



Matrox Inspector >>

Release 8.0

Interactive Windows® imaging software for industrial and scientific applications.



Key features

- > easy-to-use interactive work environment for Microsoft® Windows® 2000 and Windows® XP
- > directly acquire images from a variety of video sources using Matrox Imaging hardware
- > load and save images including sequences in many file formats
- > extensive set of accurate and robust image processing and analysis tools
- > calibrate images to correct visual distortions and perform measurements in real-world units
- > operations are performed live or on archived images including sequences
- > track operation statistics (analysis results and speed)
- > configure analysis tools for use with Matrox Imaging Library (MIL) applications
- > annotate images with text and graphics
- > control from and exchange data with other Microsoft® Windows® applications
- > automate routines with Microsoft® VBA compatible scripting
- > includes Matrox Intellicam camera configuration utility

Interactive imaging

Matrox Inspector is an interactive Windows® application for image capture, processing, analysis, display and archiving. Based on the Matrox Imaging Library (MIL), it provides point-and-click access to an extensive set of optimized functions for image processing, pattern recognition, blob analysis, edge extraction and analysis, measurement, character recognition, 1D and 2D code reading, calibration, and image compression. Matrox Inspector is designed to meet the needs of MIL developers and end-users alike. MIL users employ Matrox Inspector as a companion tool to facilitate application development by having access to all MIL tools within a single interactive work environment. End-users, such as scientists, technicians and engineers, rely on Matrox Inspector to perform and automate image enhancement and measurement tasks.

Productivity-oriented work environment

Matrox Inspector provides a familiar and easy-to-use interface (see Figure 1) with point-and-click access to imaging operations through pull-down menus, dialog boxes and toolbars as well as shortcuts. Options are conveniently presented to the user by frequency and likelihood of use. Live preview, apply and undo features allows the user to investigate the effect of operations without permanently changing the image. Results are presented as images, tables and/or graphs, and are immediately updated with each new operation. Key results can be displayed in a reference view, highlighted according to established tolerances. Analysis operations can be benchmarked for speed of execution and can be performed live as images are acquired or on stored images (see Figure 2). Moreover, results can be tracked through trend and distribution graphs (see Figure 3) useful for tuning operation settings. Matrox Inspector facilitates color imaging through various color components display modes and simultaneous color coded histograms and profile operations (see Figure 4).

A workspace pane provides an at-a-glance overview of all documents and systems (digitizers) in use. The user can dynamically switch between systems and free systems for use with other MIL applications including the Matrox Intellicam frame grabber configuration utility. Matrox Inspector's interface can even be customized by adding, removing or editing menu items and toolbar buttons, and these changes can be shared with other users by saving them to file. Extensive on-line help for all operations is provided in the Microsoft® HTML help format, complete with keyword or full text searches.



Productivity-oriented work environment

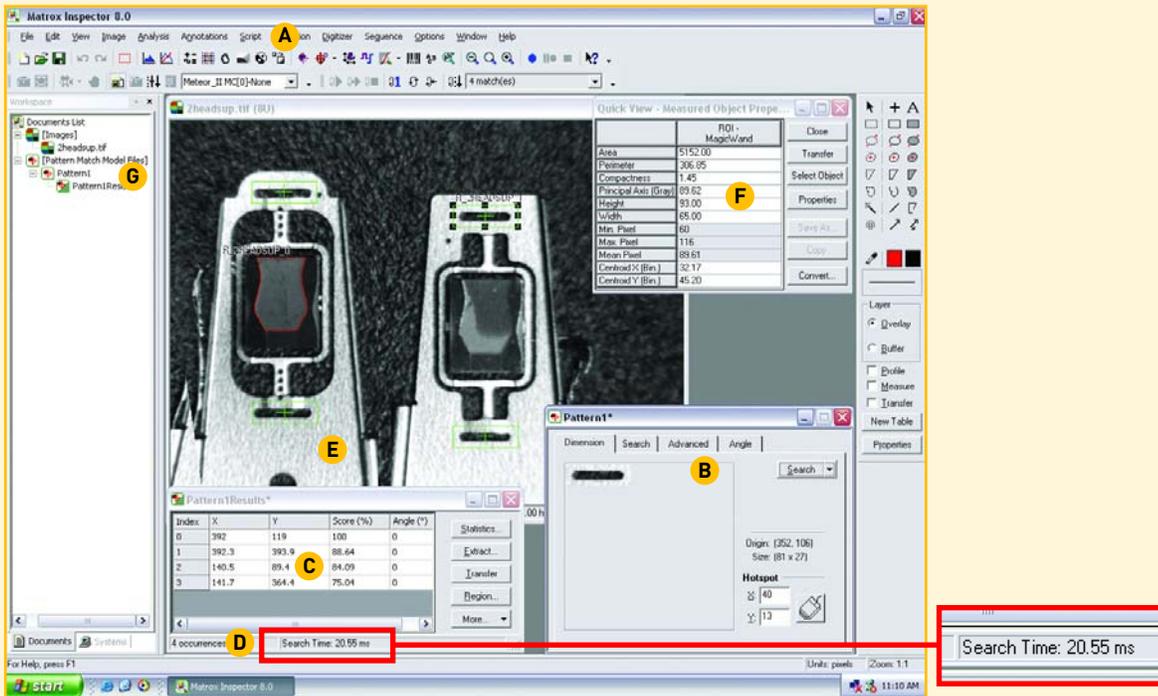


Figure 1

- A. Pull-down menus and toolbars provide easy access to operations
- B. Settings are presented in tabs ranging from most often used to most advanced
- C. Results are displayed in spreadsheet format
- D. Results window also display the operation's execution speed
- E. Results are highlighted directly on image
- F. Features of graphical objects (e.g., average intensity, area, size, angle, etc.) can be displayed in the Quick View window
- G. The workspace pane provides an overview of open images, scripts and systems (digitizers)

Image loop toolbar

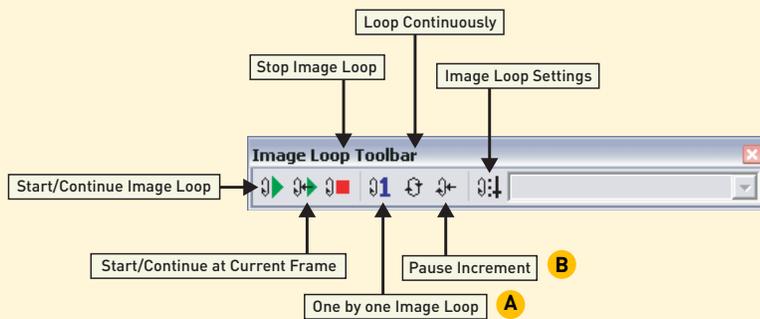


Figure 2

Perform analysis operations live on captured images or on stored images using the Image Loop toolbar. One can even step through images one at a time (A) and pause at the current image (B).

