Matrox **4Sight EV6** »

with Matrox **Design Assistant X**

Vision controller with an intuitive, versatile, and extendable IDE for machine vision applications.

MATROX
IMAGING

Overview

Matrox 4Sight EV6 with Matrox Design Assistant X[1]

Matrox® 4Sight EV6 is a powerful industrial computer built for machine vision on the factory floor. This system pairs readily with the intuitive, versatile, and extendable integrated development environment (IDE), Matrox Design Assistant X.

Equipped with four Gigabit Ethernet ports and four SuperSpeed USB ports, Matrox 4Sight EV6 supports the use of multiple GigE Vision® and USB3 Vision® industrial cameras to enable the oversight of many production lines. Powered by a embedded quad-core Intel® Core™ processor, the Matrox 4Sight EV6 is ready to handle multi-camera inspection applications. It interfaces directly to factory automation equipment and enterprise systems through discrete I/Os, plus Gigabit Ethernet, RS-232/RS-485, and USB ports. The Matrox 4Sight EV6's industrial-strength design and careful component selection ensures its long-term availability.

A dedicated hardware-assisted mechanism on the Matrox 4Sight EV6 delivers real-time discrete I/O management, effectively allowing this vision controller to synchronize a typical vision application with a manufacturing line. The dedicated mechanism enables output events to occur at precise moments in time, based on elapsed time, or for specific input events. An input event can come directly from a discrete input—including from a rotary encoder—or be count-derived from a discrete input. Programmed output events are stored in a hardware list, which is traversed based on a clock or an input event. The execution of an output event results in a state transition, pulse, or pulse train on a specific discrete output. Multiple cascadable hardware timers are available to count or generate specific events.

Matrox 4Sight EV6 comes pre-installed with Microsoft® Windows® 10 IoT Enterprise 2019 (64-bit) and Matrox Design Assistant X, making it ready to deploy on power up. The Windows 10 environment offers familiarity, performance, and reliability, with key embedded features like the Unified Write Filter (UWF) to prevent corruptions caused by unanticipated power-downs.

Matrox 4Sight EV6 at a glance

Reduce service stoppages with a fanless design

Inspect multiple sites through the support for four GigE Vision and four USB3 Vision cameras

Simplify cabling for GigE Vision installations using power-over-Ethernet (PoE)-enabled ports

Tackle typical vision workloads with a mobile-class embedded seventh-generation Intel Core processor

Connect separately to the factory floor and enterprise networks via two more Gigabit Ethernet ports

Synchronize with other equipment using the integrated real-time digital I/Os with rotary encoder support and RS-232/RS-485 ports

Matrox Design Assistant X

Matrox Design Assistant X[1]

Matrox Design Assistant X is an IDE for Windows where vision applications are created by constructing an intuitive flowchart instead of writing traditional program code. In addition to building a flowchart, the IDE enables users to design a graphical web-based operator interface for the application. Since Matrox Design Assistant X is hardware independent, choose any computer with GigE Vision or USB3 Vision cameras and get the processing power needed. Work with multiple cameras all within the same project, or per project running concurrently and independently from one another[2]. This field-proven software is also a perfect match for the Matrox 4Sight EV6 vision controller or the Matrox Iris GTR smart camera. Matrox Design Assistant X offers the freedom to choose the ideal platform for any vision project.

Application design

Flowchart and operator interface design are done within the Matrox Design Assistant X IDE hosted on a computer running 64-bit Windows. A flowchart is put together using a step-by-step approach, where each step is taken from an existing toolbox and is configured interactively. The toolbox includes steps for image analysis and processing, communication, flow-control, and I/O. Outputs from one step—which can be images and/or alphanumeric results—are easily linked to the appropriate inputs of any other step. Decision making is performed using a conditional step, where the logical expression is described interactively. Results from image analysis and processing steps are immediately displayed to permit the quick tuning of parameters. A contextual guide provides assistance for every step in the flowchart. Flowchart legibility is maintained by grouping steps into sub-flowcharts.

In addition to flowchart design, Matrox Design Assistant X enables the creation of a custom, web-based operator interface to the application through an integrated HTML visual editor. Users alter an existing template using a choice of annotations (graphics and text), inputs (edit boxes, control buttons, and image markers), and outputs (original or derived results, and status indicators). A filmstrip view is also available to keep track of and navigate to previously analyzed images. The operator interface can be further customized using a third-party HTML editor.

Why a flowchart?

The flowchart is a universally accessible, recognized, and understood method of describing the sequence of operations in a process. Manufacturing engineers and technicians in particular have all been exposed to the intuitive, logical, and visual nature of the flowchart.

Matrox Design Assistant X at a glance

Solve machine vision applications efficiently by constructing flowcharts instead of writing program code

Choose the best platform for the job within a hardware-independent environment that supports Matrox smart cameras and vision controllers, and third-party PCs with GigE Vision or USB3 Vision cameras

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

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

Work with multiple cameras all within the same project or per project running concurrently and independently from one another[2]

Interface to third-party 3D sensors to process and analyze their depth map

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

Maximize productivity with instant feedback on image analysis and processing operations

Receive immediate, pertinent assistance through an integrated contextual guide

Communicate actions and results to other automation and enterprise equipment via discrete Matrox I/Os, RS-232/RS-485, and Ethernet (TCP/IP, EtherNet/IP™[3], Modbus®, PROFINET®, and native robot interfaces)

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

Increase productivity and reduce development costs with Matrox Vision Academy online and on-premises training

Protect against inappropriate changes with the Project Change Validator tool

Matrox Design Assistant X (cont.)

Create custom flowchart steps

Users have the ability to extend the capabilities of Matrox Design Assistant X by way of the included Custom Step software development kit (SDK). The SDK, in combination with Microsoft Visual Studio® 2017 enables the creation of custom flowchart steps using the C# programming language. These steps can implement proprietary image analysis and processing, as well as proprietary communication protocols. The SDK comes with numerous project samples to accelerate development.

Application deployment

Once development is complete, the project—with flowchart and operator interface—is deployed either locally or remotely. Local deployment is to the same computer or Matrox vision controller as was used for development. Remote deployment is to a different computer, including Matrox vision controllers or a Matrox smart camera.

Project templates for quicker start-up

Matrox Design Assistant X includes a series of project templates and video tutorials to help new developers get up and running quickly.

These templates serve as either functional applications or application frameworks intended as a foundation for a target application. Templates also permit dynamic modifications, allowing users to tweak functionality at run-time and immediately see the outcome of any adjustments. The project templates address typical application areas, with examples for:

- Barcode and 2D code reading
- Measurement
- Presence/absence
- Recipes
- Robot guidance (Pick-and-Place)
- Dot-matrix text reading (SureDotOCR®)

More information on templates can be found on the Quick Start page of Matrox Design Assistant X software.

Version 1905 highlights

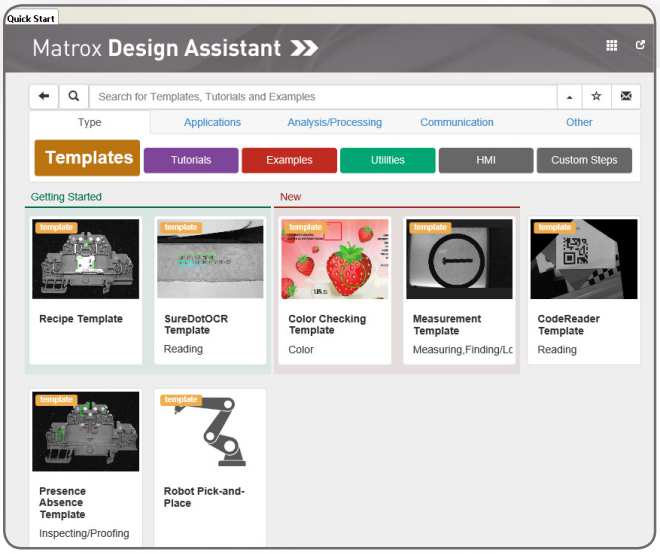
Multiple run-times allow for multiple independent projects to concurrently execute on the same platform

Interface to third-party 3D sensors to process and analyze their depth map

Photometric stereo tool enhances surface irregularities such as embossed or engraved features, scratches or indentations

Classification step that leverages deep learning to inspect images of highly textured, naturally varying, and acceptably deformed goods

Shape-finding tools for locating circular, elliptical, rectangular, and line segment features

