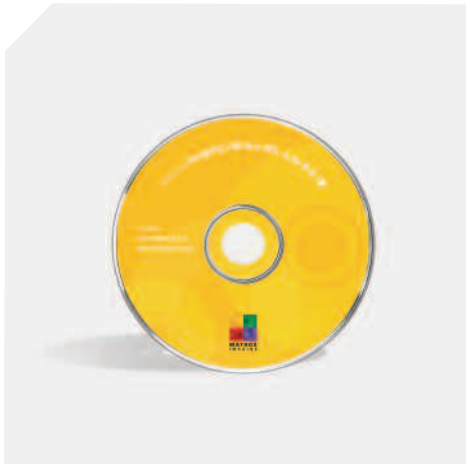




Matrox Imaging Library (MIL-Lite) >>>

Release 8.0

Software development toolkit for image capture, display and archiving.



Key features

- > complete and easy-to-use programming library for image capture, display and archiving
- > applications easily ported to new hardware platforms
- > multi-processing and multi-threading support
- > available for Microsoft® Windows® 2000, Windows® XP (32-bit) and Linux¹
- > includes Matrox Intellicam camera configuration utility
- > royalty-free redistribution with Matrox hardware
- > free first-year enrollment in maintenance program



Extensive and highly-optimized imaging library

Matrox Imaging Library (MIL-Lite) is a high-level programming library with an extensive set of optimized functions for image capture, display and archiving. Designed to facilitate development and increase productivity, MIL-Lite offers a common C API that supports Matrox Imaging's entire hardware line, and an intuitive and easy-to-use function set.

Rapid development

For fast Windows® application development, MIL-Lite comes bundled with ActiveMIL-Lite², a collection of ActiveX controls (OCX) for managing image capture, display and archiving. ActiveMIL-Lite lets you quickly and easily put together an imaging application with a custom, professional-looking Windows® user interface. Application development consists of drag and drop tool placement with point and click configuration, resulting in substantially less coding. With ActiveMIL-Lite, OEMs and integrators save development time by focusing on the imaging task rather than implementing the user interface.

Common API for image capture, processing and display

A common API provides seamless support for the full range of Matrox Imaging hardware, letting you capture images using the frame grabber of your choice. MIL-Lite also supports image capture from GigE Vision™³ and IIDC-based IEEE 1394 a/b³ cameras. Image display is optimized for Matrox and third-party graphics controllers.



Reusable application code

Once your application is built, you can move it from one platform to another with little or no changes to the application code. For example, moving an application from one frame grabber to another can be as simple as changing a single line of code.

»» Moving from one board to another

```
...  
/* Allocate a system */  
MilSystem = MsysAlloc(M_SYSTEM_METEOR_II_CL, ...);  
...  
  
...  
/* Allocate a system */  
MilSystem = MsysAlloc(M_SYSTEM_SOLIOS, ...);  
...
```

By changing a single line of code, an application using a Matrox Meteor-II/Camera Link can work with a Matrox Solios eCL/XCL.

Simplified system and application management

With MIL-Lite, a developer does not require an in-depth knowledge of the underlying hardware. MIL-Lite is designed to deal with the specifics of each hardware platform and provides simplified system management and control (i.e., hardware detection, initialization and buffer copy). For example, when grabbing to host memory, MIL-Lite transparently allocates a buffer of the appropriate type (i.e., non-paged memory). However, MIL-Lite does give developers direct access to certain hardware resources. For example, MIL-Lite can provide the physical address of a buffer. MIL-Lite also includes debugging services (i.e., function parameter checking, tracing and error reporting) to further aid application development.

Data formats

MIL-Lite can manipulate data, such as monochrome images, stored in 1, 8, 16 and 32-bit integer, as well as 32-bit floating point formats. MIL-Lite can also handle color images stored in packed or planar RGB/YUV formats. Included are commands for converting between data types.

Dependable and flexible image capture

For greater determinism and the fastest response, MIL-Lite provides multi-buffered image capture control performed in the operating system's kernel mode. Image capture is thus secured for frame rates measured in the thousands per second even when the host CPU is heavily loaded with tasks such as HMI management, networking and archiving to disk. The multi-buffered mechanism supports callback functions for simultaneous capture and processing even when the processing time occasionally exceeds the capture time.

MIL-Lite, in combination with the appropriate Matrox Imaging or supported third-party hardware, enables high-quality image capture from virtually any type of color or monochrome source including standard, high-resolution, high-rate, frame-on-demand cameras, line scanners, slow scan, and custom-designed devices.