» Track operation results

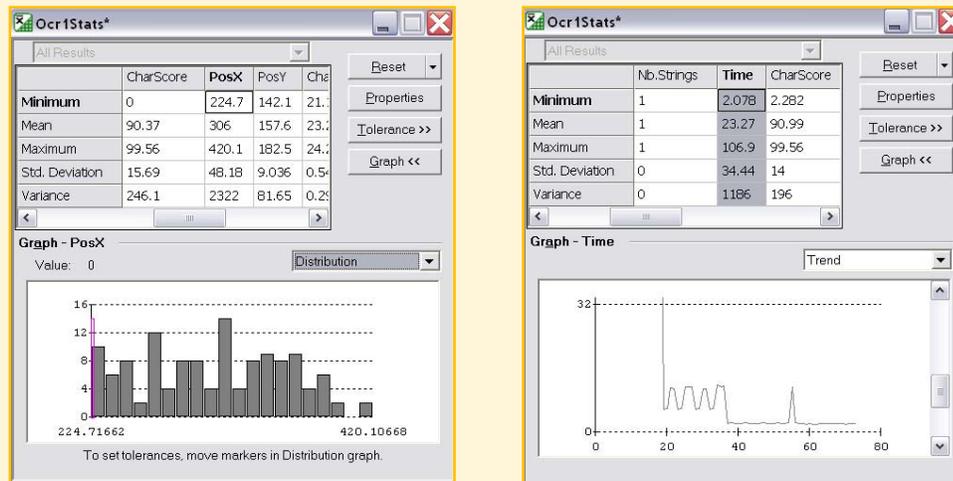


Figure 3
Track operation results using distribution and trend graphs.

» Color imaging

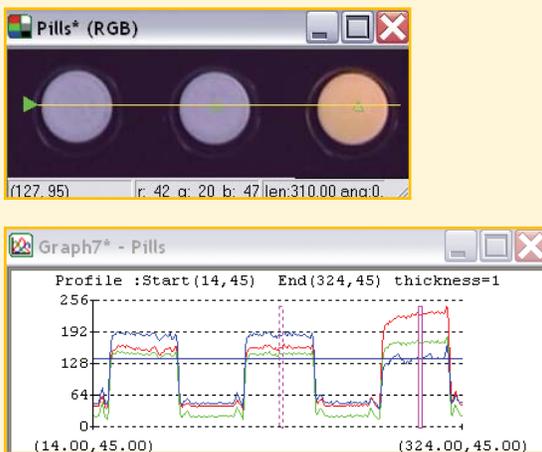


Figure 4
Line profiles highlight color relationships.

Flexible image acquisition

Used in conjunction with Matrox Imaging hardware, Matrox Inspector can acquire images from virtually any type of color or monochrome image source including standard video format cameras, as well as non-standard high-resolution, high-rate, frame-on-demand, line-scan and slow-scan imaging devices. Refer to the Matrox Imaging board datasheets for more information.

For non-standard video formats, simply try one of the numerous ready-made interfaces available from Matrox Imaging or create your own using the Matrox Intellicam frame grabber configuration utility. Matrox Intellicam is a Windows®-based program that allows users to interactively and easily configure Matrox Imaging capture hardware for a variety of image sources.

Live image manipulation

On-screen controls are available for adjusting brightness, contrast, hue, saturation, and gain and offset during live image capture. Live Bayer filtering, frame averaging and pseudo-coloring of monochrome images are also supported.

Record and view image sequences

Not only can Matrox Inspector acquire a single image but it can also capture sequential images into PC memory or onto disk¹ as is, or with compression. Sequence control consists of a timer that indicates start, interval and stop times. The user can also directly end a sequence capture using a hotkey or an on-screen control. Timing information is recorded and accessible separately from the images (see Figure 5).

During playback the entire sequence can be viewed in a single pass or as a continuous loop, or viewed as a selected segment. Image sequences can also be viewed as thumbnails of individual images. Image sequences can be saved to disk in AVI and multi-page TIFF file formats and read from raw, AVI, multi-page TIFF and DICOM² file formats. They can also be converted from one format to another. Moreover, image sequences can consist of a list of individual image files.

Load and save images

Matrox Inspector supports the loading and saving of individual images in file formats such as BMP, DCM (DICOM), JPG, JP2, PNG and TIF, as well as in a raw format. Supported depths for monochrome images, depending on the file type, include 1, 8, 16 (including 10 and 12) and 32-bits per pixel. Color images are stored in 24-bit RGB format or 8-bit with palette. Images can be easily converted from one file format to another.

Interactive measurements and more

With Matrox Inspector, a user can perform measurements by drawing graphics directly onto the image. Available graphics objects include points, lines, rectangles, ellipses, polygons, angles and freehand curves. Matrox Inspector lets a user instantly view features of graphical objects such as area, size, angle, average pixel value and maximum pixel value along with the profile. Feature values and profiles are updated in real-time whenever a change is made to a graphical object. Graphics can also be used to perform basic image touch-up or manually segment objects in a monochrome or color image.

Select and process non-rectangular areas of interest

Regions of interest (ROI) and objects of interest (OOI) can be rectangular and non-rectangular, such as an ellipse, a polygon, a donut shape or a freehand shape. Matrox Inspector also has an interactive tool that allows users to create an ROI based on pixel similarity.

