **Choose what the power button does**.
 - a Click **Change settings that are currently unavailable**.
 - b Under **Shutdown settings**, clear **Turn on fast startup (recommended)**.
 - c Click **Save changes**.

Windows notification area error messages

The DSX.utils setup program is designed to delete any previously-installed Matrox device drivers found on your system before installing new drivers. When the setup program deletes the old drivers, Windows detects the change, mistakenly assumes it is an error, and displays an error message.

Since the old drivers are deleted intentionally as part of the installation, it is recommended that you ignore the Windows error message, and allow the setup program to finish installing the new Matrox drivers. If you choose to click the error message for details, you will see a list of drivers in the process of being installed.

Your DSX card appears as either **PCI Device** or **Multimedia Controller**, and its status is shown as “No driver found”. This status will not change even after the installation is successful, as Windows verifies driver status sequentially, and the drivers had already been deleted when the status was updated. Rest assured that all the required drivers are installed, and your Matrox device will function normally if you allow the setup program to complete the installation.

Installing the Matrox VFW software codecs on a system without DSX hardware

The Matrox VFW software codecs let you render and play back Matrox *.avi* files in your Video for Windows programs without having to install Matrox DSX.utils and DSX hardware.



Note If you’ve installed Matrox DSX.utils, you do not need to install the Matrox VFW software codecs because all the Matrox codecs are automatically installed on your system during the installation.

The Matrox VFW software codecs are available for download in the “Downloads” section of the Matrox Support website at www.matrox.com/video/support.

6

Installing Your DSX Software for Linux

This chapter explains how to install the Matrox DSX software, and update the Matrox DSX firmware for Linux.

Installing the Matrox software

Once you've installed your Matrox DSX hardware and properly connected your devices, you can proceed with the software installation as explained in the following sections.



Note Refer to the *Matrox DSX Release Notes* for supported operating systems and other important information.

Installing libdispatch

Before installing the software installation package (*DSX-TopologyUtils.run*), libdispatch must be installed.



Note Follow the appropriate procedure for your operating system when installing libdispatch.



To install libdispatch for Ubuntu:

- 1 If required, uninstall any previously installed version, such as libdispatch0 or libdispatch-dev.


```
$ sudo apt-get purge libdispatch0 libdispatch-dev
```

```
$ sudo apt-get autoremove
```
- 2 Install the libdispatch prerequisites listed at <https://github.com/nickhutchinson/libdispatch>.


```
$ sudo apt-get install libblocksruntime-dev libkqueue-dev libpthread-workqueue-dev
```
- 3 If you have Ubuntu version 12.04, install the Clang compiler version 3.4 available at <http://www.lvm.org/>. For different Ubuntu versions, go to step 4.
 - a Update the repository of apt-get by adding the following lines at the end of the */etc/apt/sources.list* file:


```
$ deb http://llvm.org/apt/unstable/llvm-toolchain-3.6 main
```

```
$ deb-src http://llvm.org/apt/unstable/ llvm-toolchain-3.6 main
```
 - b Install Clang 3.4 with the following commands:


```
$ sudo apt-get update
```

```
$ sudo apt-get install clang-3.4
```

 The compiler should now be installed in */usr/lib*.
 - c Create two symbolic links to use Clang properly:


```
$ sudo ln -s /usr/bin/clang-3.4 /usr/bin/clang
```

```
$ sudo ln -s /usr/bin/clang++-3.4 /usr/bin/clang++
```
 - d Verify that everything works by calling the compiler to get its version using the following commands:


```
$ cd
```

```
$ clang -v
$ clang++ -v
```

- 4 If you have an Ubuntu version other than 12.04, install the Clang compiler available at <http://www.lvm.org/> with the following command:

```
$ sudo apt-get install clang
```

- 5 Install CMake version 2.8.8 or later available at <http://www.cmake.org/>.

– For Ubuntu 12.10 or later:

```
$ sudo apt-get install cmake
```

– For versions earlier than Ubuntu 12.10:

i If required, uninstall any previously installed version of CMake.

```
$ sudo apt-get purge cmake
```

ii Download the latest version of CMake and extract the sources to a local folder. For example, if you are installing CMake version 3.0.1, type the following:

```
$ tar xvf cmake-3.0.1.tar.gz
$ cd cmake-3.0.1
$ ./bootstrap
$ make
$ sudo make install
```



Note To access the newly installed CMake, you must first close your Terminal.

- 6 Download *libdispatch-0.1.3.1.zip* available at <https://github.com/nickhutchinson/libdispatch/releases/tag/v0.1.3.1>, then build and install libdispatch as follows:

```
$ unzip libdispatch-0.1.3.1.zip
$ mkdir libdispatch-0.1.3.1-build && cd
libdispatch-0.1.3.1-build
$ ../libdispatch-0.1.3.1/configure
$ make
$ sudo make install
```

⇒ To install libdispatch for CentOS 7 or openSUSE 13.1:

- 1 Install the following:

– For CentOS 7:

```
$ sudo -E yum install epel-release
$ sudo -E yum install clang
$ sudo -E yum install cmake
```

– For openSUSE 13.1:

```
$ sudo zypper install clang
$ sudo zypper install cmake
```

```
$ sudo zypper install gcc
```

- 2 Download *libblocksruntime-0.4.1.tar.gz* available at <https://github.com/mheily/blocks-runtime/releases>, then build and install it as follows:

```
$ tar xvf libblocksruntime-0.4.1.tar.gz
$ cd libblocksruntime-0.4.1
$ ./configure
$ make
$ sudo make install
```

- 3 Download *libpthread_workqueue-0.9.1.tar.gz* available at <https://github.com/mheily/libpwq/releases>, then build and install it as follows:

```
$ tar xvf libpthread_workqueue-0.9.1.tar.gz
$ cd libpthread_workqueue-0.9.1
$ ./configure
$ make
$ sudo make install
```

- 4 Download *libkqueue-2.0.3.tar.gz* available at <https://github.com/mheily/libkqueue/releases>, then build and install it as follows:

```
$ tar xvf libkqueue-2.0.3.tar.gz
$ cd libkqueue-2.0.3
$ ./configure
$ make
$ sudo make install
```

- 5 In */etc/ld.so.conf.d*, create a *local.conf* file with the text */usr/local/lib*, then run **sudo ldconfig**.