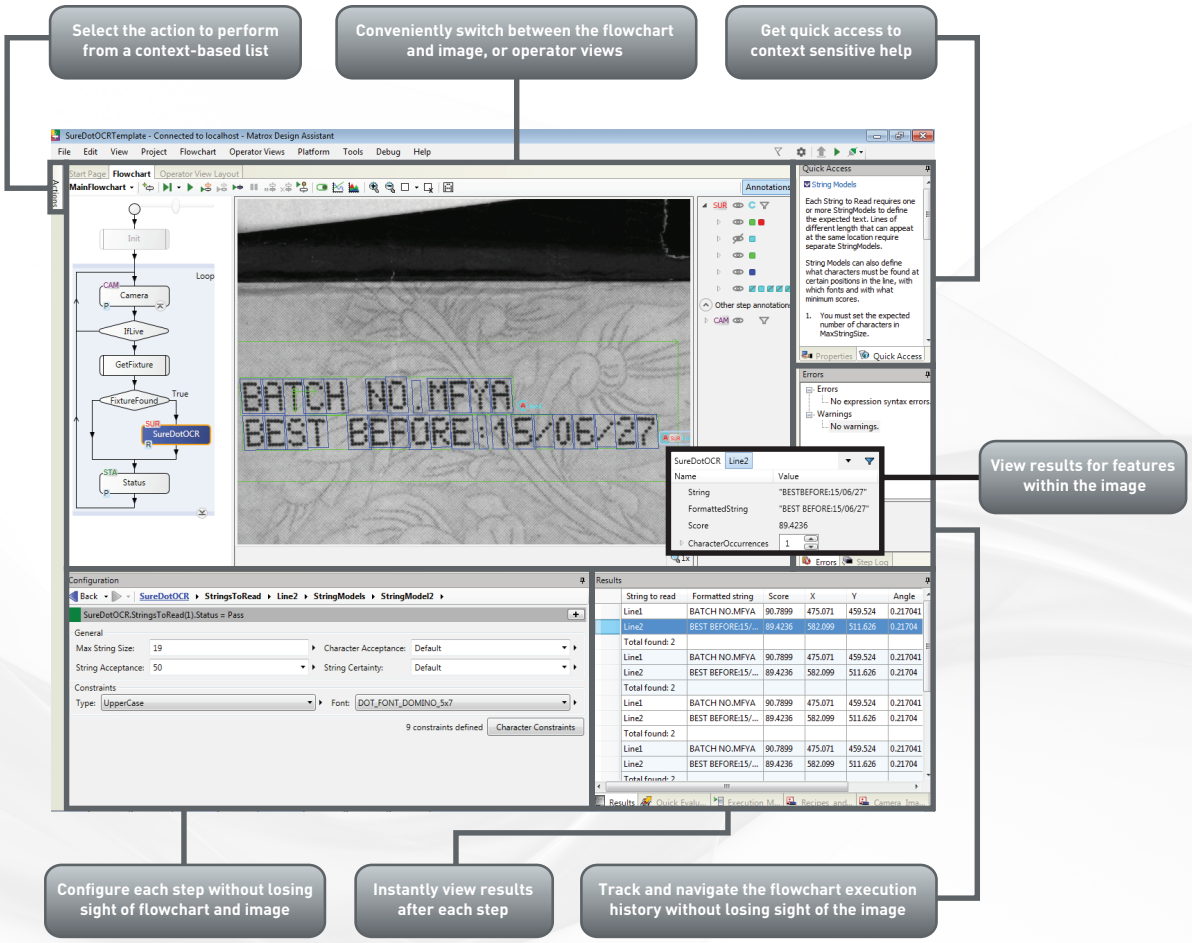


Project templates

IDE

Customizable developer interface

The Matrox Design Assistant X user interface can be tailored by each developer. The workspace can be rearranged, even across multiple monitors, to suit individual preferences and further enhance productivity.



Operator View

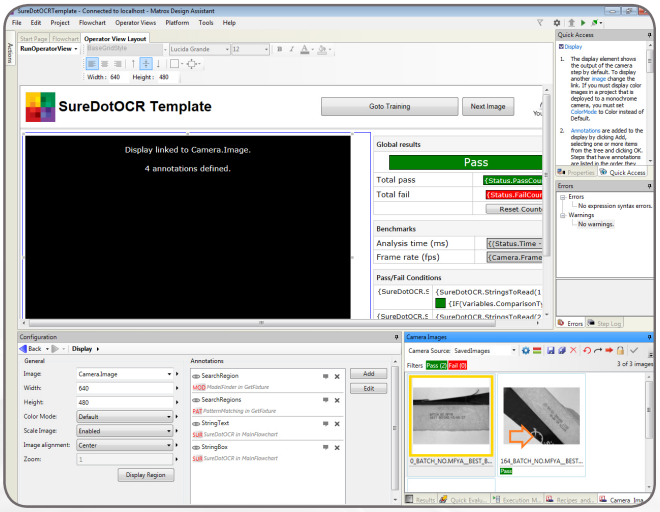
Operator interface viewable anywhere

The web-based operator interface, or Operator View, can be accessed locally or remotely through a HTML-5-capable web browser[4]. Local viewing is done on the same computer or Matrox vision controller as was used for development. Local viewing is also available with a Matrox smart camera through a simple touch screen connected to its video output and USB interface, which eliminates the need for an additional computer. Remote viewing is done from any computer, including dedicated human-machine interface (HMI) or touch-panel PCs.

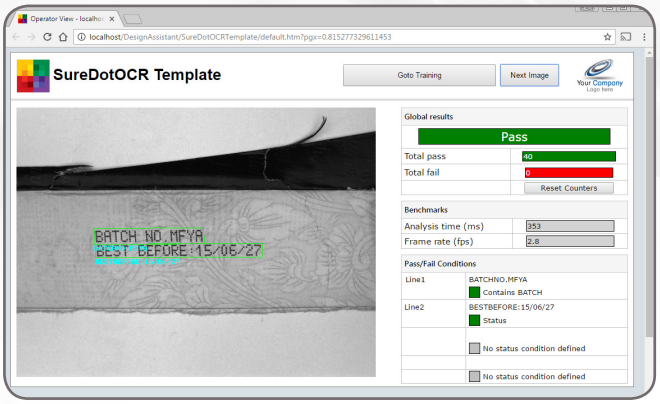
A stand-alone HMI application can be created using Microsoft Visual Studio to run on the local or a remote computer as an alternative to the web-based operator interface.

Security features

Access to specific Operator Views can be made to require user authentication (i.e., username and password) so only authorized personnel can modify key parameters of a running project. A project can be locked to a specific Matrox smart camera or Matrox vision controller when deployed, preventing it from running on an unauthorized platform. A project can also be encrypted during deployment to a platform, insuring that the project cannot be read or changed by unauthorized users. Projects locked to a platform are automatically encrypted.



Design a customized Operator View



Resulting Operator View as seen in a web browser

Vision Tools

Image analysis and processing

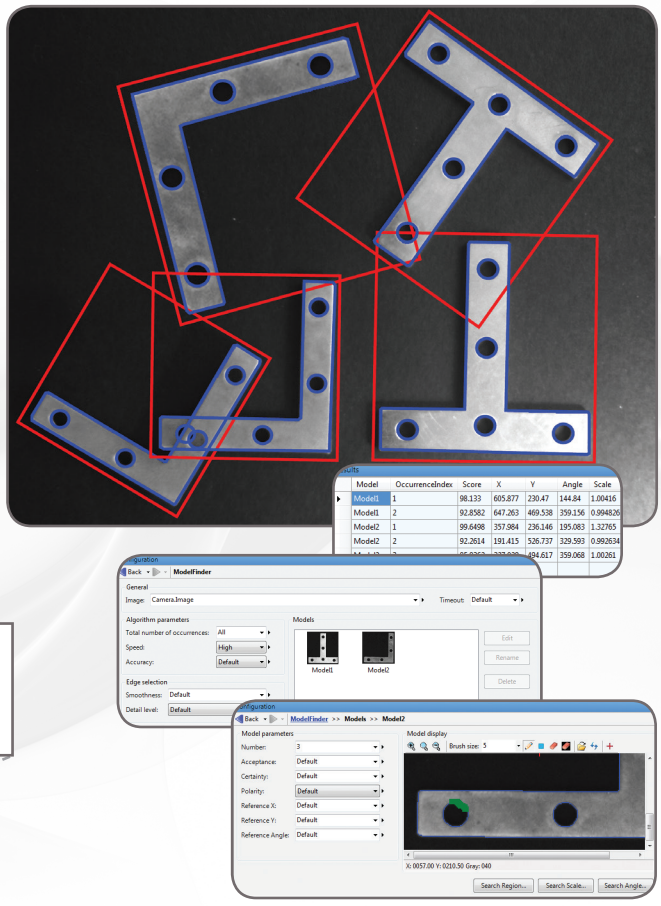
Central to Matrox Design Assistant X are flowchart steps for calibrating, enhancing, and transforming images; locating objects; extracting and measuring features; reading character strings; and decoding and verifying identification marks. These steps are designed to provide optimum performance and reliability.

Pattern recognition

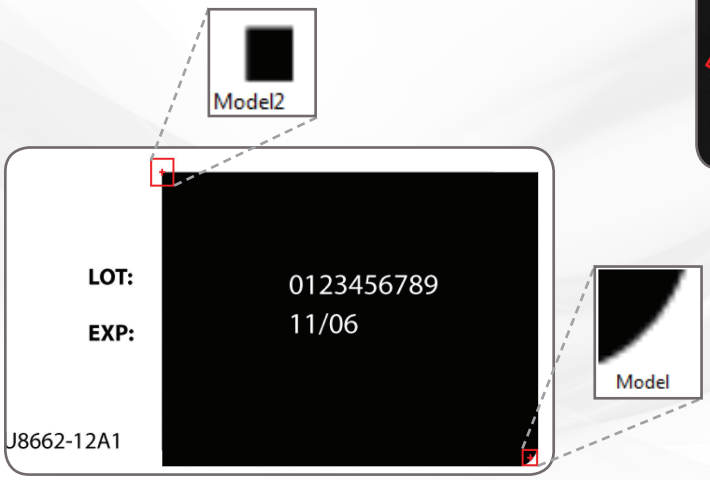
Matrox Design Assistant X includes two steps for performing pattern recognition: Pattern Matching and Model Finder. These steps are primarily used to locate complex objects for guiding a gantry, stage, or robot, or for directing subsequent measurement steps.