Calibrate images

Image calibration is provided to correct visual distortions and enable measurements in real-world units (see Figure 6). Matrox Inspector can compensate images for lens aberrations, aspect ratios, rotation and perspective views, and convert positions and measurements in an image from pixel to real-world units. A calibration mapping is created using a simple physical grid, image or a list of points. Relative origins and angles are set based on an object in an image. Calibration mappings are loaded and saved as MIL MCA files.

Recording sequences

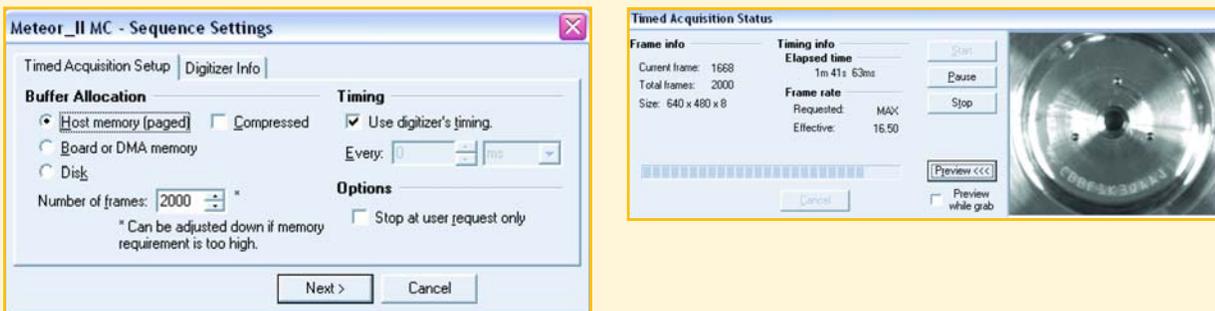


Figure 5

Select sequence settings (left). View all frame and timing information, and preview images while acquiring (right).

» Calibrate images



Figure 6

Use calibration to correct visual distortions based on calculations derived from a physical grid.

Image enhancement and processing

Select from Matrox Inspector's extensive list of neighborhood, arithmetic and mapping operations. Use filters for edge detection, sharpening and smoothing. Apply morphological operators to images. Represent pixel intensities graphically with histograms and profiles. Transform images using operations such as scaling, rotation, translation and symmetry. Tile or center an image or ROI into a larger image.

Perform a circular wrap or unwrap using polar coordinates transformation. Use an FFT to convert images from the spatial to the frequency domain and vice-versa. Create and apply custom spatial filters or morphological structuring elements with variable size and available number of kernels per filter.

Object analysis

For object or blob analysis, Matrox Inspector counts and labels objects, as well as measures numerous binary and grayscale features (see Figure 7). Blobs are segmented from each other and from the background using a variety of threshold operations. More difficult segmentation can be performed using the Watershed tool to separate touching objects. Users can experiment with different watershed settings and preview the effects before applying on the original image.

Analysis results are provided in a spreadsheet format, which includes statistics on each selected feature and can be sorted using custom criteria. Blob outlines produced during analysis can easily be converted to OOI's or masks for further processing.

» Blob analysis

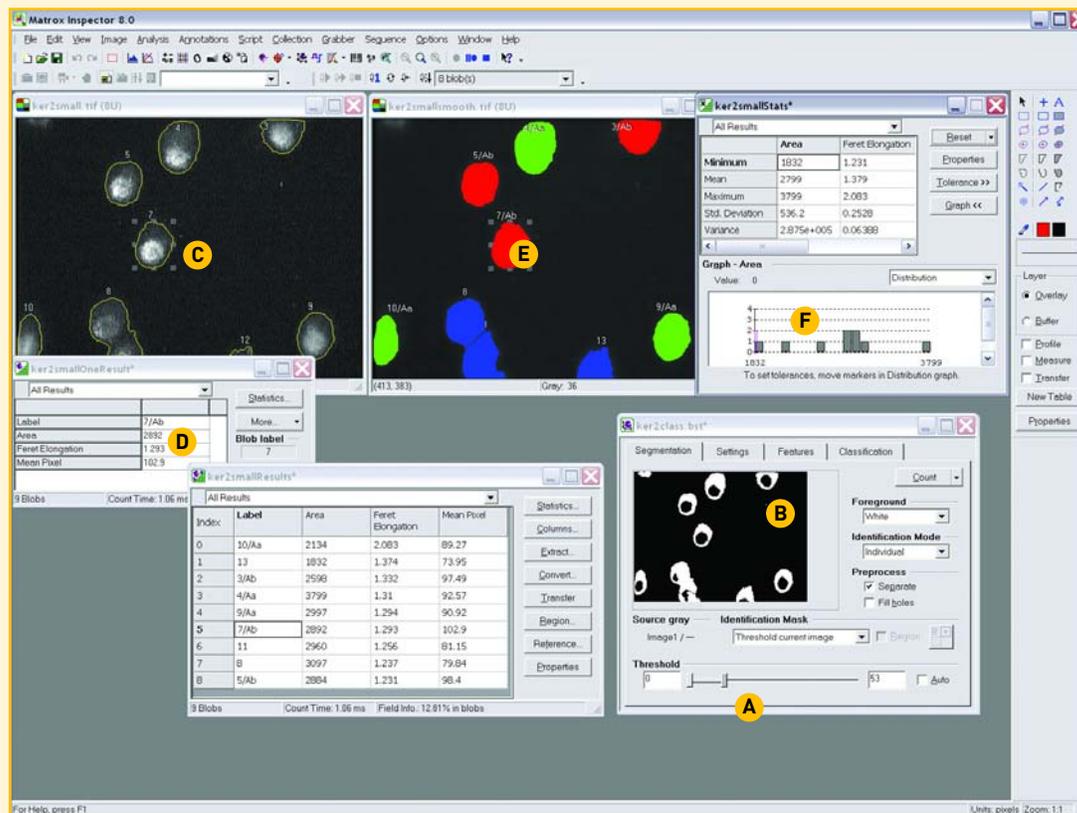


Figure 7

A. Dual slider allows basic segmentation with a two-level threshold
B. Instant preview of resulting changes
C. Blobs individually labeled and identified on the image

D. Individual results reported by double-clicking a specific blob
E. Blobs can be classified based on user-selected criteria and displayed graphically on the image
F. View statistics for all blobs by feature

Filtering and classifying blobs

Blob filters let the user automatically discard blobs based on features, while blob classifiers place blobs into classes according to features. One can interactively select blobs to be used to set criteria for a particular class and Matrox Inspector will 'learn' the criteria based on your selection. Class results are displayed on the image using colors and labels and in separate tables and graphs. Class configurations can be saved for use in future sessions.