- 6 Download *libdispatch-0.1.3.1.zip* available at <https://github.com/nickhutchinson/libdispatch/releases/tag/v0.1.3.1>.

- 7 Build and install *libdispatch* as follows:

```
$ unzip libdispatch-0.1.3.1.zip
$ mkdir libdispatch-0.1.3.1-build && cd libdispatch-0.1.3.1-build
$ ../libdispatch-0.1.3.1/configure
$ make
$ sudo make install
```

Installing the Matrox software installation package

The software installation package (*DSX-TopologyUtils.run*) will be installed in */opt/MatroxVideo/DSX.utils* and contains the Matrox DSX drivers. Any missing dependencies will be reported to you before performing the install. Please install any missing packages to continue.



Note You must install `libdispatch`, before installing the software installation package. For more details, see “[Installing libdispatch](#)” on page 38.



To install the software installation package:

- 1 Before installing the software installation package, you must copy the `.run` file locally to your computer.
- 2 After copying the `.run` file, make sure that the software installation package is executable by checking that the execute bit is on using your graphical file manager or setting it on the Terminal (`chmod +x <filename>`).
- 3 To install the software installation package, do one of the following:
 - a For a typical installation, run the installer with `sudo` (for example, **`sudo ./DSX-TopologyUtils.run`**), or run it while logged in as the root user.
 - b For a silent mode installation, run the installer with `sudo` or while logged in as the root user, and add the suffix `-- -quiet` or `-- -q` (for example, **`sudo ./DSX-TopologyUtils.run -- -quiet`**). All prompts and messages are bypassed, and your system is automatically restarted if needed. Log messages, including errors about dependencies, will appear in the execution trace.
 - c For a trial run installation that will exit before the actual installation begins (or if errors are found), run the installer with the suffix `-- -validate` or `-- -v` (for example, **`sudo ./DSX-TopologyUtils.run -- -validate`**).

This trial run allows you to validate the installation package without installing the software. You may see warning and/or error messages in the execution log.

To validate the trial run installation in silent mode (that is, without prompts or messages), use the following command:

```
sudo ./DSX-TopologyUtils.run --noprogress -- -quiet -v
```

Remarks

- If you update your Linux kernel, you must reinstall *DSX-TopologyUtils* in order to rebuild the Matrox kernel drivers with the newer OS kernel distribution.
- In order to update your software installation software to a later version, you must first uninstall the old version as explained in “[Uninstalling the Matrox software.](#)”

Installing the Matrox SDK

The Matrox SDK contains all the header and DSX library files required to develop applications that use the Matrox DSX hardware, and includes available sample applications. The Matrox SDK (*DSX-TopologySdk.run*) will be installed in */opt/MatroxVideo/DSX.sdk*.



To install the Matrox SDK:

- 1 Before installing the Matrox SDK, you must copy the *.run* file locally to your computer.
- 2 After copying the *.run* file, make sure that the Matrox SDK is executable by checking that the execute bit is on using your graphical file manager or setting it on the Terminal (`chmod +x <filename>`).
- 3 To install the Matrox SDK, run the installer with `sudo` (for example, `sudo ./DSX-TopologySdk.run`), or run it while logged in as the root user.



Note In order to update your Matrox SDK to a later version, you must first uninstall the old version as explained in [“Uninstalling the Matrox software.”](#)

Uninstalling the Matrox software

You can uninstall the DSX software as follows:

- To uninstall the DSX-TopologyUtils package, run the shell script at */opt/MatroxVideo/DSX.utils/uninstall.sh* as root user (or with `sudo`).
- To uninstall the DSX-TopologySdk package, run the shell script at */opt/MatroxVideo/DSX.sdk/uninstall.sh* as root user (or with `sudo`).

Updating the Matrox Firmware

All Matrox DSX cards run firmware (onboard software) that is stored in their permanent memory. When a Matrox DSX card receives power, its firmware will execute. The firmware version installed on the card must match the Matrox DSX-TopologyUtils version installed on the computer system. The Matrox Firmware Updater is the application used by the setup program (included with DSX-TopologyUtils) to update the firmware if needed when a newer version of DSX-TopologyUtils is installed. After the firmware is updated, the Matrox Firmware Updater will indicate whether a system reboot is required.

Typical uses for the Matrox Firmware Updater are as follows:

Basic setup After you install DSX-TopologyUtils, the setup program verifies if a Matrox DSX card is installed. If there is a card installed, the Matrox Firmware Updater is launched to check the version of the card's firmware and update it, if required. After this initial firmware update, you must update the DSX card's firmware manually, if required.

Basic setup with no card installed When you install DSX-TopologyUtils on a system with no Matrox DSX card installed, the setup program installs all the software, but does not run the Matrox Firmware Updater. If you install a Matrox DSX card at a later time, you must run the Matrox Firmware Updater to update the DSX card's firmware, if required.

Replacing Matrox DSX cards Care must be taken when replacing a Matrox DSX card in a system. If the existing Matrox DSX card is replaced by another card, the firmware installed on the new card might not match the installed DSX-TopologyUtils software. In this case, you must run the Matrox Firmware Updater to update the card's firmware with the appropriate version (see [“Running the Matrox Firmware Updater”](#) on page 44).

System clones When installing multiple systems it might be useful to clone each system's hard disk. Doing so is enough to ensure that the same software is installed on all systems. However, this does not update the firmware of every Matrox DSX card. You must run the Matrox Firmware Updater to update the DSX card's firmware.

Running the Matrox Firmware Updater

The name of the executable is *mvDriverFPGAUpdater.exe*, and is installed in */opt/MatroxVideo/DSX.utils/bin*. Launch the Matrox Firmware Updater with `sudo`, or while logged in as the root user.

Here are the different steps performed by the Matrox Firmware Updater when launched:

- 1 Checks for the presence of a Matrox DSX card and displays an error message if no card is detected.
- 2 Checks the version of the firmware and displays a message if the firmware is up to date.
- 3 Displays a progress bar while updating the firmware (if an update is required).
- 4 Displays a message after the update and initiates a system reboot or a full system shutdown.

The firmware is updated. If the firmware update fails, see the section [“Enabling safety recovery mode after a failed firmware update”](#) on page 19 for more information.