Saving and loading

MIL-Lite supports saving and loading of individual images or sequence of images to/from disk. Supported file formats are TIF (TIFF), BMP (bitmap), JPG (JPEG)⁴, JP2 (JPEG2000)⁴ and AVI (Audio Video Interleave), as well as a raw format.

Simplified image display⁵

MIL-Lite provides transparent image display management with automatic tracking and updating of image display windows at live video rates. MIL-Lite also allows for image display in a user-specified window. In addition, MIL-Lite supports live display of multiple video streams using multiple independent windows or a single mosaic window. Moreover, MIL-Lite provides non-destructive graphics overlay, suppression of tearing artifacts and filling the display area at live video rates. All of these features are performed with little or no host CPU intervention when using the appropriate graphics hardware.

»» Non-destructive overlay



MIL-Lite performs non-destructive overlay of graphics at live video rates with little or no host CPU intervention.

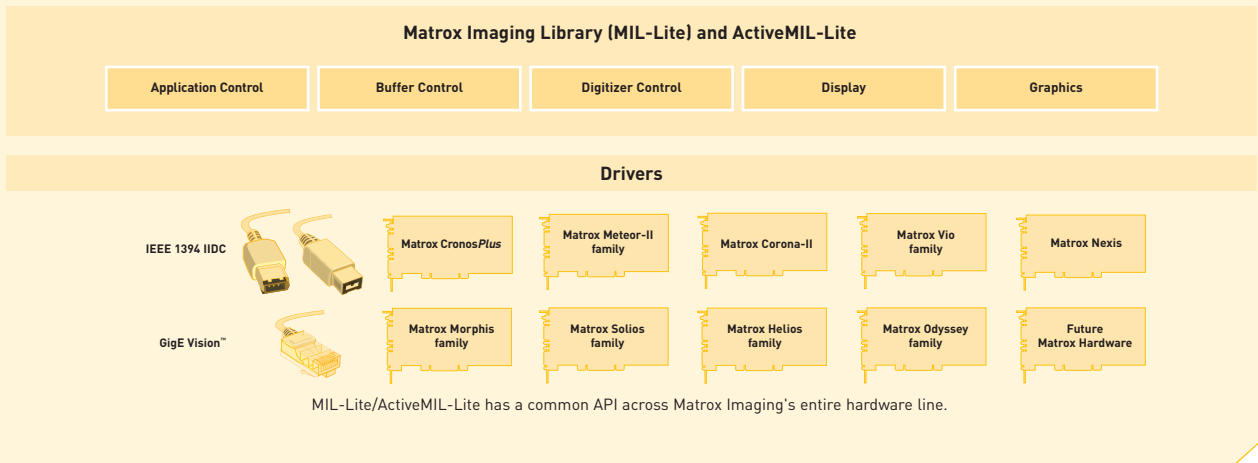
MIL-Lite also supports multi-screen display configurations that are in an extended desktop mode² (Windows[®] desktop across multiple monitors), auxiliary mode (monitor not showing Windows[®] desktop but dedicated to MIL-Lite display) or a combination of both. Multi-screen display configurations are achieved using Matrox and/or third-party graphics boards.

»» Image display management



MIL-Lite automatically manages multi-screen display configurations.

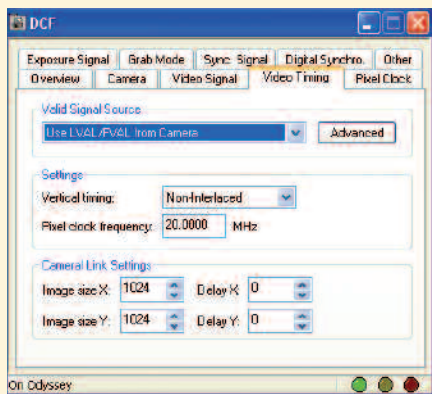
» Software Architecture



Matrox Intellicam

MIL-Lite includes the Matrox Intellicam camera configuration utility, a Windows®-based program that allows users to interactively and easily configure Matrox image capture hardware for a variety of image sources or simply try one of the numerous ready-made interfaces available from Matrox Imaging.

» Matrox Intellicam



Included with MIL-Lite is the Matrox Intellicam frame grabber configuration utility.