Edge extraction and analysis

Matrox Inspector includes Edge Finder, a powerful tool for quickly and accurately extracting and constructing object contours (outlines) or thin-line crests (ridges or valleys).

Interactively modify extraction parameters and adjust construction parameters. Calculate, and measure a vast number of edge features and track statistics. Sort and select edges by feature and feature inter-relationship (see Figure 8).

Edge Finder can serve as a pre-processor to the Model Finder, passing on only relevant edges to be considered in matching, thus speeding up the process significantly. Edge Finder works equally well on either monochrome or color images (color boundaries) and is robust to uneven lighting and noise. Edge Finder contexts are loaded and saved as MIL MEF files.

Image inspection

The Model Finder or Pattern-matching tools quickly locate or detect missing parts by defining a model and performing a search. Model Finder (see Figure 9) employs a unique algorithm based on geometric features that provides exceptional flexibility with unparalleled levels of accuracy and robustness. This tool can search for and locate a predefined model that is translated, rotated (0° to 360°) and/or scaled (50% to 200%). Model Finder can also search for multiple models and/or occurrences in parallel. Model Finder accepts occlusion of significant contours and tolerates non-uniform changes in contrast including full or partial contrast reversal.

The Pattern-matching tool uses normalized grayscale correlation with an intelligent search strategy to search for and accurately locate a predefined model that is translated and/or rotated. The tool is capable of handling degraded, noisy and out-of-focus images. In both cases, the user can interactively optimize and fine-tune search parameters, as well as load and save models as MIL MMF and MMO files respectively.

Edge Finder

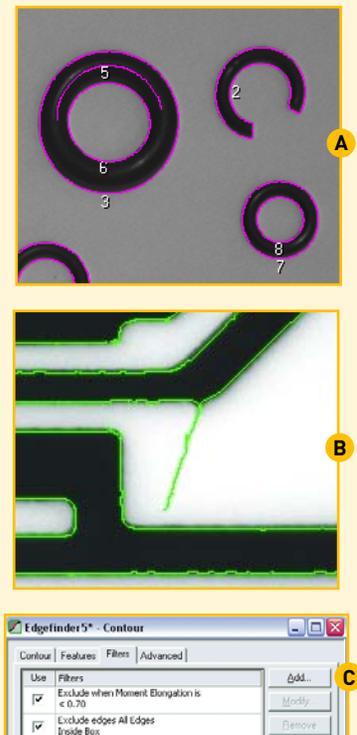


Figure 8 illustrates the Edge Finder tool's capabilities. Panel A shows an original image with object contours highlighted in purple and numbered 1 through 8. Panel B shows the extracted thin-crest crests (ridges or valleys) in green. Panel C shows the Edge Finder 5* - Contour dialog box, which includes tabs for Contour, Features, Filters, and Advanced. The Filters tab is active, showing options to use filters, exclude edges when Moment Elongation is < 0.70, and exclude edges All Edges Inside Box.

Figure 8

With the Edge Finder tool, users can construct and extract object contours (outlines) (A) and thin-crest crests (ridges or valleys) (B) from images. Moreover, users can filter (sort and select) edges by feature (C).

Model Finder

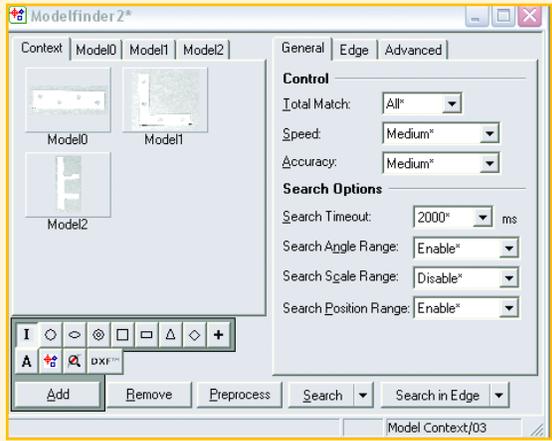


Figure 9 shows the Model Finder 2* software interface. The window displays a search area with three models (Model0, Model1, Model2) and a control panel. The control panel includes sections for Control and Search Options. The Control section includes Total Match (All*), Speed (Medium*), and Accuracy (Medium*). The Search Options section includes Search Timeout (2000* ms), Search Angle Range (Enable*), Search Scale Range (Disable*), and Search Position Range (Enable*). The bottom panel has buttons for Add, Remove, Preprocess, Search, and Search in Edge.

Figure 9

Models can be created from images, DXF files or Edge Finder results. Predefined fiducials are also supported.