The following list describes the different error codes returned by the Matrox Firmware Updater:

- 0 Indicates that no errors were encountered.
- 4 The application is already running another instance.
- 5 The firmware download driver could not be started (not logged on as an Administrator).
- 6 Indicates a hardware malfunction during the firmware update (this requires a powerdown and a restart of the Matrox Firmware Updater).
- 7 Indicates access to the system’s PCI bus has failed, and the Matrox Firmware Updater cannot check for installed Matrox cards.
- 8 Indicates that an incorrect command-line parameter was provided.

Running the updater in silent mode

When launched with the *-silent* command line switch, the only thing that the Matrox Firmware Updater will display to the user is a progress bar while updating the firmware.

Here are the different steps performed by the Matrox Firmware Updater when launched with the *-silent* command-line switch:

- 1 Checks for the presence of a Matrox DSX card.
- 2 Checks the version of the firmware.
- 3 Displays a progress bar while updating the firmware (if an update is required).
- 4 Restarts your system when the update is complete.

The firmware is updated. If the firmware update fails, see the section [“Enabling safety recovery mode after a failed firmware update”](#) on page 19 for more information.

Because error messages are not displayed in this mode, the Matrox Firmware Updater returns error codes to the application instead. Therefore, in order to use the *-silent* command-line switch correctly, the Matrox Firmware Updater should be called from within another application to allow for the monitoring of the error codes and the initialization of a system reboot if necessary. Otherwise, the firmware update would not be completed until a system reboot.

The following list describes the different error codes returned by the Matrox Firmware Updater when launched with the *-silent* command-line switch:

- 1 Indicates that a system reboot is required (the firmware has been updated).
- 2 The installed firmware is already up to date (no popup).
- 3 No card is detected (no popup).
- 4 The application is already running another instance.
- 5 The firmware download driver could not be started (not logged on as an Administrator).
- 6 Indicates a hardware malfunction during the firmware update (this requires a powerdown and a restart of the Matrox Firmware Updater).
- 7 Indicates access to the system’s PCI bus has failed, and the Matrox Firmware Updater cannot check for installed Matrox cards.
- 8 Indicates that an incorrect command-line parameter was provided.
- 9 Indicates that a system reboot is required.
- 10 Indicates that a full system shutdown is required.
- 11 Indicates that a full system shutdown is required and that the connection to the external power box must be removed.
- 12 Indicates that the application did not start properly (MFC was not properly initialized).

Additional installation information

This section includes supporting information that is related to installing the DSX software.

Disabling suspend mode

On a Linux operating system, suspend mode can be used as an alternative to a full shutdown of your system. On a system with Matrox DSX installed, this alternative shutdown state can cause your system to become unstable and must be disabled.

You can disable Suspend mode in Linux as follows:

- 1 Add the kernel options “**acpi=off apm=off**” to the **GRUB_CMDLINE_LINUX_DEFAULT** line in the */etc/default/grub* file as root user or with sudo.
- 2 In a shell, run the command **update-grub** as root user or with sudo.

7

Monitoring Your DSX System in Windows

This chapter explains how to use X.info to display important details about your DSX system and installed hardware in Windows.

Overview

Matrox X.info lets you display information about your Matrox DSX system and installed hardware in Windows, and provides warnings when certain problems arise (for example, when the temperature of one of your DSX cards exceeds the maximum operating temperature).

Using X.info to display DSX information

Matrox X.info runs continuously to monitor your system, whenever your computer is turned on. You can open Matrox X.info to display monitoring details by double-clicking the  icon on your Windows taskbar or clicking the  icon on your Windows taskbar and selecting **Open X.info**.

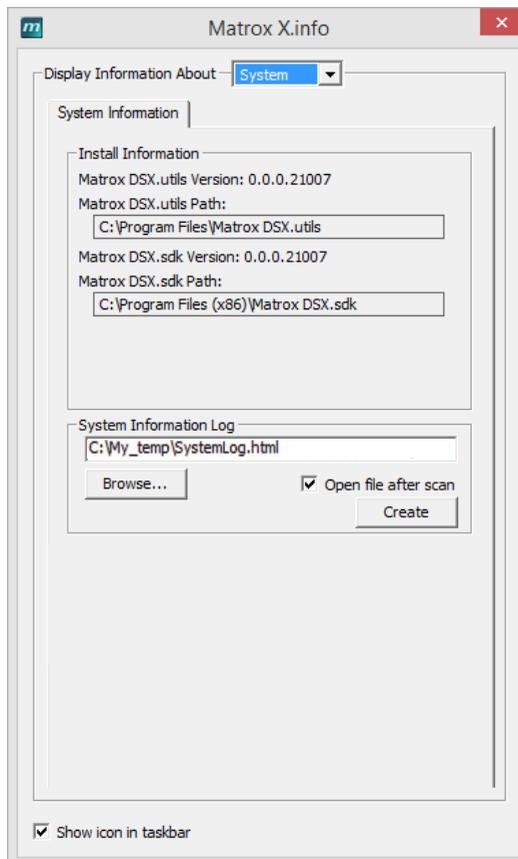


Note If you do not see the icon, check your taskbar properties and make sure that you're showing the icon for Matrox X.info.

Displaying system information

To display information about your Matrox DSX system, select **System** from the **Display Information About** list. On this page, you can see **Install Information**, such as the install path and version of DSX.utils. You can also create an HTML log file of your system information, which can be useful for troubleshooting. To create this log, use the **Browse** button under **System Information Log** to select the path

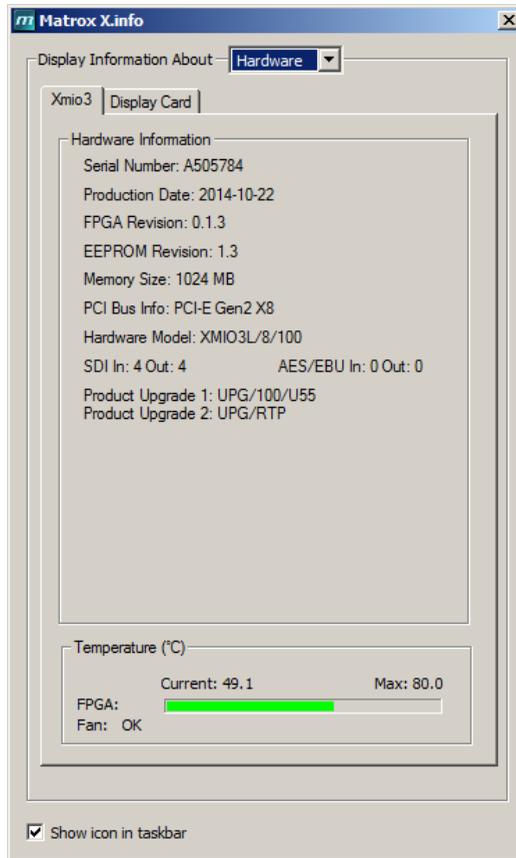
and name of the log, then click **Create**. If **Open file after scan** is selected, the HTML system log opens after it is created.



