About Matrox Imaging

Founded in 1976, Matrox is a privately held company based in Montreal, Canada. Imaging, Graphics and Video divisions provide leading component-level solutions for imaging and machine vision, graphics, and video. Each division leverages the others’ expertise and industry relations to provide timely and innovative products.

Matrox Imaging is an established and trusted supplier to top OEMs and integrators involved in the manufacturing, medical diagnostic and security industries. The components consist of cameras, interface boards and processing platforms, all designed to provide optimum price-performance within a common software environment.

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Matrox Imaging Library (MIL)

We offer developers a comprehensive set of software tools. Our foundation product, Matrox Imaging Library (MIL), is an application development toolkit for image analysis, machine vision, medical imaging and video analytics. MIL includes tools for every step in the process: from application feasibility, to prototyping, through to development and ultimately deployment.

MIL Benefits

- Solve applications rather than develop underlying tools by leveraging a toolkit with a 20-year history of reliable performance.
- Tackle applications with utmost confidence using field-proven tools for analyzing, locating, measuring, reading and verifying.
- Harness the full power of today’s hardware through optimizations exploiting SIMD, multi-core CPU, multi-CPU, GPU and FPGA technologies.
- Easily support platforms ranging from smart cameras to HPC clusters via a single consistent and intuitive API.
- Obtain images from the interface of choice through support for analog, Camera Link®, CoaXPress, DVI-D, GigE Vision®, IEEE 1394a-1987, SDK and SDK Vision™ transmission formats.
- Maintain flexibility and choice by way of 32/64-bit Windows® and Linux® support.
- Make the best use of available programming know-how with support for C, C++, CP and Visual Basic® languages.
- Further increase productivity and reduce development costs by receiving training and assistance from a team of imaging experts.

1. Only under Windows®.
Matrox Design Assistant

Matrox Design Assistant is an integrated development environment (IDE) where machine vision applications are created by constructing a flowchart instead of writing traditional program code. In addition to building a flowchart, the IDE enables users to directly design a graphical operator interface to the application.

Easily and quickly solve machine vision applications without writing program code using an intuitive flowchart-based methodology

Tackle machine vision applications with utmost confidence using field-proven tools for analyzing, locating, measuring, reading and verifying

Learn and use a single program for creating both the application logic and operator interface

Deploy the same application to either a Matrox smart camera, vision system or third-party computer with a GigE Vision® or USB3 Vision™ camera

Work with multiple cameras within the same project

Rely on a common underlying vision library for the same results with a Matrox smart camera, vision system or third-party computer

Maximize productivity by getting instant feedback on image analysis and processing operations

Get immediate pertinent assistance through an integrated contextual guide

Communicate actions and results to other automation and enterprise equipment through discrete Matrox I/Os, RS-232 and Ethernet (TCP/IP, EtherNet/IP™, MODBUS®, PROFINET and native robot interfaces)

Maintain control and independence through the ability to create custom flowchart steps

Matrox Design Assistant Benefits

Our smart cameras combine the integration capabilities of conventional smart cameras with the flexibility of PC-based machine vision systems. Developers create their applications using either an intuitive flowchart-based integrated development environment or a traditional software development kit. Matrox Iris GT smart cameras offer a dust-proof, immersion-resistant and extremely rugged construction. A choice of image sensors, combined with an efficient Intel® Atom™ embedded processor, allow these smart cameras to tackle a wide variety of machine vision applications. Users create applications for a Matrox Iris GT using either the Matrox Design Assistant integrated development environment or the MIL application development kit.

Simplify system integration by using a camera, processor and software development package from a single vendor with over 35 years of industry experience

Reliably handle typical production rates by way of an efficient Intel® Atom™ embedded processor running Microsoft® Windows® Embedded Compact 7

Conveniently administer, control and monitor application and device through a web-based user interface

Operate without a PC to a way of built-in keyboard, video (monitor) and mouse (KVM) support

Tackle different image resolution, size and speed requirements through a choice of monochrome and color CCD sensors

Synchronize image capture and processing to the production process using the externally triggered electronic camera shutter

Directly interface to other automation equipment through the integrated digital I/Os, Ethernet and serial ports

Communicate over the factory-floor and enterprise networks to any of Ethernet interfaces

Sturdy, dust-proof and washable IP67-rated casing that can be used in a variety of applications

Matrox Smart Camera Benefits
Matrox 4Sight GPm and Matrox 4Sight GP
A unique combination of embedded PC technology, compact size and ruggedness make Matrox 4Sight industrial computers the ideal solution for cost-sensitive image analysis, machine vision, medical imaging and video surveillance applications.