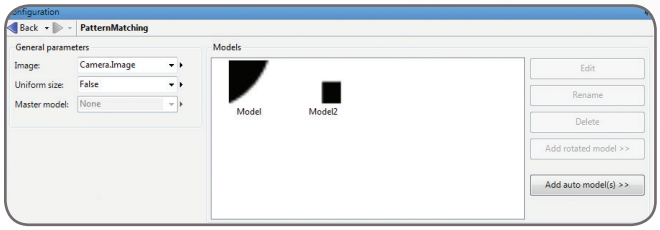
The Pattern Matching step finds a pattern by looking for a similar spatial distribution of intensity. The step employs a smart search strategy to quickly locate multiple patterns, including multiple occurrences, which are translated and slightly rotated. The step performs well when scene lighting changes uniformly, which is useful for dealing with attenuating illumination. A pattern can be trained manually or determined automatically for alignment. Search parameters can be manually adjusted and patterns can be manually edited to tailor performance.

The Model Finder step employs an advanced technique to locate an object using geometric features (e.g., contours). The step finds multiple models, including multiple occurrences that are translated, rotated, and scaled. Model Finder locates an object that is partially missing and continues to perform when a scene is subject to uneven changes in illumination, thus relaxing lighting requirements. A model is manually trained from an image; search parameters can thus be manually adjusted and models manually edited to tailor performance.



Model Finder





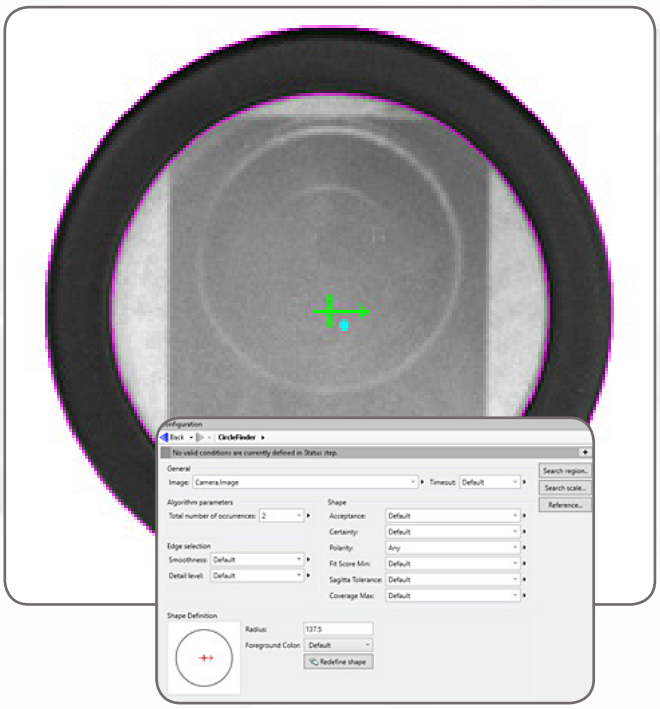
Pattern Matching

Vision Tools (cont.)

Shape finding

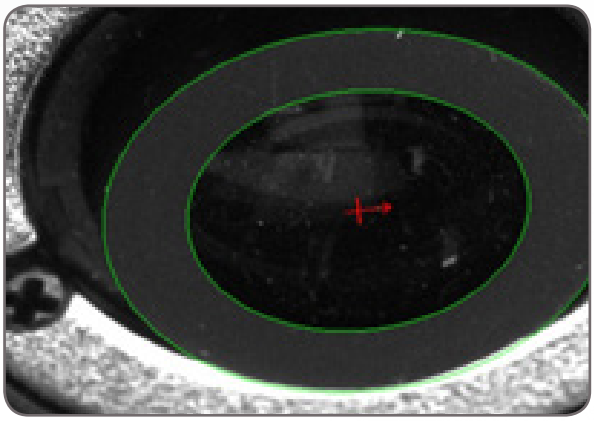
Matrox Design Assistant X includes dedicated steps for finding circles, ellipses, rectangles, and line segments. The anticipated radius, the possible scale range, and the number of expected occurrences define circle finding. Ellipse and rectangle finding are defined by the anticipated width and height, the possible scale and aspect ratio ranges, and the number of expected occurrences. Line segment finding is defined by the anticipated length and the number of expected occurrences. Continuous and broken edges lying within an adjustable variation tolerance produce the requested shape.

The Shape Finding step computes the total number of found occurrences; for each occurrence, the tool can provide the center position and score relative to the reference. It can also give the radius and scale for circles; the angle, aspect ratio, width, and scale for ellipses and rectangles; and the start and end positions as well as the length for line segments. These specialized modes are generally faster and more robust at finding specific shapes than generic pattern recognition.



Circle Finder

Rectangle Finder

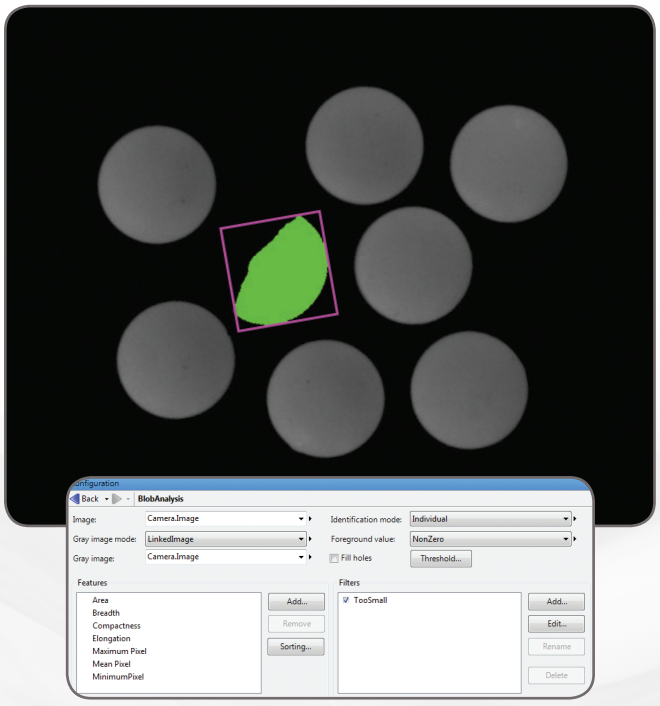


Ellipse Finder

Vision Tools (cont.)

Feature extraction and analysis

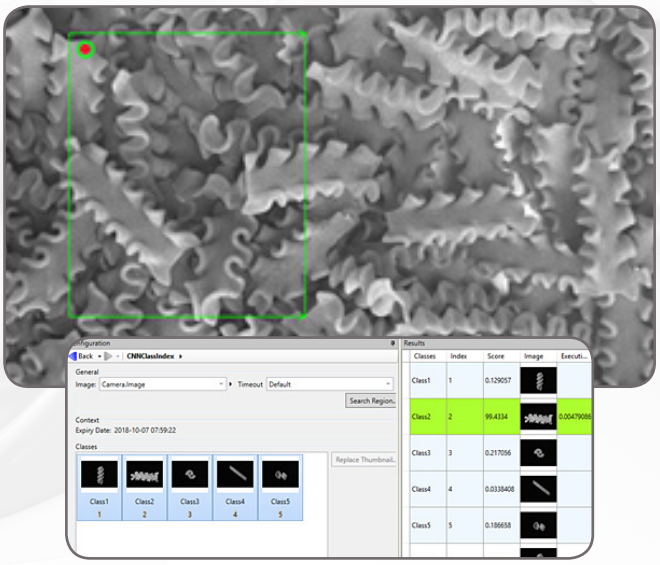
The Blob Analysis step is used to identify, count, locate, and measure basic features and objects (i.e., blobs) to determine presence and position, and enable further inspection. The step works by segmenting images where blobs are separated from the background and one another before quickly identifying the blobs. Over 50 characteristics can be measured and these measurements can be used to eliminate or keep certain blobs.



Blob Analysis

Classification

Matrox Design Assistant X includes a Classification step for automatically categorizing image content using machine learning. It makes use of deep learning—specifically convolutional neural network (CNN)—technology for assigning images or image regions to pre-established classes. The tool is particularly well-suited for analyzing images of highly textured, naturally varying, and acceptably deformed goods. The intricate design and training of a neural network is carried out by Matrox Imaging, taking advantage of the accumulated experience, knowledge, and skill of its experts in both machine learning and machine vision. Users simply need to submit an adequate set of images that are representative of the given application, categorized for the desired classes, and roughly distributed evenly among the latter. The prediction or inference with the neural network is then performed exclusively by Matrox Imaging-written code on a mainstream CPU, eliminating the dependence on third-party neural network libraries and the need for specialized GPU hardware.



Classification

Vision Tools (cont.)