Displaying hardware information

To display information about all of the Matrox DSX hardware installed in your system, select **Hardware** from the **Display Information About** list. Each DSX card is represented by a tab.

Click the card's tab to display a page with hardware information (for example, serial number and production date). You can also monitor the current and maximum temperature for each hardware component.



Important Whether or not you have opened Matrox X.info, if one or more of your DSX hardware components exceeds the maximum operating temperature, you'll receive a warning message with further instructions (see [“Error notification”](#) on page 51).

Monitoring your DSX hardware operating temperatures

As shown in the X.info **Hardware** section, the current and maximum temperatures for your DSX hardware components are displayed. To avoid damage to your DSX components and/or computer system, make sure that you don't operate your DSX components at or near the maximum temperature for a prolonged period of time. You should target your DSX hardware to operate at least 20°C below the maximum operating temperature.

You should monitor the temperature of your DSX hardware components periodically and take measures as needed to lower the room temperature and/or improve the ventilation in your DSX system. For details on how to ensure that your system is properly ventilated, see [“Plan for adequate ventilation”](#) on page 6.

Error notification

X.info provides temperature warnings and warnings for other possible hardware problems. Once X.info has detected a hardware problem, the **Matrox X.info Notification** dialog box will be displayed to give you details of the problem and further instructions. You will not be able to close this dialog box until the problem has been resolved.

Your notes

8

Monitoring Your DSX System in Linux

This chapter explains how to use `mveXinfo` to display important details about your DSX system and installed hardware in Linux.

Overview

The Matrox mveXinfo program lets you display information about your Matrox DSX system and installed hardware in Linux. It also displays warnings when certain problems arise (for example, when the temperature of one of your DSX cards exceeds the maximum operating temperature).

Using mveXinfo to display DSX information

The Matrox mveXinfo program is located at */opt/MatroxVideo/DSX.utils/bin/mveXinfo.exe* and can be called anytime to display system information, hardware information, and your DSX hardware operating temperatures as shown in the following example output:

```
-----  
Install information  
-----  
Matrox DSX.utils Version: 9.5.0.13408  
Matrox DSX.utils Path: /opt/MatroxVideo/DSX.utils  
Matrox DSX.sdk Version: 9.5.0.13408  
Matrox DSX.sdk Path: /opt/MatroxVideo/DSX.sdk  
  
X.mio3  
-----  
Serial Number: BN32712  
Production Date: 2014-06-18  
Primary FPGA: 0.4.0  
EEPROM Revision: 1.0  
Memory Size: 1024 MB  
PCI Bus Info: PCI-E X8  
Hardware Model: Xmio3L/8/100  
SDI: In: 4 Out: 4  
AesEbuInOut: In:0 Out: 0  
  
Temperature:  
FPGA: 44.0°C (111.3°F), Max 80.0°C (176.0°F)  
Fan: OK
```

The Matrox mveXinfo program does not run in the background and must be called to display the current information. You can create an HTML report of your DSX system, which can be useful for troubleshooting, by typing the following on the command line:

```
$ ./mveXinfo.exe [-g[FILE]]
```

Where:

[-g] Generates the DSX system report.

[FILE] Filename of the DSX system report. The default filename is ./dsxSystemInfo.html.

If you would like to view a list of all the possible arguments, type the following on the command line:

```
$ ./mveXinfo.exe -h
```

Monitoring your DSX hardware operating temperatures

To avoid damage to your DSX components and/or computer system, make sure that you don't operate your DSX components at or near the maximum temperature for a prolonged period of time. You should target your DSX hardware to operate at least 20°C below the maximum operating temperature.

You should monitor the temperature of your DSX hardware components periodically and take measures as needed to lower the room temperature and/or improve the ventilation in your DSX system. For details on how to ensure that your system is properly ventilated, see [“Plan for adequate ventilation”](#) on page 6.

Error notification

For error notifications in Linux, refer to the Matrox DSX Topology API for information on how to implement the code in your application to receive notifications.

Your notes

A

DSX Specifications

This appendix provides specifications for DSX hardware.

X.mio3 FH card



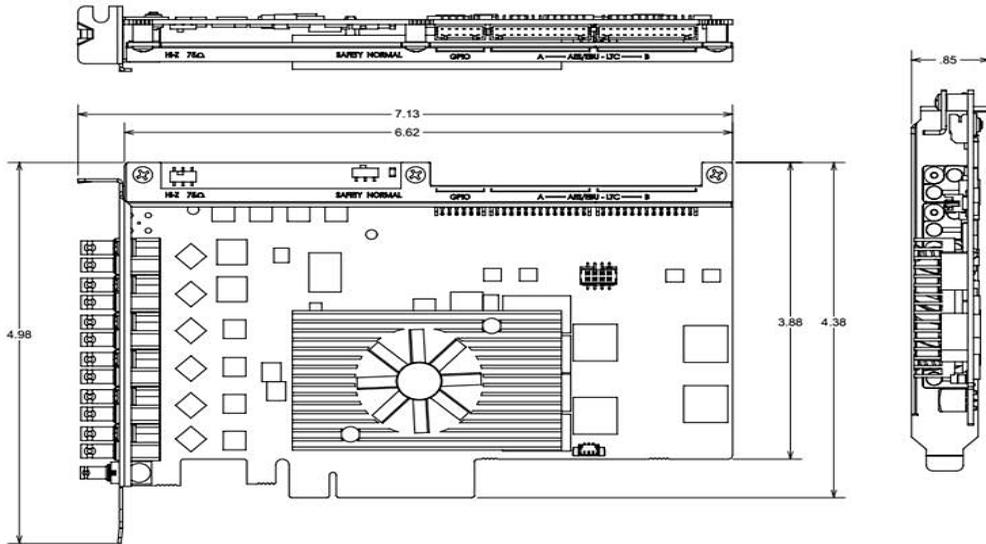
Note The particular inputs and outputs may vary depending on the model and configuration of your X.mio3 FH card.