**Matrox 4Sight GPm Benefits**

- Reduce service stoppages with a fanless design
- Impact multiple sites through the support for four GigE Vision® and four USB3 Vision™ cameras
- Simplicity coding for GigE Vision® installations using Power-over-Ethernet (PoE) enabled ports
- Tackle typical vision workloads with a mobile-class 3rd generation Intel® Core™ processor
- Connect separately to the factory floor and enterprise networks via two more secure Ethernet ports
- Synchronize with other equipment using the integrated general purpose digital I/Os and RS232/RS485 ports
- Drive up to two operator displays
- Install in space-limited hostile environments with a small footprint ruggedized casing
- Run applications in a familiar, reliable and customizable environment using the provided Microsoft® Windows® Embedded Standard 7

**Matrox 4Sight GP Benefits**

- Tackle demanding imaging workloads with confidence using a desktop-class 3rd generation Intel® Core™ processor
- Encode high-definition video real-time in H.264 with little CPU usage
- Directly capture from standard GigE Vision® and USB3 Vision™ cameras
- Flexibly support for analog, Camera Link®, CoaXPress, DVI and SDI video interfaces using Matrox frame grabbers
- Synchronize with other equipment using the integrated general purpose digital I/Os
- Expand I/O capabilities through two PCIe® slots accepting full-height, half-length cards
- Drive up to two operator displays
- Install in space-limited industrial environments on a result of a small-footprint rugged design
- Run applications in a familiar, reliable and customizable environment using the provided Microsoft® Windows® Embedded Standard 7

**Matrox Supersight Benefits**

- Tackle extreme applications with certainty using a high performance compute cluster platform
- Harness the full power of today’s multicore CPU, GPU and FPGA technology to provide image processing offload and acceleration
- Eliminate I/O bottlenecks with a unique PCIe® switched fabric backplane architecture
- Directly interface to external process equipment through the integrated Gigabit Ethernet, RS-232, USB connectivity
- Minimize the need for revalidation by using a lifecycle managed platform with consistent long term availability
- Simplify system integration by using an integrated platform from a single vendor and pre-qualified third-party components
- Run applications under an established OS with factory-installed Windows® 7 for Embedded Systems

**Matrox Supersight**
Our high-performance computing (HPC) platform, Matrox Supersight, is ideal for computationally-demanding industrial imaging applications.

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1. With support for multiple languages. Only one language version can be used at any given time.
2. Matrox 4Sight GPm is a pre-licensed for the MIL interface run-time package. All other MIL run-time packages require adding a separate license.
Frame Grabbers

Matrox Imaging provides developers with the industry’s most comprehensive frame grabber family. Hardware ranges from boards designed for very cost-sensitive applications, to frame grabbers integrating flexible, high-site acquisition and pre-processing capabilities. All of our products combine maximum functionality and unbeatable value.

Matrox Frame Grabber Benefits

- Acquire the video format of choice through support for SD, HD and non-standard analog, DVI-D, Camera Link®, CoaXPress, GigE Vision®, IEEE 1394 and SDI
- Minimize system costs with support on select boards for multiple video input channels per slot
- Minimize or accelerate image manipulation using reformatting and conversion on select boards
- Accommodate present and legacy systems with support for conventional PCI, PCI-X® and PCI-Express® on select boards
- Reduce development and validation costs through a managed lifecycle offering consistent long term availability
- Reliably acquire images using the efficient Matrox Imaging Library (MIL) video capture drivers
- Get up and running quickly with camera interfaces included with MIL, published on the Matrox Imaging web site, or created with the Matrox Intellicam interactive utility
- Future-proof applications with the portable and consistent MIL application programming interface
- Maintain flexibility and choice by way of 32/64-bit Windows® and 32/64-bit Linux® support

Vision Processors

Our vision processing technology integrates high-bandwidth acquisition and real-time processing.

