



Software

# Matrox Imaging Library (MIL-Lite) >>>

Release 7.5

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
- > supports TIF, BMP, AVI and raw file formats
- > available as DLL and OCX for Microsoft® Windows® 98, Windows® Me, Windows NT® 4.0, Windows® 2000 and Windows® XP<sup>1</sup>
- > includes Matrox Intellicam camera configuration utility
- > royalty-free redistribution

## High-level Library for Fast Application Development

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 the entire line of Matrox Imaging's hardware as well as an intuitive and easy-to-use function set.

### Rapid development

For fast Windows application development, MIL-Lite comes bundled with ActiveMIL-Lite, a collection of ActiveX controls (OCX) for managing image capture, display and archiving. ActiveMIL-Lite fully integrates into Microsoft® Visual Basic® or Visual C++® rapid application development (RAD) environments.

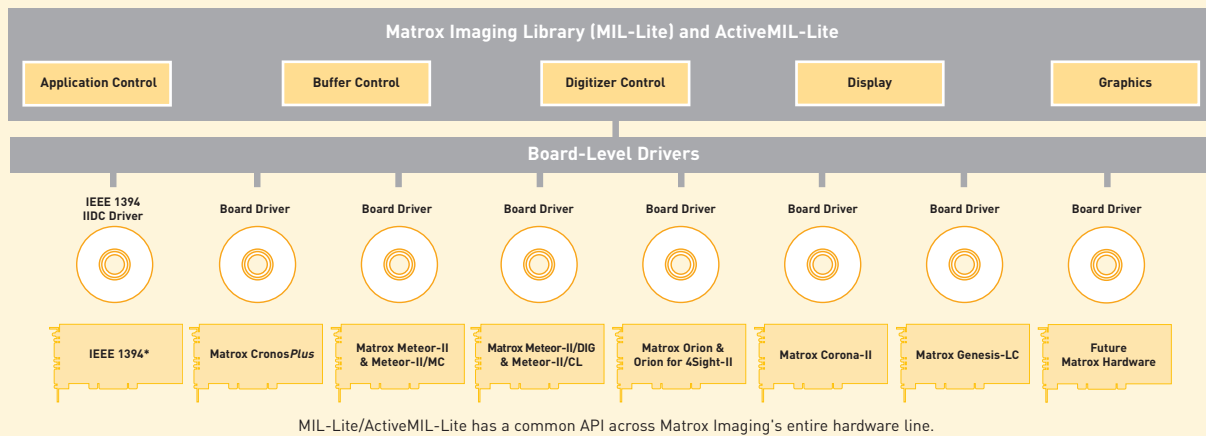
ActiveMIL-Lite lets you quickly and easily put together an imaging application with a custom, professional-looking, Windows user interface. Application development consists of drag and drop tool placement with point and click configuration, resulting in substantially less coding. With ActiveMIL-Lite, OEMs and integrators save development time by focusing on the imaging task rather than implementing the user interface.

### Common API for image capture 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 IEEE 1394-based imaging devices compatible with the IIDC specification. Image display is optimized for Matrox graphics controllers but can be performed using any graphic controller.



## » Software Architecture



\*Matrox Meteor-II/1394, 4Sight-II or third-party adapter.

### Reusable application code

Once your application is built, you can move it from one platform to another with little or no rewriting. 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 */
MitSystem = MsysAlloc(M_SYSTEM_METEOR_II, ...);
...