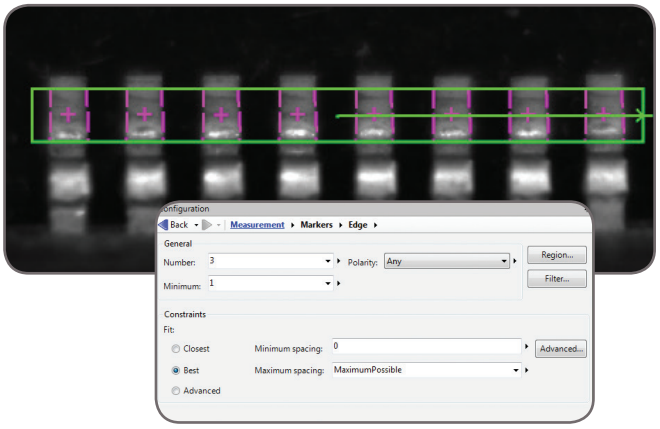
1D and 2D measurements

Matrox Design Assistant X includes three steps for measuring: Measurement, Bead inspection, and Metrology. These tools are predominantly used to assess manufacturing quality.

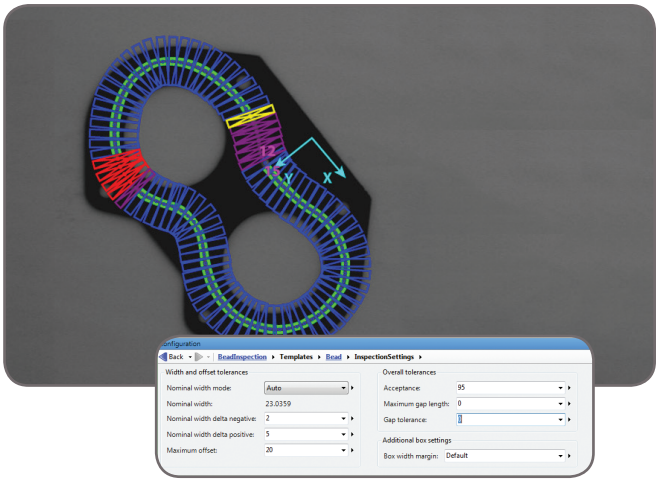
The Measurement step uses the projection of image intensity to very quickly locate and measure straight edges or stripes within a carefully defined rectangular region. The tool can make several 1D measurements on edges and stripes, as well as between edges or stripes.

The Bead inspection step is for inspecting material that is applied as a continuous sinuous bead, such as adhesives and sealants, or its retaining channel. The step identifies discrepancies in length, placement, and width, as well as discontinuities. The Bead inspection step works by accepting a user-defined coarse path (as a list of points) on a reference bead and then automatically and optimally placing search boxes to form a template. The size and spacing of these search boxes can be modified to change the sampling resolution. The allowable bead width, offset, gap, and overall acceptance measure can be adjusted to meet specific inspection criteria.

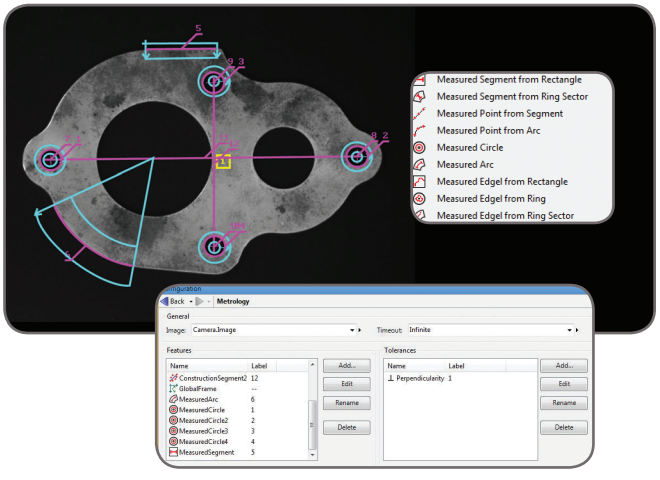
The Metrology step is intended for 2D geometric dimensioning and tolerancing applications. The step extracts edges within defined regions to best fit geometric features. It also supports the construction of geometric features derived from measured ones or defined mathematically. Geometric features include arcs, circles, points, and segments. The step validates tolerances based on the dimensions, positions, and shapes of geometric features. The step's effectiveness is maintained when subject to uneven changes in scene illumination, which relaxes lighting requirements. The expected measured and constructed geometric features, along with the tolerances, are kept together in a template which is easily repositioned using the results of other locating steps.



Measurement



Bead Inspection



Metrology

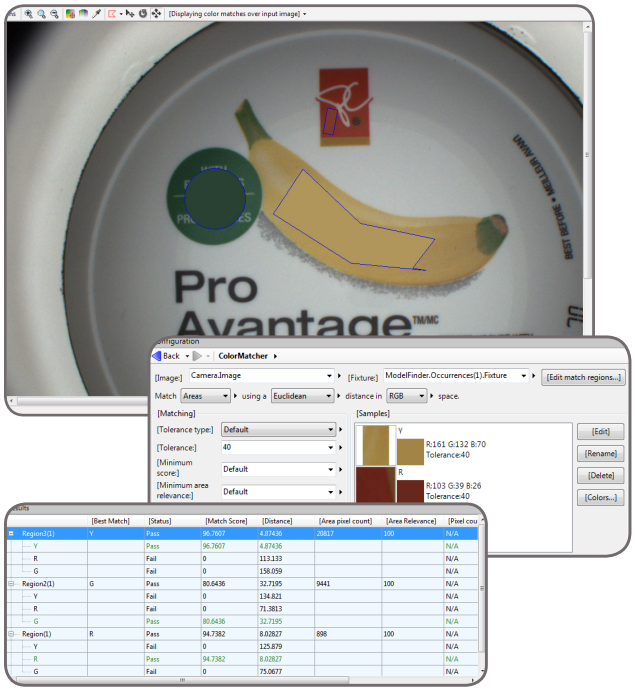
Vision Tools (cont.)

Color analysis

Matrox Design Assistant X includes a set of tools to identify parts, products, and items using color, assess quality from color, and isolate features using color.

The Color Matcher step determines the best matching color from a collection of samples for each region of interest within an image. A color sample can be specified either interactively from an image—with the ability to mask out undesired colors—or using numerical values. A color sample can be a single color or a distribution of colors (i.e., a histogram). The Color Matching method and the interpretation of color differences can be manually adjusted to suit particular application requirements. The Color Matcher step can also match each image pixel to color samples to segment the image into appropriate elements for further analysis using other steps such as Blob Analysis.

The Image Processing step includes operations to calculate the color distance and perform color projection. The distance operation reveals the extent of color differences within and between images, while the projection operation enhances color to grayscale image conversion for analysis using other grayscale processing steps.



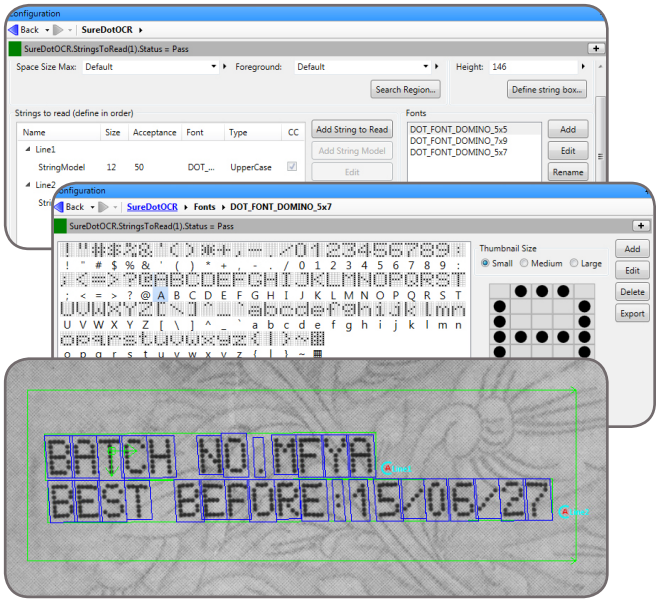
Color Matcher

Character recognition

Matrox Design Assistant X provides two steps for character recognition: SureDotOCR and String Reader. These steps combine to read text that is engraved, etched, marked, printed, punched, or stamped on surfaces.

The SureDotOCR[4] step is uniquely designed for the specific challenge of reading dot-matrix text produced by inkjet printers. Its use is straightforward, just needing to specify the dot size, the number of characters in a text string, and the dimension—but not the location—of the text region. The step reads strings located at any angle, with varying contrast and on an uneven background. It interprets distorted characters and handles some variability to character scale. The step recognizes punctuation marks and blank spaces. It includes pre-defined fonts that can be edited. The SureDotOCR step automatically reads multiple lines of text where each line can be in a different font. It supports user-defined constraints, overall and at specific character positions, to further enhance recognition rates. The SureDotOCR step provides greater robustness and flexibility than case-specific techniques that convert dot-matrix characters into solid ones for reading with traditional character recognition tools.

The String Reader step is based on a sophisticated technique that uses geometric features to quickly locate and read text made up of solid characters in images where these characters are well separated from the background and from one another. It handles text strings with a known or unknown number of evenly or proportionally spaced characters. The step accommodates changes in character angle with respect to the string, aspect ratio, scale, and skew, as well as contrast reversal. It accepts strings located across multiple lines and at a slight angle. The step reads from multiple pre-defined or user-defined Latin-based fonts. It supports user-defined constraints, overall and at specific character positions, to further increase recognition rates.