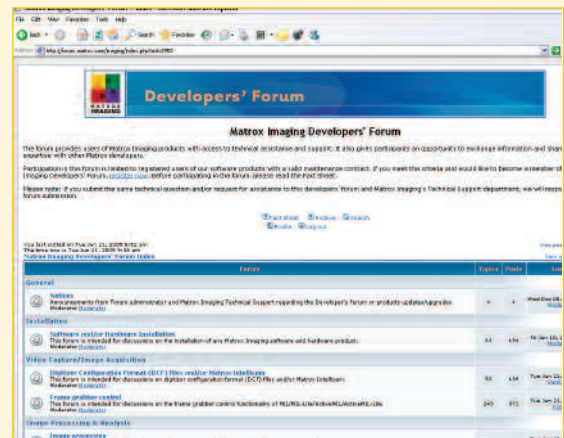
Comprehensive yet highly accessible documentation

Online help provides developers with thorough yet easy-to-find documentation covering all aspects of MIL-Lite. The online help can even be tailored to match the environment in use.

Maintenance program

MIL-Lite provides registered users 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. Moreover, registered user have full access to the Matrox Imaging Developers' Forum, an online, moderated community for discussions on all Matrox Imaging products. Just before the expiration of the maintenance program, registered users will have the opportunity to extend the program for another year. For more information, refer to the Matrox Imaging Software Maintenance Programs brochure.

» Matrox Imaging developers' forum



Registered users can share technical expertise with other Matrox developers on the Matrox Imaging Developers' Forum.

MIL-Lite/ActiveMIL-Lite modules:

Application Control

Provides environment control functions such as error checking, function tracing and default allocation to simplify programming and debugging.

Data Control

Offers functions for manipulating data (including image) buffers.

- image buffer allocation/deallocation
- region of interest (ROI) definition
- read/write and direct access of data buffers
- support for monochrome and color (RGB and YUV) image buffers
- Bayer filter using bilinear interpolation or adaptive algorithm with support for white balancing, gamma correction and color artifact correction (when using adaptive algorithm).
- save images to disk in standard file formats including TIF, BMP, JPG⁴, JP2⁴ and AVI, as well as a raw format.

Display Control⁶

Includes functions such as image display, fill, zoom, pan, scroll, output LUT management and graphics overlay control.

- image display in MIL-Lite or user-specified window
- non-destructive graphics overlay of live video with no host CPU intervention
- "no-tearing" live image display mode
- support for multi-screen display configurations (extended desktop and/or auxiliary modes)
- VGA to WXGA, NTSC/PAL and custom display formats

Digitizer Control⁶

Supports control of digitizers (image capture boards).

- single, continuous, asynchronous and multi-buffered grab
- selectable gain, offset, hue, brightness and contrast
- input LUT
- input channel
- scale up and/or down
- trigger and exposure control
- user (auxiliary) I/O bits

Graphics

Set of graphics primitives used to create image annotations.

- draw lines, rectangles, arcs, circles, ellipses and dots with selectable color
- write text with selectable font, size and color

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Supported Environments

- Microsoft® Windows® 2000, Windows® XP (32-bit) and Linux¹
- ActiveMIL-Lite applications developed using Microsoft® Visual Basic® .NET 2003 (managed code) and Visual C++ .NET 2003 (unmanaged code)
- MIL-Lite applications for Windows® 2000/XP (32-bit) developed using Microsoft® Visual C++® 6.0 and Visual C++ .NET 2003 (unmanaged code)
- MIL-Lite applications for Linux¹ developed using GNU Compiler Collection (GCC)

Ordering Information

Development Toolkits

Part number	Description
MIL LITE 8 WIN	MIL-Lite development toolkit for Windows® 2000/XP (32-bit). Includes CD with MIL-Lite, ActiveMIL-Lite, Intellicam, Matrox display drivers and online documentation.

MIL-Lite Maintenance Programs

Included in the original purchase price of the MIL-Lite development toolkits, it entitles registered users to one year of technical support and free updates of the development toolkit.

Part number	Description
MIL LTE MAINTENANCE	One year program extension.

MIL-Lite Training

Visit Matrox Imaging's website (<http://www.matrox.com/imaging/training/>) for more information on MIL-Lite training courses.

Notes:

1. Contact local representative or Matrox Imaging for availability.
2. With Windows® 2000/XP edition.
3. For Windows® XP (32-bit) only.
4. Requires a run-time license.
5. Partially available in Linux edition.
6. Hardware permitting.