General

PCI interface	½-length, full-height PCI Express Gen2 x8 card
Regulatory compliance	FCC Class A, CE Mark Class A, ACMA Class A, RoHS Directive 2002/95/EC
Nominal card dimensions	Card 16.82 cm × 11.1 cm (6.62" × 4.38") Card including full-height bracket and connectors 18.11 cm × 12.65 cm (7.13" × 4.98") Overall thickness including components 2.16 cm (0.85")

Dimensions

The dimensions for the Matrox X.mio3 FH card are as shown in the following illustration:



Typical operating voltages and current consumption

Voltage	+ 3.3 V	+ 12 V
Current	1.4 A	1.7 A

Total power consumption: 25.0 watts (may vary depending on your X.mio3 FH card model and system configuration).

Connector types

- SDI Video: HD-BNC connector.

Video input signals

Signal Type	Qty	Specification	Impedance
SD-SDI/HD-SDI/ 3G-SDI	8/12	Compliant with SMPTE 259M/SMPTE 292M/ SMPTE 424M	75 Ω
Reference In	1	<ul style="list-style-type: none"> • NTSC 286 mV as per SMPTE 170M • PAL 300 mV as per ITU-R BT.624-4 • HD Tri-level sync 600 mV_{p-p} as per SMPTE 274M/296M 	75 Ω ¹

¹ Can be set to 75 Ω termination using the miniature SW1 switch on the card (see “Installing your X.mio3 FH and X.mio3 LP card” on page 15).

Video output signals

Signal Type	Qty	Specification	Impedance
SD-SDI/HD-SDI/ 3G-SDI	8/12	Compliant with SMPTE 259M/SMPTE 292M/ SMPTE 424M	75 Ω

Environmental specifications

- Minimum/maximum room operating temperature¹: 0 to 55° C
- Minimum/maximum storage temperature: –40 to 75° C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

 **Important** To avoid damage to your DSX components and/or computer system, make sure that you don't operate your DSX cards at or near the maximum operating temperature for a prolonged period of time (see [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55 for more information).

¹ This temperature range assumes that the hardware components on the card don't exceed the maximum operating temperature as explained in [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55.

X.mio3 LP card



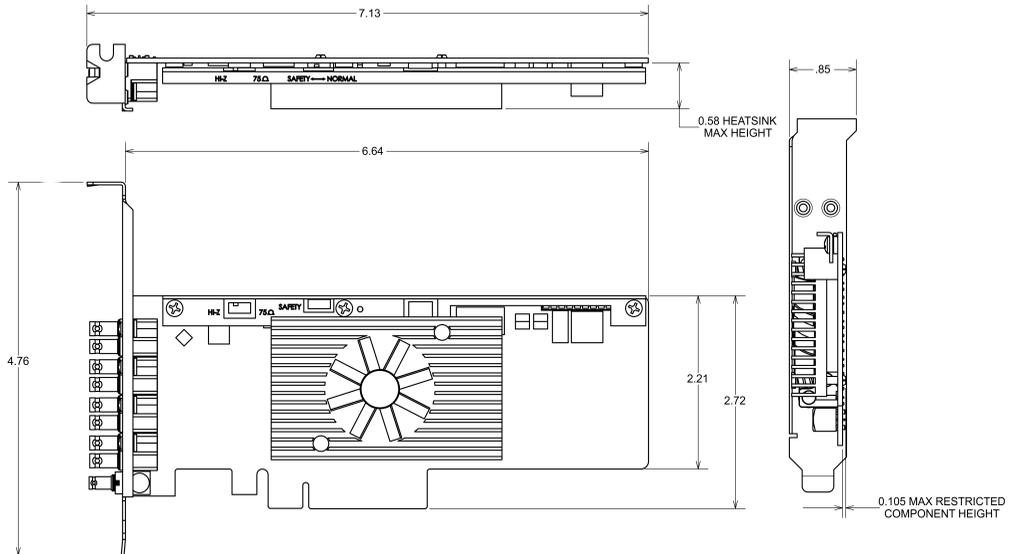
Note The particular inputs and outputs may vary depending on the model and configuration of your X.mio3 LP card.

General

PCI interface	½-length, ½-height PCI Express Gen2 x8 card
Regulatory compliance	FCC Class A, CE Mark Class A, ACMA Class A, RoHS Directive 2002/95/EC
Nominal card dimensions	<p>Card 16.87 cm × 6.91 cm (6.64" × 2.72")</p> <p>Card including low-profile bracket and connectors 18.11 cm × 7.62 cm (7.13" × 3.0")</p> <p>Card including full-height bracket and connectors 18.11 cm × 12.09 cm (7.13" × 4.76")</p> <p>Overall thickness including components 2.16 cm (0.85")</p>

Dimensions

The dimensions for the Matrox X.mio3 LP card are as shown in the following illustration:



Typical operating voltages and current consumption

Voltage	+ 3.3 V	+ 12 V
Current	1.1 A	1.4 A

Total power consumption: 21.0 watts (may vary depending on your X.mio3 LP card model and system configuration).

Connector types

- SDI Video: HD-BNC connector.

Video input signals

Signal Type	Qty	Specification	Impedance
SD-SDI/HD-SDI/ 3G-SDI	4/8	Compliant with SMPTE 259M/SMPTE 292M/ SMPTE 424M	75 Ω
Reference In	1	<ul style="list-style-type: none"> • NTSC 286 mV as per SMPTE 170M • PAL 300 mV as per ITU-R BT.624-4 • HD Tri-level sync 600 mV_{p-p} as per SMPTE 274M/296M 	75 Ω ¹

¹ Can be set to 75 Ω termination using the miniature SW1 switch on the card (see “Installing your X.mio3 FH and X.mio3 LP card” on page 15).