»» Measurement Edge/Stripe

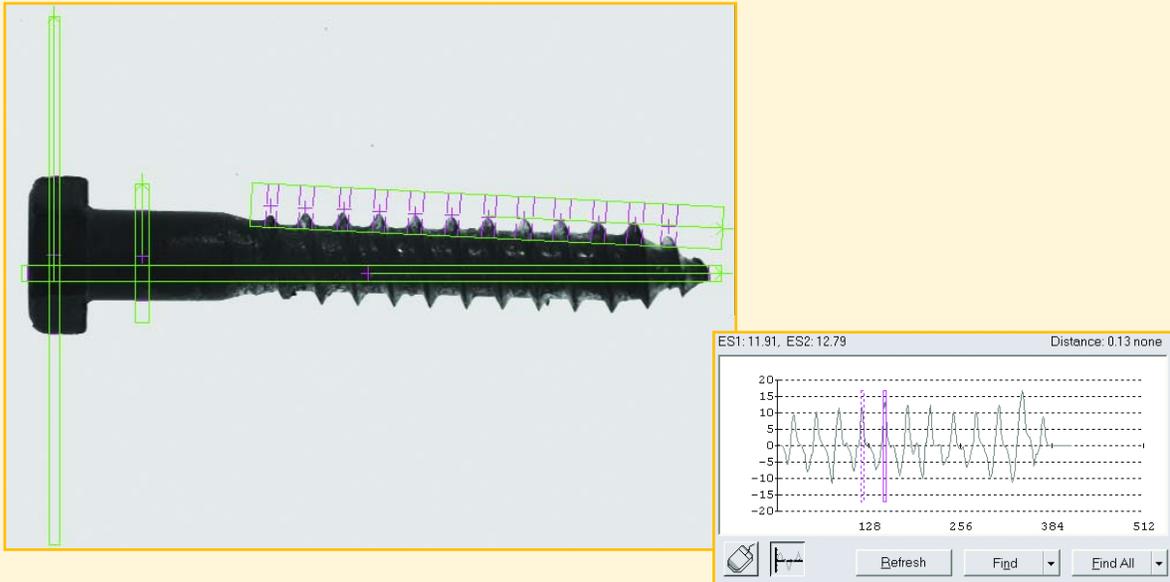


Figure 10

Working with the Measurement Edge/Stripe tool, users can define multiple regions and automatically locate single or multiple markers (left). A graphical display of edge and stripe strengths is available (right).

Image inspection (cont.)

Working with the Measurement Edge/Stripe tool (see Figure 10) enables users to define multiple regions and automatically locate single or multiple reference markers (edges and stripes). Measure distances and angles between markers (points, edges and stripes). A graphical display of edge and stripe strengths is available to fine-tune and optimize the search within a given region.

Results for Model Finder, Pattern-matching and Measurement Edge/Stripe tools are reported in a tabular form or hierarchal tree format. Results can be sorted, exported or saved to file.

Relative Region

The Relative Region tool seamlessly ties the results of a location operation to a measurement operation. For example, object location information (position, angle and/or scale) from Model Finder can be used to automatically place the search region for the Measurement Edge/Stripe tool (see Figure 11).

»» Relative Region

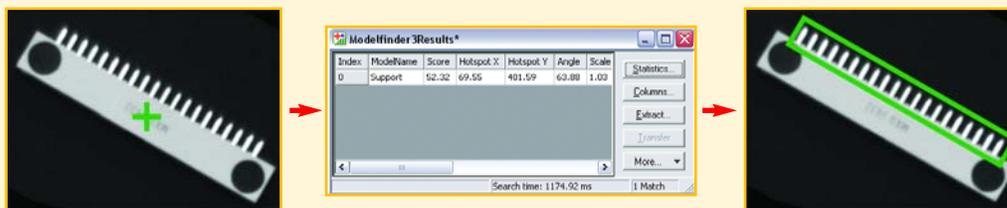


Figure 11

The Relative Regions tool seamlessly ties the results of a location operation to a measurement operation.

Character recognition

Character recognition is performed in Matrox Inspector using either a classic template-based or a sophisticated feature-based tool. The template tool is very quick while String Reader (see Figure 12), the feature-based tool, is very robust. String Reader automatically locates character strings within an image and accommodates for variations including contrast and scale (50% to 200% from reference). With either tool, Matrox Inspector enables the user to interactively define fonts, create grammar rules and control reading parameters. These configuration settings can be loaded and saved as MIL MFO and MSR files respectively.

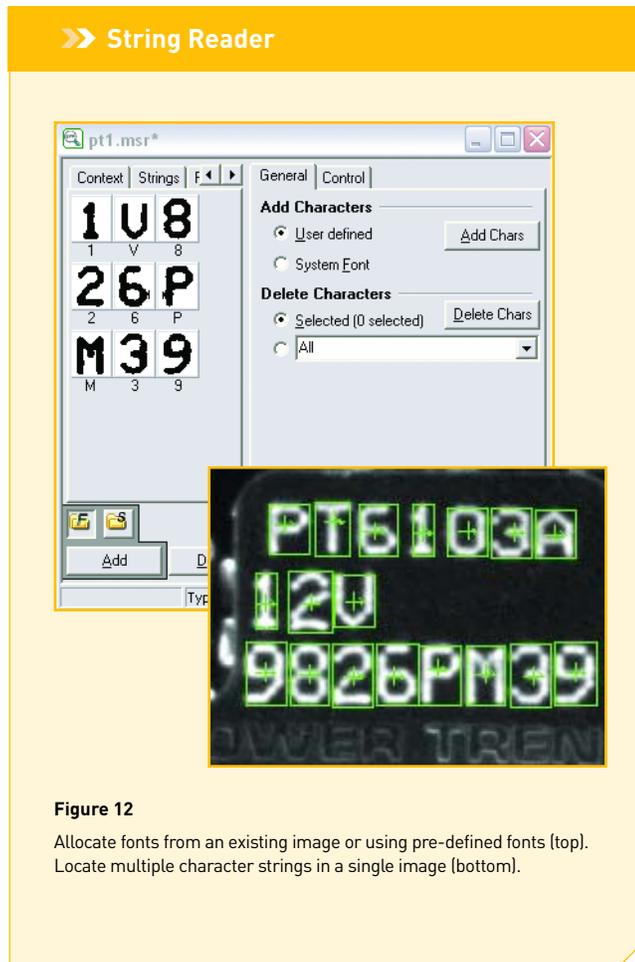


Figure 12
Allocate fonts from an existing image or using pre-defined fonts (top).
Locate multiple character strings in a single image (bottom).

Read and verify ID marks

Matrox Inspector's code reader tool enables a user to read and write the most popular 1D, 2D and composite (1D with 2D) code symbologies. Moreover, Matrox Inspector also enables the user to grade (verify) these codes.

Sub-pixel accuracy

Matrox Inspector performs measurement operations with sub-pixel accuracy. For example, Model Finder provides translation accuracy up to 1/40th of a pixel, rotation accuracy up to 1/20th of a degree and scale accuracy better than 0.1%.

Convenient data transfer

Images, graphs and results can be shared with Windows® applications by copying to and pasting from the clipboard. Images, graphs and results can be exported directly to Microsoft® Excel or Word, as well as transferred to other Windows® applications using Automation.

Image display

Matrox Inspector supports true color (24-bit), high color (16-bit) and palette color (8-bit) image display. Color images can be displayed as one composite image or as individual components. Images can be scaled, zoomed, scrolled and panned. View images as a 3D surface plot of intensity or in a text form representation of pixel intensity. With Matrox Inspector you can load, edit and save predefined or custom display palettes for improved visualization.