Matrox Radiant eCL Benefits

- Offload and accelerate image processing to free and assist the host CPU using an FPGA
- Optimize multi-camera applications via support for up to four independent Base (eCL-QB) or up to two full (eCL-DF) Camera Link® camera per board
- Perform deterministic image acquisition by way of the jitter-free Camera Link® interface
- Eliminate test points through a MIL® all host interface and ample on-board buffering
- Use the highest rate cameras with available support for up to 10-taps at 85 MHz
- Reduce cabling and eliminate power supply by way of Power over Camera Link® (PoCL) support
- Reduce development and validation costs through a managed lifecycle offering consistent long term availability
- Implement image capture with ease and confidence using Matrox Imaging Library (MIL) application development tools
- Maintain flexibility and choice by way of 32/64-bit Windows® and 32/64-bit Linux® support

Matrox Radiant eCL Features

- Let Matrox Imaging help you take advantage of FPGA-based processing

Application can feature demanding and repetitive image processing tasks that overwhelm the host CPU or leave little room for additional functionality. FPGA-based processing provides an elegant solution to offload and even accelerate these tasks, freeing up valuable host resources. FPGA devices offer the added benefit of supporting custom image processing algorithms. However, custom FPGA development is cost, knowledge and time intensive.

Matrox Imaging provides FPGA design services to assist OEMs with the development of timely and efficient solutions. These solutions are based on an extensive set of ready-made design blocks and vast knowhow obtained after many years of in-house ASIC and FPGA design. Matrox Imaging’s design services rate FPGA-based processing accessible without having to incur the costs associated with specialized tools and staffing.
Support and Services

Support and maintenance
Matrox Imaging’s front line support group is available to answer your installation questions and provide developer trouble-shooting assistance. Our team of applications engineers is ready to guide you through the design, development and deployment phase of your project. We also offer customers a worldwide network of field support specialists.

Matrox Imaging provides registered users of our software with automatic enrollment in the maintenance program for one year. This maintenance program entitles registered users to free software updates and technical support from Matrox Imaging. Just before the expiration of the maintenance program, registered users will have the opportunity to extend the program for another year.

The Vision Squad
In addition to an experienced and skilled technical support group that helps users with installation, cross-compatibility and programming matters, Matrox Imaging offers customers the assistance of the Vision Squad. The Vision Squad’s knowledgeable staff, working closely with our software developers, helps users quickly assess application feasibility and establish the best strategy for using our processing and analysis tools to produce a solution. Services range from providing advice to delivering a proof-of-concept imaging application and its underlying framework.

World-class manufacturing
Matrox Imaging relies on world-class manufacturing to deliver high-quality products in a timely manner. A dedicated test area in our offices is used for material inspection and assembly verification of our camera products.

Integration services
If you are looking for a turn-key solution, Matrox Imaging has a network of authorized integrators who will work with you to design a vision system tailored to your specifications. Our integrators have delivered hundreds of vision systems to a wide range of manufacturing fields and disciplines from automotive to food, electronics to pharma/biotech, medical devices to transportation, packaging to robotics. With years of combined experience, they have mastered the art of ingesting vision systems with other automation systems. Whether it be a small-scale or an enterprise-class vision system, Matrox Imaging can deliver a complete vision system crafted by a vision specialist and constructed with the best components in the industry.

Training
Matrox Imaging offers developers comprehensive training on our software tools, including instructor-led classroom sessions and virtual classes worldwide. We also have extensive experience developing custom, on-site training courses tailored to meet customers’ specific needs and project timelines. By participating in our training programs, OEMs and integrators will:
• Increase productivity
• Reduce development and engineering costs
• Bring projects to market sooner

Product Change Control
Some industries, such as medical and semiconductor, are subject to stringent regulatory approaches where the slightest change to a product can trigger significant revalidation work at great expense to the OEM. Matrox offers a range of programs including Copy Exact and Revision Controlled with additional documentation options for Change Risk Analysis and Validation Planning to assist OEMs with their regulatory compliance.