Video output signals

Signal Type	Qty	Specification	Impedance
SD-SDI/HD-SDI/ 3G-SDI	4/8	Compliant with SMPTE 259M/SMPTE 292M/ SMPTE 424M	75 Ω

Environmental specifications

- Minimum/maximum room operating temperature¹: 0 to 55° C
- Minimum/maximum storage temperature: –40 to 75° C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)



Important To avoid damage to your DSX components and/or computer system, make sure that you don't operate your DSX cards at or near the maximum operating temperature for a prolonged period of time (see [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55 for more information).

¹ This temperature range assumes that the hardware components on the card don't exceed the maximum operating temperature as explained in [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55.

X.mio3 IP card



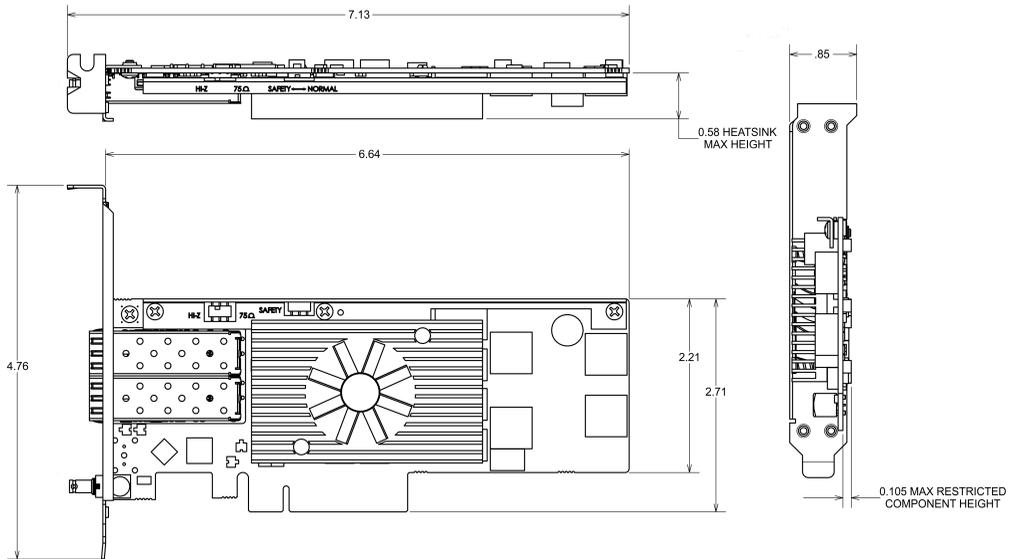
Note The particular inputs and outputs may vary depending on the model and configuration of your X.mio3 IP card.

General

PCI interface	½-length, ½-height PCI Express Gen2 x8 card
Regulatory compliance	FCC Class B, CE Mark Class B, RCM Class B, RoHS Directive 2002/95/EC
Nominal card dimensions	Card 16.82 cm × 6.91 cm (6.62" × 2.72") Card including low-profile bracket and connectors 18.01 cm × 7.62 cm (7.09" × 3.0") Card including full-height bracket and connectors 18.01 cm × 12.09 cm (7.09" × 4.76") Overall thickness including components 1.9 cm (0.75")

Dimensions

The dimensions for the Matrox X.mio3 IP card are as shown in the following illustration:



Typical operating voltages and current consumption

X.mio3 IP Voltage	+3.3 V	+12 V
Current	0.61 A	1.67 A
Power	2 watts	20 watts
Two SFP+ RX/TX Fiber Optical Transceivers Voltage	+3.3 V	+12 V
Current	0.30 A	N/A
Power	1 watt	N/A
Total	+3.3 V	+12 V
Current	0.91 A	1.67 A
Power	3 watts	20 watts

Total power consumption: 23 watts.
Based on two FiberStore SFP-10G31-10 transceivers
(may vary depending on your X.mio3 IP card model and
system configuration).

Connector types

- SFP+ transceivers for 10Gb Fiber Optic Cable, LC/LC, Multi Mode, Duplex, which are compliant with the SFF-8431 rev 4.1 specification.

Input signals

Signal Type	Qty	Specification	Impedance
IP/UDP/RTP	2 SFP+	Compliant with SMPTE 2022-6	
Reference In	1	<ul style="list-style-type: none"> • NTSC 286 mV as per SMPTE 170M • PAL 300 mV as per ITU-R BT.624-4 • HD Tri-level sync 600 mV_{p-p} as per SMPTE 274M/296M 	75 Ω ¹

¹ Can be set to 75 Ω termination using the miniature SW1 switch on the card (see “Installing your X.mio3 IP card” on page 22).

Output signals

Signal Type	Qty	Specification	Impedance
IP/UDP/RTP	2 SFP+	Compliant with SMPTE 2022-6	

Environmental specifications

- Minimum/maximum room operating temperature¹: 0 to 55° C
- Minimum/maximum storage temperature: –40 to 75° C
- Maximum altitude for operation: 3,000 meters
- Maximum altitude for transport: 12,000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)



Important To avoid damage to your DSX components and/or computer system, make sure that you don't operate your DSX cards at or near the maximum operating temperature for a prolonged period of time (see [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55 for more information).

¹ This temperature range assumes that the hardware components on the card don't exceed the maximum operating temperature as explained in [“Monitoring your DSX hardware operating temperatures”](#) on page 51 or page 55.

B

Validated Transceivers

This appendix provides details for Matrox X.mio3 IP validated transceivers.

X.mio3 IP validated transceivers

These lists are provided only as a reference. They do not guarantee the transceivers' compatibility with other devices such as routers, switches, etc., nor their interoperability with the different models.

These transceivers were tested for proper operation with an X.mio3 IP with two identical SFP+ transceivers, connected in dual loopback, between both transceivers (TX1 to RX2, TX2 to RX1) at a specific range and data rate.

All tests were performed with four video streams of 1080p at 59 fps, in full duplex output and input (2x SFP+ RX/TX optical transceivers, TX1 -> RX2, TX2 -> RX1, at two video streams per optical link).



Note These tests were performed under normal ambient laboratory conditions.