Annotate images

Annotate images with graphics and text using Matrox Inspector. Available graphics include points, lines, rectangles, ellipses, polygons, angles and freehand curves. Text can be added using many different font types and sizes. Annotations are performed directly on the image or on the overlay surface and can be carried over to a new image or extracted band. Annotations performed automatically by imaging operations can also be extracted for further use (e.g., model mask).

Print images

Images, graphs and data can be sent to any Windows® compatible printer for a hard copy of your work.

VBA and 'C' compatible scripting

Matrox Inspector further improves productivity and provides additional customization options by incorporating a richly featured scripting environment (see Figure 13). MIL developers and end-users can record a sequence of manual operations in a script and easily apply it to a series of images.

Scripts can be created in Microsoft® Visual Basic® for Applications (VBA) or 'C' compatible programming languages. Moreover, scripts can be edited to add calls to write log files, transfer data to Microsoft® Excel® in custom formats, display a User Position dialog to get graphical input (see Figure 14) and display user dialogs to set options for the script. The Expression Builder tool is available to quickly add script commands by point-and-click rather than typing. The scripting environment provides command completion and parameter information is linked directly to the Help file.

An integrated debugger is present to troubleshoot scripts by allowing you to set execution breakpoints or step through a script line-by-line to carefully observe the effects, as well as view the content of variables at any time. Matrox Inspector supports quick access to scripts from a dedicated toolbar, menu or shortcut keys. Matrox Inspector includes numerous sample scripts to help you develop your own scripts.

Scripting

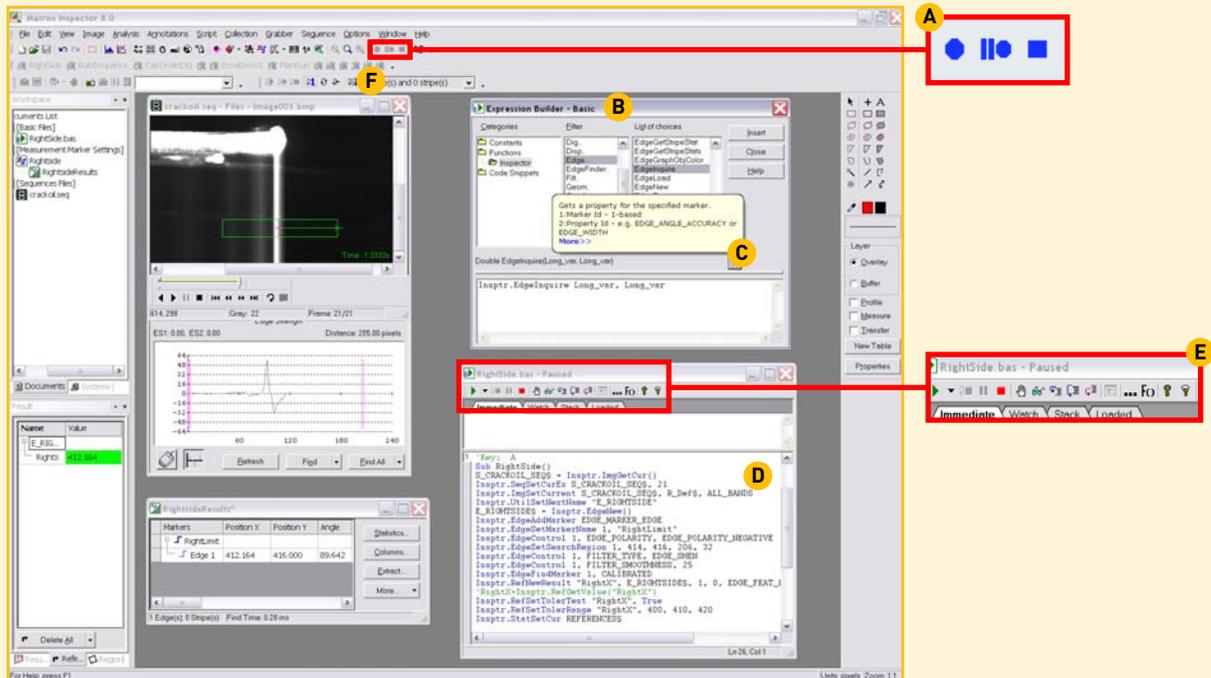


Figure 13

A. Start, pause or stop script recordings

B. Use Expression Builder to quickly add script commands by point-and-click

C. Tooltips provide parameter information and direct link to Inspector Help

D. VBA syntax is color coded

E. Access all debugging tools from the script window toolbar

F. Assign a toolbar button or menu item to a script for easy execution

User Position dialog

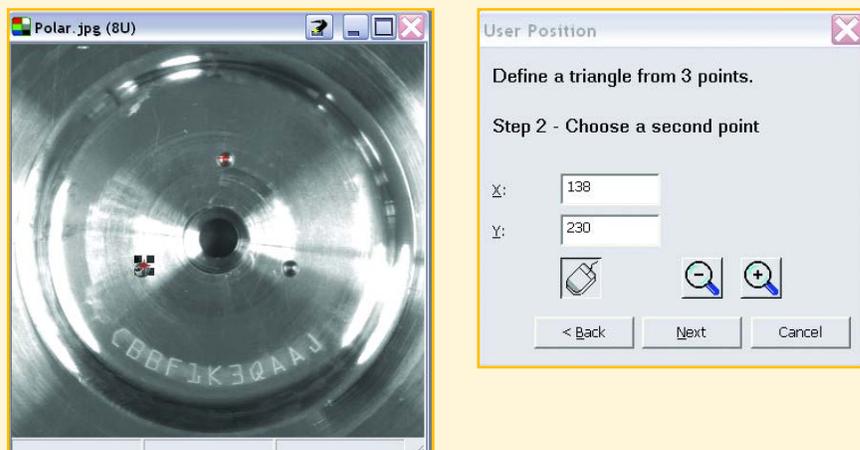


Figure 14

Invoke a user position dialog from within a script to obtain graphical input from a user.