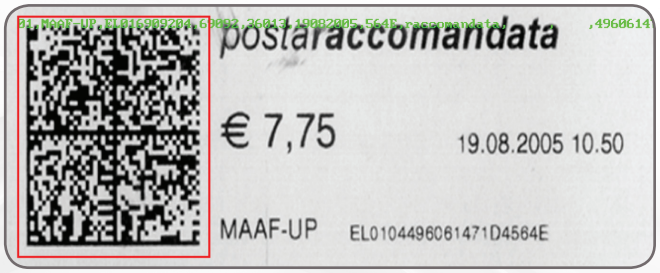
SureDotOCR

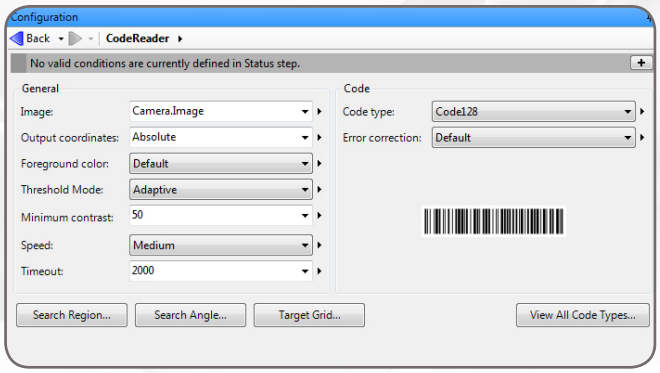
Vision Tools (cont.)

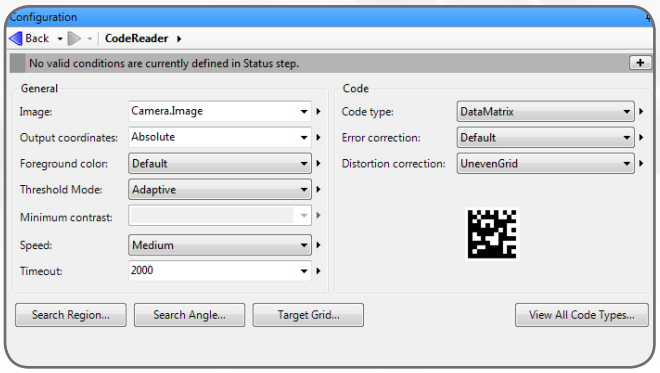
1D and 2D code reading and verification

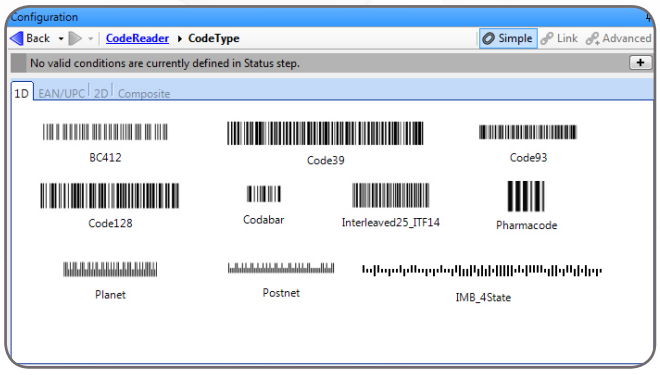
Code Reader is a step for locating and reading 1D, 2D, and composite identification marks. The step handles rotated, scaled, and degraded codes in tough lighting conditions. The step can provide the orientation, position, and size of a code.

In addition, the Code Verify step verifies the quality of a code based on the ANSI/AIM and ISO/IEC grading standards.

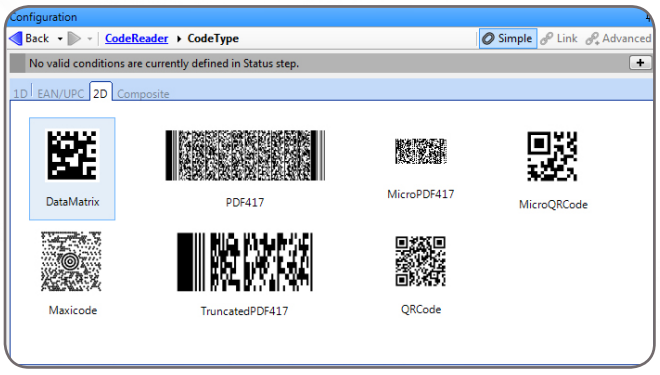








Code Reader (1D)



Code Reader (2D)

Vision Tools (cont.)

Registration

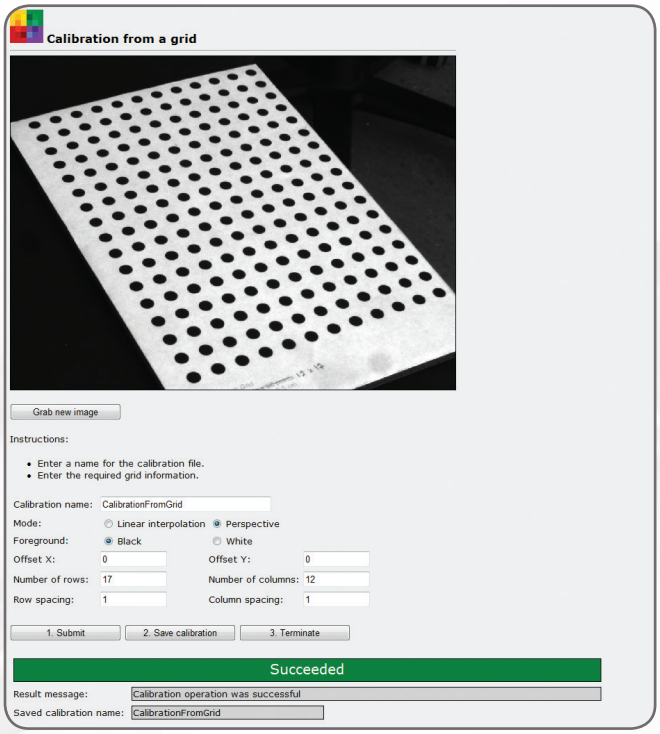
A Photometric Stereo tool produces an image that emphasizes surface irregularities—such as embossed or engraved features, scratches, or indentations—from a series of images taken with directional illumination as driven by a Light Sequence Switch (LSS) from CCS, a LED Light Manager (LLM) from Smart Vision Lights, or similar light controller.

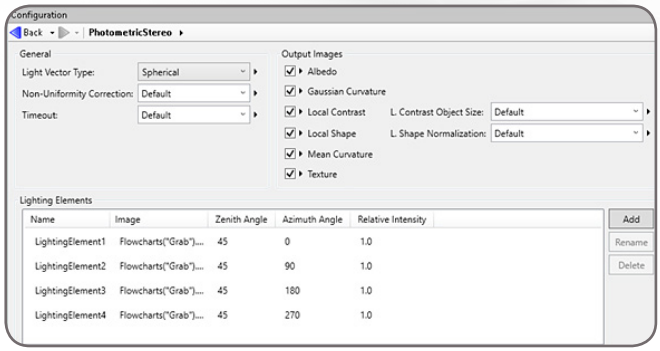
2D calibration

Calibration is a routine requirement for machine vision. Matrox Design Assistant X includes a 2D Calibration step to convert results (i.e., positions and measurements) from pixel to real-world units and vice-versa. The tool can compensate results and even an image itself for camera lens and perspective distortions.

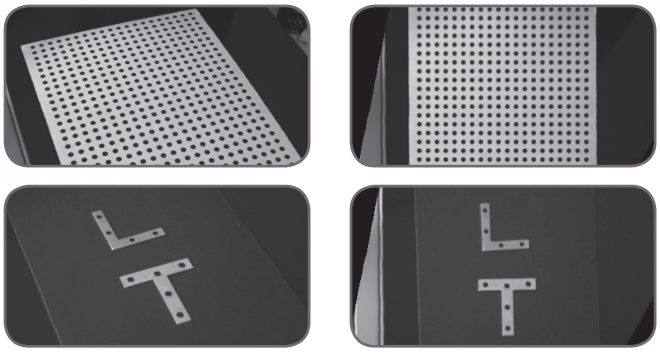
Calibration is achieved using an image of a grid or just a list of known points and is performed through a utility project accessed from the Matrox Design Assistant X configuration portal.

Registration (Photometric Stereo)





Photometric Stereo



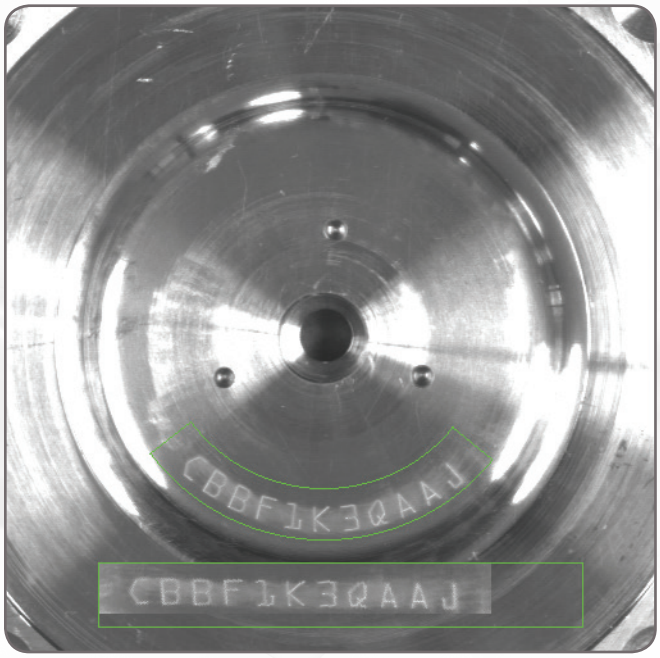
Calibration

Vision Tools (cont.)