Validated 1310 and 1550 nm single-mode SFP transceivers

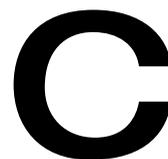
Brand	Order No.	Description	Brand compatibility	Optical fiber used
Avago	AFCT-701ASDZ	10Gb Ethernet, SFP+ Optical Transceiver, 10km on 9/125 μm SMF (10GBASE-LR), 0 to 85°C, LC Duplex	Agilent/Avago	9/125, single-mode NDSF, ITU-T G.652.D
	AFCT-701SDZ	10Gb Ethernet, SFP+ Optical Transceiver, 10km on 9/125 μm SMF 10GBASE-LR, 0 to 70°C, LC Duplex		
FiberStore	SKU10327MS	Avago AFCT-701SDDZ Compatible SFP+ 10km on 9/125 μm SMF Dual rate: 1G/10G (1000BASE-LX / 10GBASE-LR), 0 to 70°C, LC Duplex	Agilent/Avago	
	SKU14930 ¹	APRESIA H-ER-SFP+ Compatible Transceiver, 40km 9/125μm SMF (10GBASE-ER), 0 to 70°C, LC Duplex	Apresia	
Finisar	FTLX-1471D3BNL	10Gb Ethernet, SFP+ Optical Transceiver, 10km on 9/125 μm SMF (10GBASE SE-LR/LW), -5 to 85°C, LC Duplex	Finisar	
OE_Solution	RSPXOSLR-ST3	10Gb Ethernet, SFP+ Optical Transceiver, 10km on SMF(0.4 dB/km) (10GBASE-LR/LW), -5 to 70°C, LC Duplex	OE Solution	

¹ Only the FiberStoreSKU14930 transceiver has a wavelength of 1550 nm. All others: 1310 nm.

Validated 850 nm multi-mode SFP transceivers

Brand	Order No.	Description	Brand compatibility	Optical fiber used
6COM	6C-SFP+-SR	10Gbps SFP+ Optical Transceiver, 300m on 2000MHz/km MMF (10GBASE-SR/-SW), 0 to 70°C, LC duplex	6COM	50/125, OM3 (Stonewall F50G-DB2GG0)
Avago	AFBR-709SMZ	10Gbps, SFP+ Optical Transceiver, 300m(OM3) / 400m(OM4) MMF (10GBASE-SR/SW), 0 to 70°C, LC duplex	Agilent/Avago	50/125, OM3 (Stonewall F50G-DB2GG0); 50/125, OM4 (L-COM SP76589)
	AFBR-703ASDZ	10Gbps SFP+ Optical Transceiver, 300m (OM3) (10GBASE-SR), 0 to 85°C, LC duplex		50/125, OM3 (Stonewall F50G-DB2GG0)
Delta	LCP-10G3A4EDR-G	10Gbps SFP+ Optical Transceiver, 300m(OM3- 2000MHz/km MMF) (10GBASE-SR), -5 to 70°C, LC duplex	Delta	50/125, OM3 (Stonewall F50G-DB2GG0)
FiberStore	SKU00013I3	Alcatel-Lucent SFP-10G-GIG-SR Compatible Optical Transceiver Dual rate: 1G/10G (10GBASE-SR/SW & 1000BASE-SX), LC duplex	Alcatel-Lucent	50/125, OM3 (Stonewall F50G-DB2GG0)
	SKU000123E1	Linksys LACXGSR Compatible 10GBASE-SR Optical Transceiver (10GBASE-SR), 0 to 70°C, LC duplex	Linksys	50/125, OM3 (Stonewall F50G-DB2GG0)
Finisar	FTLX-8571D3BCL	10Gbps SFP+ Optical Transceiver, 300m(OM3) / 400m(OM4) MMF 10GBASE-SR/SW 10G Ethernet, -5 to 70°C, LC duplex	Finisar	50/125, OM3 (Stonewall F50G-DB2GG0); 50/125, OM4 (L-COM SP76589)
Intel	FTLX-8571D3BCV-IT (E10GSFPSR)	1G/10Gbps SFP+ Optical Transceiver, 1G: 550m, 10G:300m (OM3) Dual rate: 1G/10G (10GBASE-SR/SW & 1000BASE-SX), LC duplex	Intel	50/125, OM3 (Stonewall F50G-DB2GG0)

Your notes



DSX Technical Support

This appendix explains how you can register your DSX product and obtain technical support.

Registration

You can register your Matrox DSX product on our web site at www.matrox.com/video.

-  **Important** Only registered users are entitled to technical support, software updates, access to our user forums, and special promotional offers.

DSX OEM technical support

As a Matrox DSX user, you have several sources for technical support.

DSX applications engineering

If you have a problem or question that you're unable to solve by referring to your DSX documentation, please contact your Matrox DSX representative. He or she should be able to help you correct any installation or system configuration problem.

If your representative is unable to solve your problem, contact our Matrox applications engineering department for further information and assistance.

Contacting us by telephone

Telephone Worldwide (514) 685-7230 ext. 2841

Matrox Video Products Developer Forum

The Matrox Video Products Developer Forum at <http://forum.matrox.com/videodev> is an online forum that provides users of Matrox video products with access to product release information, software updates, and technical support. It also gives participants an opportunity to exchange information and share technical expertise with other Matrox developers.

-  **Important** Only registered users are allowed on this forum.

A

- AES/EBU audio cable
 - Matrox X.mio3 FH connection [10](#)
- Audio cable
 - connecting to Matrox X.mio3 FH [10](#)

C

- Card installation
 - Matrox X.mio3 FH [15](#)
 - Matrox X.mio3 IP [22](#)
 - Matrox X.mio3 LP [15](#)
 - safety precautions [5](#)
- Configuring inputs and outputs [18](#)

D

- Dongle upgrade procedure
 - about [19, 25](#)
- DSX software
 - installing
 - in Linux [38](#)
 - in Windows [30](#)
 - removing
 - in Linux [42](#)
 - in Windows [32](#)
- DSX technical support [72](#)
- DSX.sdk
 - See* Matrox DSX.sdk
- DSX.utils
 - See* Matrox DSX.utils
- DSX-TopologySdk
 - See* Matrox DSX-TopologySdk
- DSX-TopologyUtils
 - See* Matrox DSX-TopologyUtils

E

- Error notification
 - with X.info [51](#)

F

- Firmware update
 - during installation [30](#)
 - safety recovery mode [19, 26](#)

G

- Genlock termination switch [15, 22](#)
- GPI cable bracket
 - Matrox X.mio3 FH
 - circuit connection [14](#)
 - connecting [12](#)
 - connecting external devices [13](#)
 - connector pinouts [13](#)