Automation server

All Matrox Inspector functions are exposed through an Automation interface, providing services to customized Microsoft® Visual Basic® and Visual C++® clients, and applications such as Microsoft® Excel®.

Scripting in VBA

- Visual Basic® for Applications (VBA) compatible interpreter
- syntax in edit area is color coded
- support arrays, file and string manipulation, math functions and objects
- control script execution using custom dialog boxes
- add buttons, list boxes, edit controls, radio buttons and combo-boxes using a graphical dialog box editor
- transfer data to and control other Windows® applications using Automation
- enable calls to functions in external DLL files and execution of external programs

Scripting in 'C'

- similar to 'C' programming but with simplifications (e.g., variable data type assigned automatically and no array handling)

Create and manage image databases

Interactively create and manage a visual database or collection of image files using Matrox Inspector (see Figure 15). Each collection keeps a thumbnail or file list representation of the image content along with the file name and location of each image file. One can quickly identify the required image file

from its thumbnail or from other information such as image dimensions, format, resolution, data type, file size and date of creation. Images can be organized by dragging them from one position to another or by using the available sort commands. Drag-and-drop images into and between collections. Directly access collections within scripts for a convenient method of testing with a series of images.

Matrox Inspector List of Operations

File

- new, open, close, save, save as, print, print preview, print setup, system setup, open recent file or script, exit, drag-and-drop images from Windows® Explorer, Windows® Finder and other applications

Edit

- undo, redo, cut, copy, paste (into New/ROI), duplicate, select all, delete special, delete, delete all, palette optimization/editor, find, replace, indent, outdent, export selected results or settings

View

- zoom in or out (7 levels), view composite, view components, view 3D, view as text, toolbars (digitizer toolbar, document status, drawing tools toolbar, format bar, Image Loop toolbar, main toolbar, menu toolbar, result pane, palette viewer, script bar, user toolbar, workspace panel), collection, DICOM information/overlay, graph (zoom, view as line, bar, image, crossing), sequence (thumbnails, view as thumbnails or list), font, record position, image properties

» Manage Image Databases

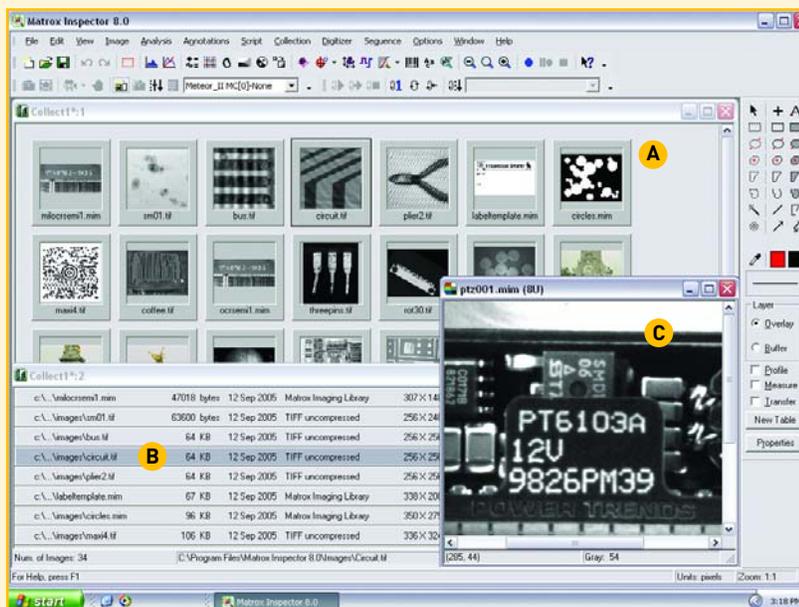


Figure 15

- A. View each image in a collection as a thumbnail
- B. View file details for each image in a collection
- C. Double click on an image thumbnail or file name to automatically load the image for viewing

Image

Calibration -

- new, new from grid, modify, relative origin, load, save, copy

Convert -

- binary, 8, 16, 32-bit (signed and unsigned), float (32-bit), RGB, HSL, 8-bit unsigned with palette

Extract band -

- extract or merge component (red/hue, green/saturation, blue/luminance)

Statistics -

- histogram and x, y, line, curve, ellipse profiles with dynamic preview
- determine extreme values, means and crossing points

Processing-

- arithmetic: absolute value, absolute difference, add, subtract, add and subtract with saturate, multiply, multiply with saturate, negate, integer divide, convert, fixed point divide, copy image (conditional, mask, etc.), fill with value, scale and offset, shift, minimum, maximum, logical operations (NOT, AND, NAND, OR, XOR, NOR or XNOR)
- filters: average, Bayer, horizontal edge, Laplacian, median, prewitt, rank, relief with NW8U, sharpen, smooth, sobel, sobel angle, vertical edge, user defined
- IIR filters: edge detect, edge detect SQR, first derivative X or Y, first derivative X, Y or XY, horizontal, vertical or Laplacian edge, sharpen, smooth
- morphology: binary and grayscale, open, close, erode, dilate, distance, thin, thick, hit or miss, user defined label, zone of influence, label, reconstruct, connect map, top or bottom hat, area open and close
- mapping: brightness/contrast, contrast stretch/window leveling, gamma correction, histogram equalization (uniform, exponential, Rayleigh), with dynamic preview
- threshold: simple, two-level, high pass, band pass, low pass, band reject
- watershed: automatic or manual, live preview of resulting watershed transformations with control over variation to prevent over-segmentation, default cases (separate binary, separate objects), find background output options (lines and/or basins, combined with input, pseudo-color), zone of influence (maxima, minima)

Geometry -

- scale, rotate, translate, symmetry, tile, polar correct

Fourier transform -

- forward or reverse fast Fourier transformation

ROI -

- rectangular, ellipses, polygon, freehand, and region-growing ROI, move, resize (manually or properties page)

Analysis

Blob -

- label blobs
- segment blobs - individual or labeled group analysis
- fill holes and separate touching blobs

- apply filters and classifiers
- calculate features:
 - area
 - perimeter: normal, convex
 - size: length, breadth, elongation, feret diameter (minimum, maximum, average, at specific angle)
 - shape: compactness, roughness, number of holes in a blob, Euler number, central and ordinary moments of any order
 - location: X,Y, center of gravity, bounding box coordinates
 - grayscale: center of gravity, sum of all pixels, minimum, maximum, mean, standard deviation, sum of the squares
- draw selected blobs
- sort results