Basic image processing

Matrox Design Assistant X includes the Image Processing step for enhancing and transforming images in preparation for subsequent analysis. Supported operations include arithmetic, color space conversions, color distance, and projection (refer to Color analysis section for details), filtering, geometric transformations, logic, LUT mapping, morphology, and thresholding.

Matrox Design Assistant X also includes Edge Locator and Intensity Checker. Edge Locator[5] finds objects by locating straight edges and Intensity Checker is used to analyze an object using image intensity.



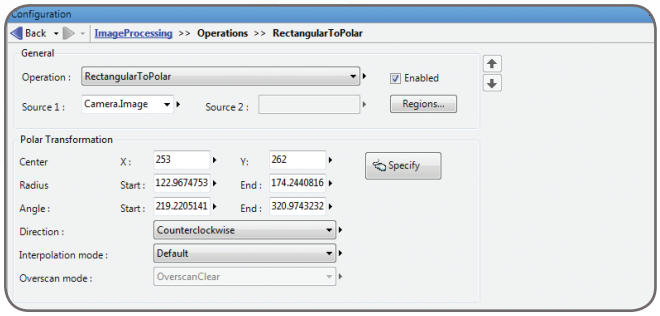
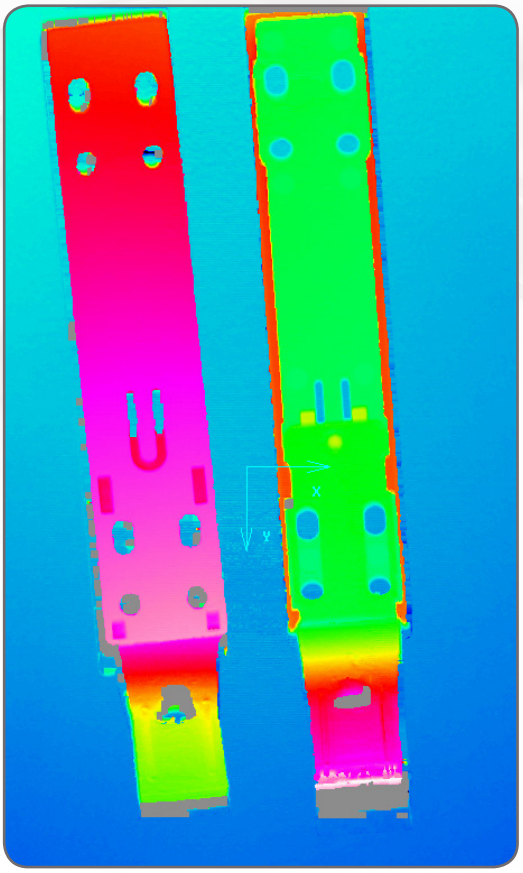


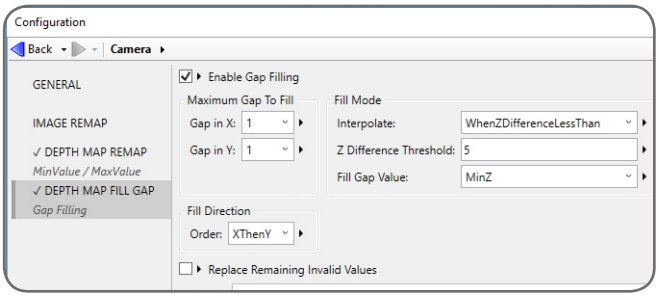
Image Processing

3D acquisition and analysis

Matrox Design Assistant X provides an interface to third-party 3D sensors like the LMI Gocator® line profilers and snapshot sensors, Photoneo® PhoXi® scanners, Wenglor weCat3D profile sensors, and the Zivid One 3D camera through their SDK or the interface standard they support[6]. Matrox Design Assistant X is able to inspect the depth map produced by these 3D sensors using the image analysis and preceding steps. It also provides additional functionality to fill gaps in a depth map, remapping a depth map for optimal use including visualization, and presenting the depth data in the world units given by the 3D sensor.



Depth-map visualization

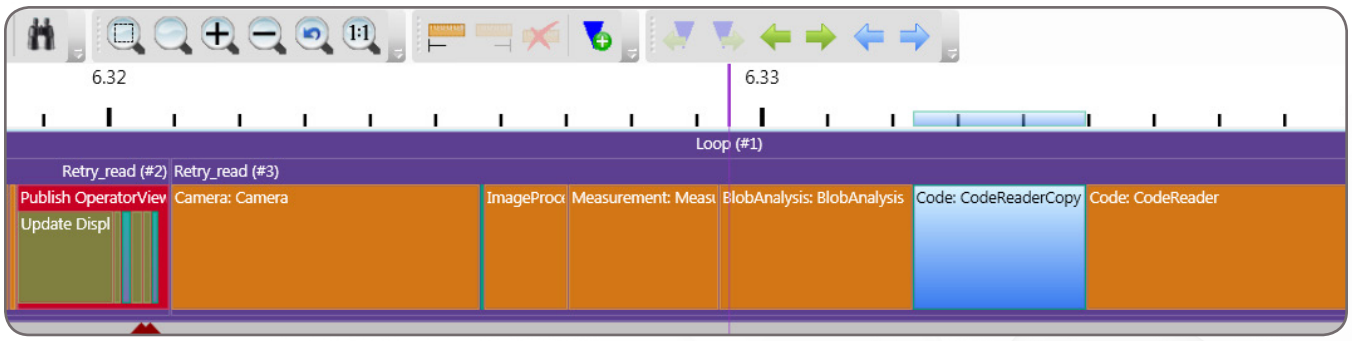


Depth-map gap filling

Utilities

Matrox Profiler

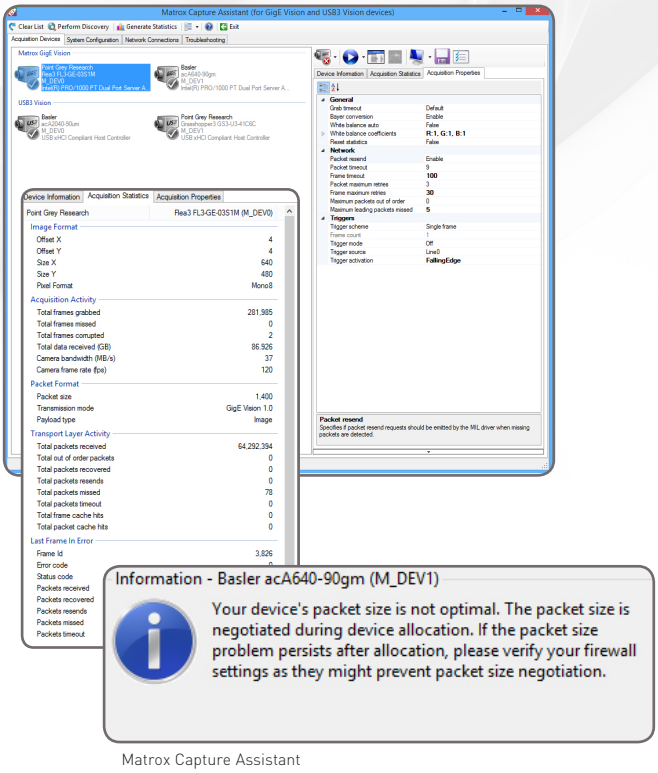
Matrox Design Assistant X includes Matrox Profiler, a separate utility to post-analyze the execution of a vision project for performance bottlenecks and timing issues. It presents the flowchart steps executed over time on a navigable timeline. Matrox Profiler permits searching for and selecting specific steps and their execution times for analysis. It computes statistics on execution times and presents these on a per-step basis.



Matrox Profiler

Matrox Capture Assistant

Matrox Capture Assistant is another separate utility included with Matrox Design Assistant X to verify the connection to one or more GigE Vision or USB3 Vision cameras and testing video acquisition. It can obtain GigE Vision and USB3 Vision device information, collect and present acquisition statistics and provide access to acquisition (GenICam™) properties. The gathering and display of statistics can be performed when acquiring within or outside of Matrox Capture Assistant. Matrox Capture Assistant also allows the adjustment of GigE Vision driver settings and provides the means to troubleshoot connectivity issues.