H

- Hardware information
 - displaying with mveXinfo [54](#)
 - displaying with X.info [50](#)
- Heat buildup problems [6](#)

L

- LEDs
 - on Matrox X.mio3 IP [25](#)
- libdispatch
 - for Centos 7 [39](#)
 - for openSUSE 13.1 [39](#)
 - for Ubuntu [38](#)
- LTC (Linear Time Code)
 - connecting LTC cable to Matrox X.mio3 FH [10](#)

M

- Matrox
 - contacting us [72](#)
- Matrox DSX
 - overview [2](#)
 - registration [72](#)
 - system recommendations [2](#)
 - technical support [72](#)
 - validated systems and storage devices [2](#)
- Matrox DSX.sdk
 - installing [31](#)
 - removing [32](#)
- Matrox DSX.utils
 - installing [30](#)
 - removing [32](#)
- Matrox DSX-TopologySdk
 - installing [42](#)
 - removing [42](#)

- Matrox DSX-TopologyUtils
 - installing 41
 - removing 42
 - Matrox Firmware Updater
 - about 32, 43
 - error codes
 - in Linux 44, 45
 - in Windows 34
 - launching
 - in Linux 44
 - in Windows 33
 - Matrox mveXinfo
 - about 54
 - monitoring temperatures 55
 - using 54
 - using to display information 54
 - Matrox VFW software codecs
 - installing 36
 - removing 32
 - Matrox X.info
 - about 48
 - error notification 51
 - hardware information 50
 - monitoring temperatures 51
 - system information 48
 - using 48
 - using to display information 48
 - Matrox X.mio3 FH
 - configuring inputs and outputs 18
 - connecting audio cable 10
 - connecting external devices to GPI cable bracket 13
 - connecting LTC cable 10
 - connecting reference input cable 17
 - connecting to GPI cable bracket 12
 - connecting video cables 17
 - dongle upgrade procedure 19
 - GPI cable bracket circuit connection 14
 - GPI connector pinouts 13
 - installing 15
 - safety recovery mode 19
 - specifications 58
 - Matrox X.mio3 IP
 - connecting reference input cable 23
 - connecting video cables 23
 - dongle upgrade procedure 25
 - installing 22
 - LEDs 25
 - safety recovery mode 19, 26
 - specifications 64
 - Matrox X.mio3 LP
 - configuring inputs and outputs 18
 - connecting reference input cable 17
 - connecting video cables 17
 - dongle upgrade procedure 19
 - installing 15
 - specifications 61
 - Monitoring your system
 - with mveXinfo 54
 - with X.info 48
 - mvDriverFPGAUpdater.exe
 - See* Matrox Firmware Updater
 - mveXinfo
 - See* Matrox mveXinfo
- ## P
- Power management settings 4
 - configuring in computer BIOS 4
 - configuring in Linux 5
 - configuring in Windows 4
- ## R
- Registering your DSX product 72
- ## S
- Safety recovery mode, enabling 19, 26
 - SFP+ cable connections
 - Matrox X.mio3 IP 23
 - Silent mode
 - for installing Matrox software in Linux 41
 - for installing Matrox software in Windows 31
 - for Matrox Firmware Updater 34, 44

Software installation

libdispatch

for CentOS 7 [39](#)

for openSUSE 13.1 [39](#)

for Ubuntu [38](#)

Matrox DSX.sdk [31](#)

Matrox DSX.utils [30](#)

Matrox DSX-TopologySdk [42](#)

Matrox DSX-TopologyUtils [41](#)

Matrox VFW software codecs [36](#)

overview [30](#), [38](#)

System information

displaying with mveXinfo [54](#)

displaying with X.info [48](#)

T

Technical support [72](#)

Temperatures

monitoring with mveXinfo [55](#)

monitoring with X.info [51](#)

U

Upgrade procedure

See Dongle upgrade procedure

V

Validated systems and storage devices [2](#)

Ventilation [6](#)

Video cable connections

Matrox X.mio3 FH [17](#)

Matrox X.mio3 LP [17](#)

Video for Windows software codecs

installing [36](#)

W

Warranty [i](#)

X

X.info

See Matrox X.info

X.mio3 FH

See Matrox X.mio3 FH

X.mio3 IP

See Matrox X.mio3 IP

X.mio3 LP

See Matrox X.mio3 LP

Your notes

Compliance Statements (for all DSX cards except X.264 and X.open)

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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 equipment and other peripherals to the card is required to meet FCC requirements.

Canada

(English) Industry Canada Compliance Statement

CAN ICES-3 (A)/NMB-3 (A)

Remark for the Matrox hardware products supported by this guide

These digital devices do not exceed the Class A limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Industry Canada.

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

CAN ICES-3 (A)/NMB-3 (A)

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 A 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 2006/95/EC for a Class A 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 equipment and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.

(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 2006/95/EC pour les unités numériques de classe A. 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 ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe A. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe A.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch

Diese Geräte entsprechen EC Richtlinie 2006/95/EC für ein digitales Gerät Klasse A. 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 und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse A entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse A entsprechenden System entsprechend funktionieren.

(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 2006/95/EC relativamente ai dispositivi digitali di Classe A. 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 e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe A. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe A.

(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 2006/95/EC para dispositivos digitales de Clase A. 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 y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase A. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase A.



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 equipment and other peripherals to the card 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

CAN ICES-3 (B)/NMB-3 (B)

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

CAN ICES-3 (B)/NMB-3 (B)

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.

Japan

VCCI Compliance Statement

Remark for the Matrox hardware products supported by this guide These are Class B products based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If these are used near a radio or television receiver in a domestic environment, they may cause radio interference. Install and use the equipment according to instructions in the manual.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。



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 2006/95/EC 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 equipment and other peripherals to the card. These products have been tested in a typical class B compliant host system. It is assumed that these products will also achieve compliance in any class B compliant system.

(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 2006/95/EC 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 ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe B. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe B.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen EC Direktive 2006/95/EC für ein digitales Gerät Klasse B. Sie wurden getestet und entsprechen demnach EN55022/CISPR22 und EN55024/CISPR24. In einer Wohnungsbau 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 und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse B entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse B entsprechenden System entsprechend funktionieren.

(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 2006/95/EC 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 e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe B. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe B.

(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 2006/95/EC 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 y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase B. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase B.



www.matrox.com/video