Code -

- read or generate bar and matrix codes
- supported symbologies: BC412, Coda Bar, Code 39, Code 93, Code 128, composite codes, DataMatrix, EAN 8, EAN 13, Interleaved 2/5, Maxicode, MicroPDF417, PDF 417, Pharmacode, Planet, Postnet, QR, RSS, UPC-A and UPC-E
- specify and/or return: string, source (code type), error correction, score, search angle (delta negative/positive), foreground (color), search speed, string size, cell size min/max, number of cells and threshold (auto or manual)
- grade using International Symbology Specification (ISS)

Edge finder -

- find object contours (outline) or thin-line crests (ridges and valleys)
- calculate features: bounding box, center of gravity, convex perimeter, circle fit (center, coverage, error and radius), closure, convex perimeter, ellipse fit (angle, center, coverage and major/minor axis), Ferets (elongation, maximum/minimum angle, maximum/mean/minimum diameter and general), starting point, label, length (fine and coarse), line fit (coefficients and error), moment of elongation (including angle), position, strength (including average), size, tortuosity and first contact points
- select edges using filters on results values and spatial relationships (inside/outside box/chain)
- retrieve feature statistics
- sort results
- save results to an AutoCAD® DXF file
- extract results to Model Finder for pattern recognition

Measurement -

- find edge and stripe: position, angle, contrast, width, spacing, etc.
- extract measurements from: point, line, rectangle, ellipse, angle
- measurement: distance, angle, area
- display measurement results and statistics

Model finder -

- allocate search model manually from a source image, using a pre-defined fiducial (circle, cross, ellipse, line, rectangle, triangle, diamond, ring and square), from an AutoCAD® DXF file or automatically
- specify model mask (don't care, flat or positive/negative weighted regions)
- eliminate noise with a smoothing operation (variable strength recursive or kernel type filter)

Model finder (cont.) -

- modify default search parameters: model and target coverage, fit error and weight, acceptance and certainty thresholds, number of occurrences, reference axis and angle, angle and scale range, contour polarity, minimum separation criteria, shared contours, search region, speed, accuracy and timeout interval
- search results: model index, target score, model coverage, fit error, warping coefficients, polarity, number of occurrences, score, position including angle and scale
- load and save as MIL MMF files

OCR -

- create, calibrate, save, restore and modify fonts
- read and verify characters
- display grayscale representations of fonts
- interactively define font parameters (including search constraints)
- load and save as MIL MFO font file

Pattern matching -

- automatic or manual model creation
- edit model, rotate model, make/load mask, change hotspot values
- apply "don't care" pixel mask to model
- preprocess model to optimize search speed (circular over-scan)
- modify default search parameters: model center, search area, positional accuracy, number of matches, acceptance threshold, speed, spacing
- search results: model position and angle, number of model matches in target, match scores
- load and save models as MIL MMO files

String reader -

- allocate fonts semi-automatically
- read character strings
- create, save, restore and modify string models
- establish grammar rules: minimum/maximum number of characters per string, character type including digit, lower case and/or upper case, letter or custom list at each position
- display grayscale representations of characters
- interactively define string model parameters (including search constraints)
- load and save as MIL MSR font file

Relative Region

- select, edit or delete relative region, or create an ROI from a relative region

Annotations

- Move to front or back, up or down, merge to image, convert (from annotations, blob, measurement, ROI to ROI, profile, overlay, buffer), transfer to measurement, clone, tool properties

Script

- VBA and 'C' compatible, control (record, pause, stop), run, pause, stop (from toolbar button, shortcut key, menu item), window (edit, modify, save and load), toolbar (debug mode, execute, single step, break points, examine variables, watch window), make calls to functions in external DLL files, execute external programs and perform Automation (VBA only)

Collection

- Insert, delete, modify paths, sort by name, type, size and date

Digitizer

Digitizer settings -

- enable digitizer (camera) type, input channel, sync channel, image size, Bayer settings, grab type (continuous normal/double buffer/averaged, halt grab, snap shot, sequence)

Sequence

- controls (reverse, playback, stop, pause, first/next/previous/last frame, repeat, insert/delete frame)

Options

Targets -

- lock source, lock destination, unlock targets, restore targets, keep targets

Lock preview -

- lock live preview of processing effects (i.e., thresholding, mapping) on images

Image loop -

- start, start at current frame, stop, one by one, continuous, pause increment, settings

Utilities -

- demos, add noise, copy sequence, find extreme maximum, background flatten, construct grid, FFT filters, file converter

ActiveMIL Builder³ -

- controls: edit, delete, undo, set main, synchronize
- actions: insert condition checks, loops, variables and custom actions, edit, duplicate, replace, move, undo, show code
- modules: merge from user form, import VB module, build

Customize -

- configure menus

Preferences -

- number of undo levels, processed/grabbed image into new window, result formatting and many others

Minimum System Requirements

- PC with an IA32 processor (Pentium II class)
- Microsoft® Windows® 2000 with Service pack 4 or Microsoft® Windows® XP with Service Pack 1
- 98 MB RAM for Windows® 2000 or 192 MB RAM for Windows® XP
- Free hard disk space⁴
 - 155 MB (85 MB for Inspector and 70 MB for MIL 8.0 run-time and utilities)
 - Additional 80 MB of presentations and tutorials
- Matrox frame grabber with a MIL driver for Microsoft® Windows® 2000 or Microsoft® Windows® XP (optional)
- Graphics adapter (may be on Matrox frame grabber board)

Ordering Information

Development Toolkits

Part number	Description
INSPECTOR 8 P or U ⁵	Inspector package. Includes CD with Inspector, on-line documentation, and Intellicam, Inspector User Guide and Parallel or USB hardware key.

Notes:

1. Subject to PC bandwidth and memory limitations.
2. Only save as a single frame DICOM format file.
3. Only works for Microsoft® Visual Basic version 6.
4. Less free hard disk space required if MIL/ActiveMIL is already installed and sample images are not installed.
5. Support for Matrox Odyssey requires special edition.

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