Matrox Capture Assistant

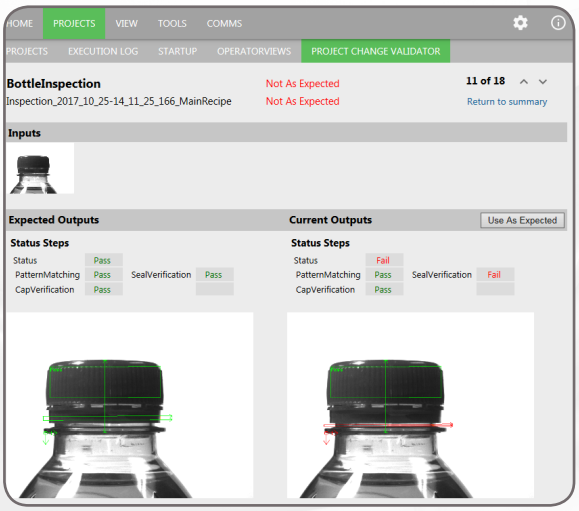
Utilities (cont.)

Project Change Validator

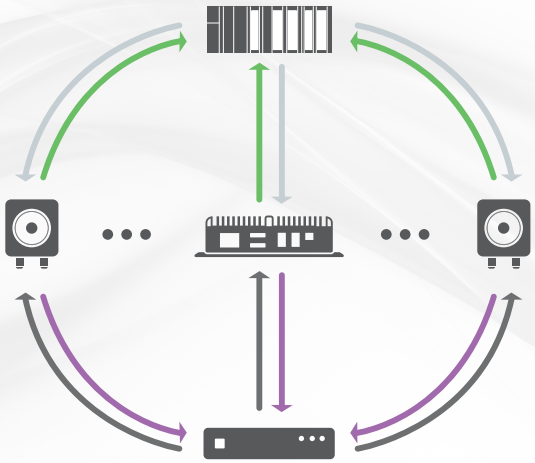
Project Change Validator is a utility employing a client-server architecture for ensuring that changes made to a deployed project are not detrimental to the functioning of that project. It provides the ability to record reference images—along with the associated inspection settings and results—for a given project.

This archived reference data is then used to validate changes made to the project. Changes are validated by running the modified project with the reference data and comparing the projects' operation against this data. Validation is performed by the server—typically running on a separate computer—which is reachable over a network.

The Matrox Design Assistant X portal provides access to the validation data for management as well as the validation results. Validation requests are made on demand from the Matrox Design Assistant X portal, an automation controller, or an HMI panel.



Project Change Validator (view from portal)



1 **Programmable logic controller (PLC)**
sends project validation request to vision system(s)

2 **Vision system(s)**
send(s) current project to validation server

3 **Validation server**
verifies project and returns status to vision system(s)

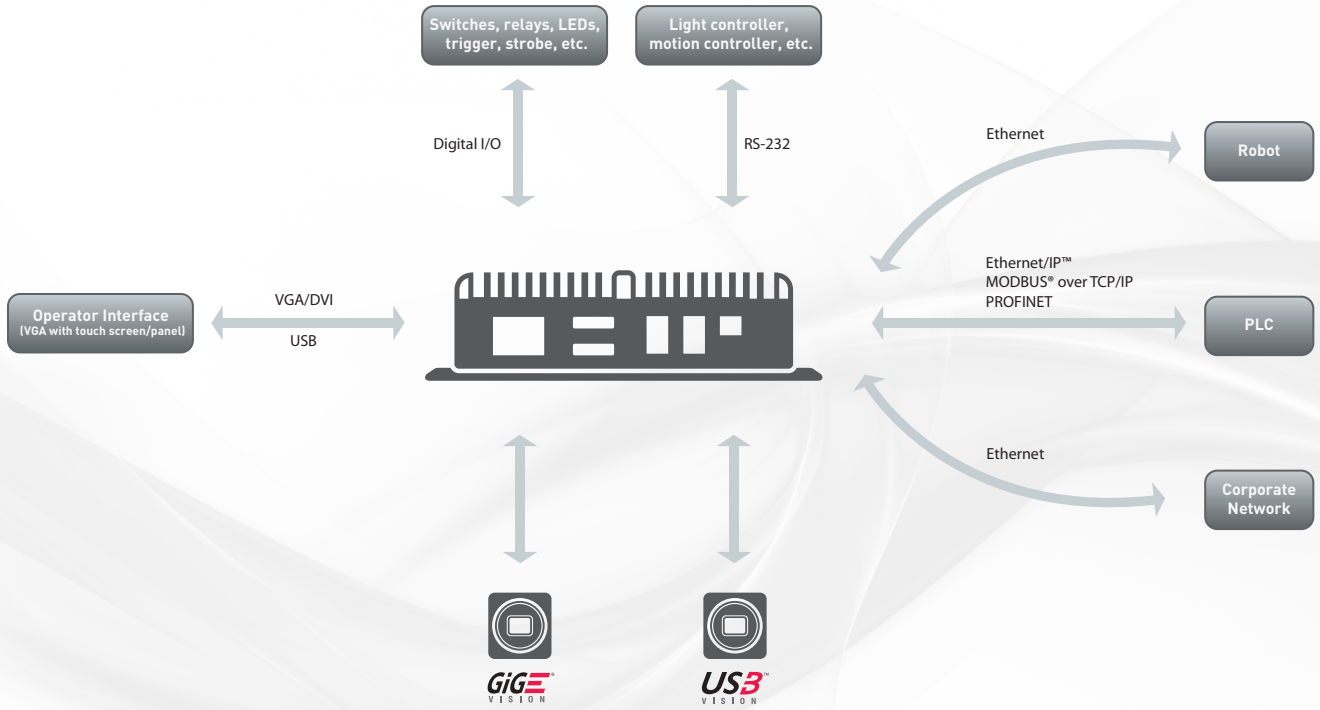
4 **Vision system(s)**
forward(s) validation status to PLC

Connectivity

Connect to devices and networks

Matrox Design Assistant X can capture images from any GigE Vision and USB3 Vision compliant camera. The software can communicate over Ethernet networks using the TCP/IP as well as the EtherNet/IP[3], Modbus over TCP/IP, and PROFINET protocols, enabling interaction with programmable logic/automation controllers. Its QuickComm facility provides ready-to-go communication with these controllers. Matrox Design Assistant X supports direct communication with select robot controllers[7] for 2D vision-guided robotic applications.

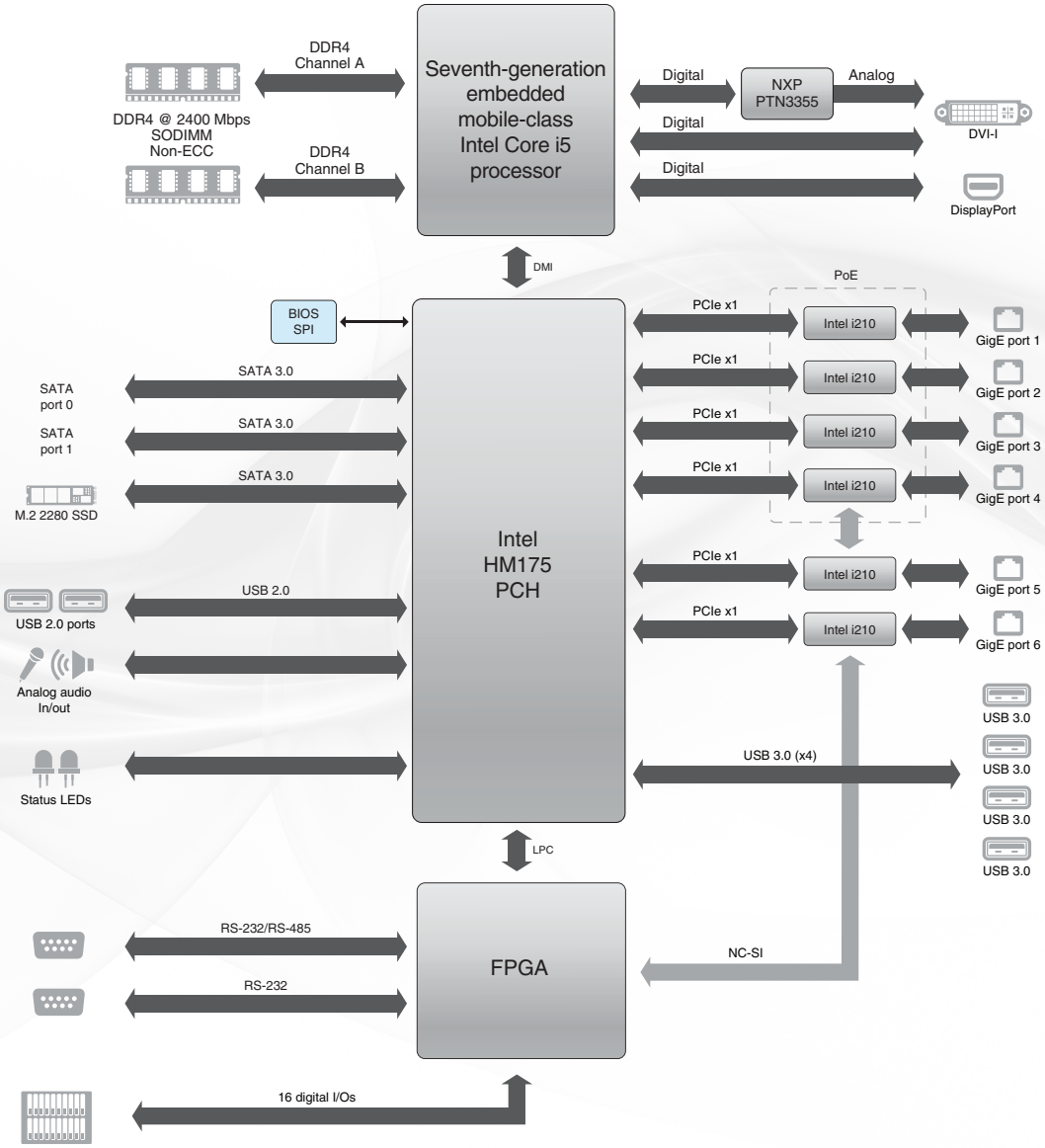
Matrox Design Assistant X can be configured to interact with automation devices through a computer's COM ports. Matrox Design Assistant X can also directly interact with the I/Os built into a Matrox vision controller, Matrox Iris GTR smart camera, and I/O card as well as the I/O available on a GigE Vision or USB3 Vision camera.