Support and Services
### Analog Frame Grabbers

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>Analog</th>
<th>DVI-D</th>
<th>SDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
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</tr>
</tbody>
</table>

### Acquisition Format

- **Standard analog**
- **Monochrome or color**
- **Frame or line scan**

### Acquisition Rate

- **Square pixel** up to 80 MHz
- **HD** up to 65 MHz

### On-board Processing

- **Bayer (2x2 average)**
- **Interpolation**
- **Color space conversion**

### Memory

- **64 MB**
- **1 GB**

### Additional Features

- **Simultaneous capture from up to two independent video sources**
- **Up to 32 MB SRAM**
- **Pre-licensed for use with MIL IEEE 1394 IIDC driver**
- **Pre-configured for optimal GigE Vision® performance**

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### Analog / SDI Frame Grabbers

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>Analog</th>
<th>SDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
<td>PCI, PC-104, PCIe® 1.0 x1</td>
</tr>
</tbody>
</table>

### Acquisition Format

- **HD (720p or 1080i)**
- **Standard analog**
- **Monochrome or color**

### Acquisition Rate

- **Square pixel** up to 85 MHz

### On-board Processing

- **Bayer (2x2 average)**
- **Interpolation (eCL-F)**
- **Color space conversion**

### Memory

- **64 MB**
- **1 GB**

### Additional Features

- **Simultaneous capture from up to two independent video sources**
- **Up to 32 MB SRAM**
- **Pre-licensed for use with MIL IEEE 1394 IIDC driver**
- **Pre-configured for optimal GigE Vision® performance**

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### Camera Link® Frame Grabbers

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>Camera Link®</th>
<th>CoaXPress</th>
<th>GigE Vision®</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIe® 1.0 x1</td>
<td>PCIe® 1.0 x1</td>
<td>PCIe® 1.0 x1</td>
<td>PCIe® 1.0 x1</td>
</tr>
</tbody>
</table>

### Acquisition Format

- **HD (up to 1080p)**
- **Standard analog**
- **Monochrome or color**

### Acquisition Rate

- **Up to 85 MHz**

### On-board Processing

- **Altera® Stratix® III Processing FPGA with 110K up to 340K logic elements and 133 MHz operation**
- **Bayer (2x2 average)**
- **Interpolation**
- **Color space conversion**

### Memory

- **16 MB**
- **64 MB**
- **1 GB**

### Additional Features

- **Simultaneous capture from up to four independent video sources**
- **Up to 32 MB SRAM**
- **Pre-licensed for use with MIL IEEE 1394 IIDC driver**
- **Pre-configured for optimal GigE Vision® performance**

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### GigE Vision® Frame Grabbers

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>GigE Vision®</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIe® 1.0 x1</td>
<td>PCIe® 1.0 x1</td>
</tr>
</tbody>
</table>

### Acquisition Format

- **HD (720p or 1080i)**
- **Standard analog**
- **Monochrome or color**

### Acquisition Rate

- **Up to 85 MHz**

### On-board Processing

- **Bayer (2x2 average)**
- **Interpolation**
- **Color space conversion**

### Memory

- **64 MB**
- **1 GB**

### Additional Features

- **Simultaneous capture from up to four independent video sources**
- **Up to 32 MB SRAM**
- **Pre-licensed for use with MIL IEEE 1394 IIDC driver**
- **Pre-configured for optimal GigE Vision® performance**

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### IEEE 1394 Frame Grabbers

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<thead>
<tr>
<th>Form Factor</th>
<th>IEEE 1394</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIe® 1.0 x1</td>
<td>PCIe® 1.0 x1</td>
</tr>
</tbody>
</table>

### Acquisition Format

- **HD (up to 1080p)**
- **Standard analog**
- **Monochrome or color**

### Acquisition Rate

- **Up to 85 MHz**

### On-board Processing

- **Bayer (2x2 average)**
- **Interpolation**
- **Color space conversion**

### Memory

- **64 MB**
- **1 GB**

### Additional Features

- **Simultaneous capture from up to four independent video sources**
- **Up to 32 MB SRAM**
- **Pre-licensed for use with MIL IEEE 1394 IIDC driver**
- **Pre-configured for optimal GigE Vision® performance**

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### Note

1. No support for transcoding (i.e. video output resolution and rate is identical to video input resolution and rate). 2. Support a maximum acquisition rate of 250 MB/s under continuous use. 3. 10-tap acquisition restricted to 70 MHz maximum.

4. Via two DVI-I and two SDI inputs, with display disabled.
5. With model supporting Quad CXP.