...
/* Allocate a system */
MitSystem = MsysAlloc(M_SYSTEM_ORION, ...);
...
```

By changing a single line of code, an application using a Matrox Meteor-II can work with a Matrox Orion.

### Simplified system management

With MIL-Lite, a user does not require an in-depth knowledge of the particular system. MIL-Lite is designed to deal with the specifics of each hardware platform and provide simplified system management and control (i.e., hardware detection, initialization and buffer copy). For example, when requiring grab to host memory, MIL-Lite transparently allocates a buffer of the appropriate type (i.e., non-paged memory).

### Multi-processing and multi-threading

MIL-Lite supports multi-processing and multi-tasking programming models. Multiple MIL-Lite applications not sharing MIL-Lite data or a single MIL-Lite application with multiple threads sharing MIL-Lite data can run under Windows® 98/Me/NT 4.0/2000/XP. MIL-Lite provides synchronization mechanisms to access shared MIL-Lite data and ensures that multiple threads using the same MIL-Lite resources do not interfere with each other. These capabilities, coupled with Windows® NT 4.0/2000/XP, enable the creation of applications that distribute workload across several CPUs in a multi-processor PC.

### Saving and loading

MIL-Lite supports saving and loading of individual images or sequence of images from disk. Supported file formats are TIF (TIFF), BMP, AVI as well as a raw data format.

### Image display

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. Hardware permitting, MIL-Lite also enables non-destructive graphics overlay of live video with no host CPU intervention and can eliminate the tearing artifact present during live video display.

MIL-Lite also supports multi-screen display configurations that are in an extended desktop mode (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 imaging boards and/or Matrox graphics boards.

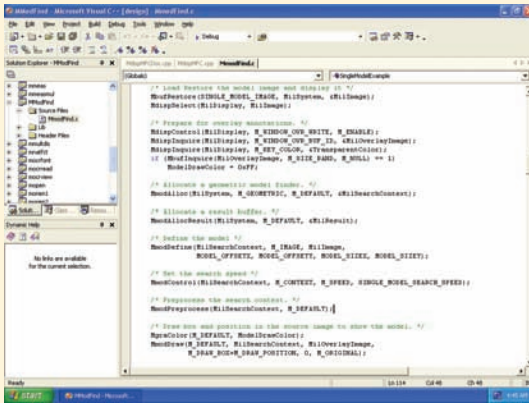
## » Image Display Management



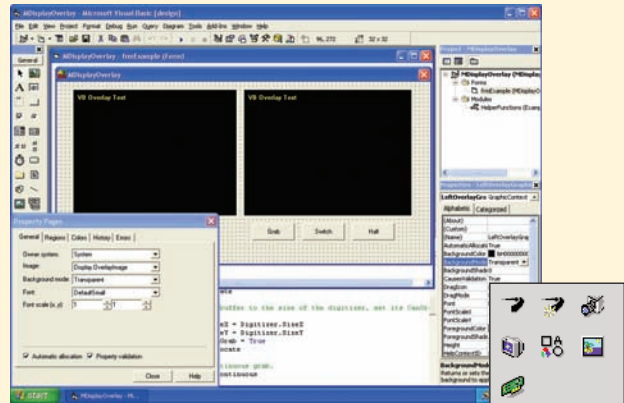
MIL automatically manages multi-screen display configurations.

## » Classic C/C++ versus OCX method

MIL-Lite provides a choice of programming environments for Windows application development: classic C/C++ or ActiveX (OCX).



MIL-Lite's C/C++ programming interface consists of descriptive command names and parameters. Commands are not only intuitive, but highly integrated, so applications are developed quickly with relatively few lines of code.



ActiveMIL-Lite (see enlarged controls on left) fully integrates into rapid application development (RAD) environments for Windows®, such as Microsoft® Visual Basic®. Application development consists of drag and drop tool placement with point and click configuration, resulting in substantially less coding than the classic C/C++ method.

### 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.

### Flexible image capture

Choose from Matrox Imaging's line of hardware products for flexible, high-quality image capture. MIL-Lite handles images acquired from virtually any type of color or monochrome source including standard, high-resolution, high-rate, frame-on-demand cameras, line scanners, slow scan devices, VCRs and custom-designed devices. Camera support is board-specific, so refer to the respective Matrox board datasheet for more information.

### Matrox Intellicam

MIL-Lite includes Matrox Intellicam camera configuration utility, a Windows®-based program that allows users to interactively configure Matrox image capture hardware with a variety of image sources.

### Comprehensive yet highly accessible documentation

Online help provides users with thorough yet easy-to-find documentation covering all aspects of MIL. It seamlessly integrates into Microsoft® Visual C++® and Visual Basic® and is context-sensitive, putting it within easy reach when one needs it most. The online help can even be tailored to match the environment in use.

### MIL-Lite/ActiveMIL-Lite modules:

#### Application Control

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

#### Data Control

Offers functions for manipulating data (including image) buffers.

- image buffer allocation/deallocation
- definition of region of interest (ROI)
- read/write and direct access of data buffers
- supports monochrome and color (RGB/YUV) image buffers
- Bayer filter with gamma correction (up to 16-bit)
- save images to disk in standard file formats including TIF, BMP and AVI, as well as a raw format

#### Display Control<sup>2</sup>

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

- image display in MIL 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 XVGA, NTSC/PAL and custom display formats

### Digitizer Control<sup>2</sup>

Supports control of digitizers (image capture boards).

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

### 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

### System Requirements

- PC with an IA32 processor (Pentium-class or better)
- Windows<sup>®</sup> 98/Me/NT 4.0/2000/XP
- minimum of 48 MB RAM for Windows<sup>®</sup> 98/Me/NT 4.0, 64 MB RAM for Windows<sup>®</sup> 2000 or 128 MB RAM for Windows<sup>®</sup> XP (excluding non-paged memory)
- minimum free hard disk space:
  - 55 MB and 75 MB for MIL-Lite and ActiveMIL-Lite development environments respectively
  - 6 MB and 8 MB for MIL-Lite and ActiveMIL-Lite run-time environments respectively
- Matrox frame grabber with a MIL driver for Microsoft<sup>®</sup> Windows<sup>®</sup>98/Me/NT 4.0/2000/XP (optional)
- graphics adapter (may be on Matrox frame grabber)
- Microsoft<sup>®</sup> Visual C++<sup>®</sup>.NET<sup>3</sup>/Visual C++<sup>®</sup> 6.0 or Microsoft<sup>®</sup> Visual Basic<sup>®</sup> 6.0

### Supported Environments<sup>1</sup>

	Windows <sup>®</sup> 98/Me/NT/2000/XP
MIL	Microsoft <sup>®</sup> Visual C++ <sup>®</sup> .NET <sup>3</sup> / Microsoft <sup>®</sup> Visual C++ <sup>®</sup> 6.0 (as DLL)
ActiveMIL	Microsoft <sup>®</sup> Visual Basic <sup>®</sup> 6.0/ Microsoft <sup>®</sup> Visual C++ <sup>®</sup> 6.0 (as ODC)

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### Ordering Information

#### Development Toolkits

Part number	Description
MIL LITE 7	Includes CD with MIL-Lite, ActiveMIL-Lite, Matrox Intellicam, MGA display drivers and online documentation.

#### Maintenance Program

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

Part number	Description
LTE MAINTENANCE	One year program extension for MIL-LITE package.

#### MIL/MIL-Lite Training

Part number	Description
MIL LITE TRAIN	Visit <a href="http://www.matrox.com/imaging/training/mil-lite/">http://www.matrox.com/imaging/training/mil-lite/</a> for more information on the MIL-Lite training course.

#### Notes:

1. Contact Matrox Imaging Sales or local representative for information regarding which environments are supported by specific Matrox hardware and the revision number of development tools.
2. Hardware permitting.
3. Unmanaged code only.