Connectivity (cont.)

Matrox 4Sight EV6

Block diagram

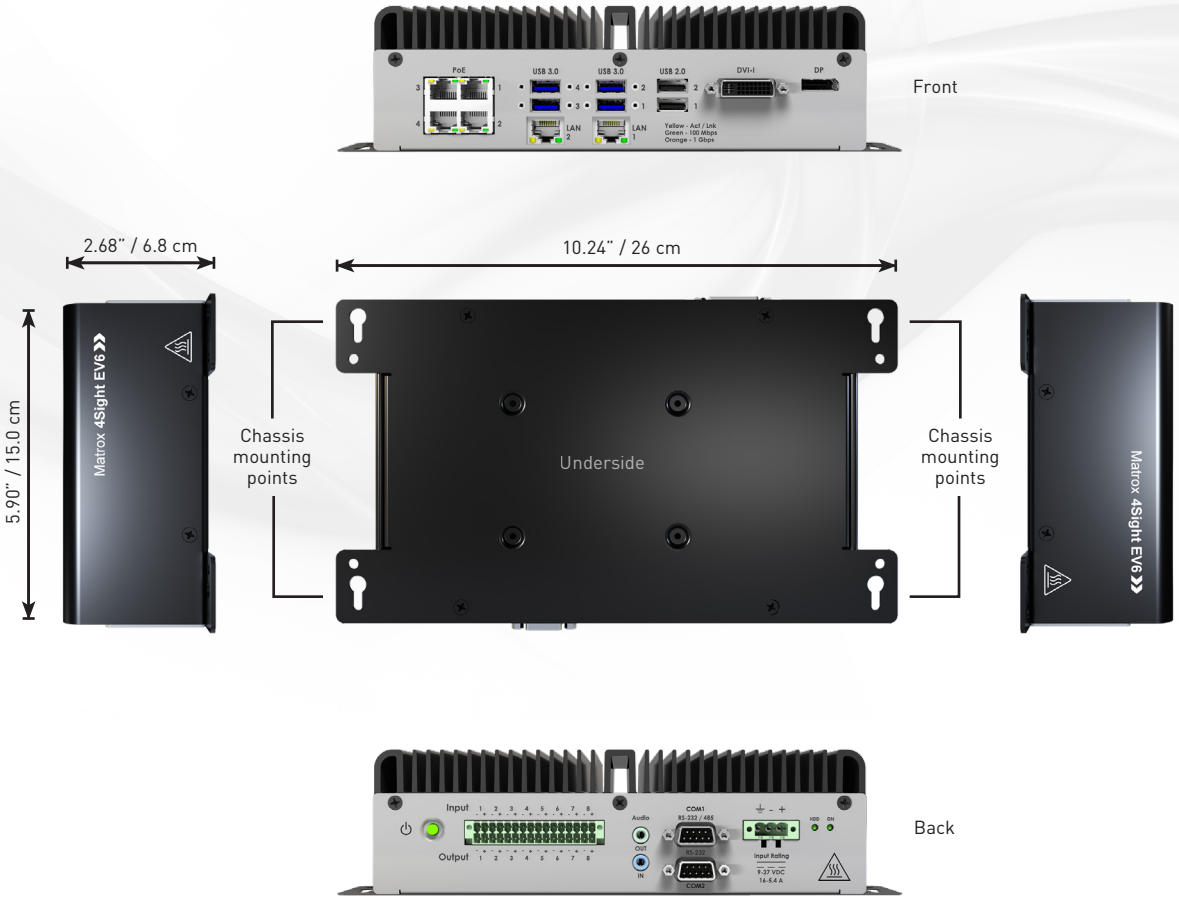


Connectivity (cont.)

Matrox 4Sight EV6
Front and back views

1. Gigabit Ethernet ports with PoE
2. USB 3.0 ports
3. Gigabit Ethernet ports
4. USB 2.0 ports
5. DVI-I output
6. DisplayPort
7. Power button
8. Digital inputs
9. Digital outputs
10. Audio out
11. Audio in
12. RS-232/RS-485 port
13. RS-232 port
14. Power input
15. HDD LED
16. Power-on LED

Matrox 4Sight EV6 chassis



Specifications

Matrox 4Sight EV6

System

- Intel Core i5-7442EQ
- Intel HM175 Platform Controller Hub (PCH)
- Two (2) 260-pin DDR4-2133/2400 SODIMM slots (dual-channel)
- Dual-head graphics support
  - One (1) DisplayPort output
    - Up to 4096x2304 @ 60 Hz
  - One (1) DVI-I display output
    - Up to 1920x1200 @ 60 Hz digital
    - Up to 2048x1536 @ 75 Hz analog
- Six (6) Gigabit Ethernet ports (10/100/1,000)
  - Four (4) Gigabit Ethernet ports with PoE (up to 15.4 W per port)
  - Two (2) standard Gigabit Ethernet ports
- Four (4) USB 3.0 ports
- Two (2) USB 2.0 ports
- Two (2) SATA 3.0 ports (internal)
- One (1) M.2 connector; used by supplied 64 GB M.2 2280 SSD
- One (1) 24-bit stereo audio input and 24-bit stereo output
- One (1) RS-232 port
- One (1) RS-232/RS-485 port
- Sixteen (16) digital I/Os
- Eight (8) inputs
  - Up to 24 V
- Eight (8) outputs (open collector)
  - 100 mA maximum @ 24 VDC
- 64 GB M.2 2280 SATA 3.0 SSD
- Power input: 9 to 27 VDC (nominal 24 VDC @ 4.2 A)

Dimensions (L x W x H)

- 22.5 x 15.0 x 6.8 cm (8.86 x 5.90 x 2.68 in)

Chassis

- Four mounting slots
- Fanless enclosure

Certifications

- FCC Class A
- ICES-003 Class A
- CE Class A
- RCM Class A

Training and Support

Matrox Vision Academy

Matrox Vision Academy provides all the expertise of live classroom training, with the convenience of on-demand instructional videos outlining how to get the most out of Matrox Design Assistant X vision software. Available to customers with valid Matrox Design Assistant X maintenance subscriptions, as well as those evaluating the software, users can seek out training on specific topics of interest, where and when needed. Regularly scheduled live classroom training is also offered at Matrox Imaging Headquarters.

Matrox Vision Academy aims to help users increase productivity, reduce development costs, and bring applications to market sooner. For more information, visit info.matrox.com/imaging/form/vision-academy.

Matrox Professional Services

Matrox Professional Services delivers deep technical assistance and customized trainings to help customers develop their particular applications. These professional services comprise personalized training; assessing application or project feasibility (e.g., illumination, image acquisition, and vision algorithms); demo or prototype applications/projects; troubleshooting, including remote debugging; and video/camera interfacing.

Backed by the Matrox Vision Squad—a team of high-level vision professionals—Matrox Professional Services offer more in-depth support, recommending best methods with the aim of helping customers save valuable development time and deploy solutions more quickly. For more information on pricing and scheduling, contact Matrox Sales at www.matrox.com/imaging/en/buy/representatives.

Matrox Design Assistant X maintenance program

Matrox Design Assistant X users have access to a Maintenance Program, renewable on a yearly basis. This maintenance program entitles registered users to free software updates and entry-level technical support from Matrox Imaging, as well as access to Matrox Vision Academy.

For more information, please refer to the Matrox Imaging Software Maintenance Programs brochure or www.matrox.com/imaging/en/support/support_maintenance/.

Ordering Information

Hardware

Part number	Description
EV6I5M16DA	Matrox 4Sight EV6 integrated unit with Intel Core i5-7442EQ, 16 GB DDR4 RAM, 64 GB M.2 MLC SSD, Microsoft Windows 10 IoT Enterprise 2019 (64-bit). Partially licensed for Matrox Design Assistant X.
EV6I5M16DA+	Matrox 4Sight EV6 integrated unit with Intel Core i5-7442EQ, 16 GB DDR4 RAM, 64 GB M.2 MLC SSD, Microsoft Windows 10 IoT Enterprise 2019 (64-bit). Fully licensed for Matrox Design Assistant X.
EV6PS*	150 W AC/DC power adapter (100-240 VAC input/24 VDC output) for Matrox 4Sight EV6.

Note: The use of this product is governed by Microsoft Software License Terms among others.

Software

Part number	Description
Included	Matrox 4Sight EV6 with Matrox Design Assistant comes with a DVD with the IDE and a maintenance registration number. It is pre-loaded with the Matrox Design Assistant design-time and run-time environment. The partially licensed model (EV6I5M16DA) enables pattern recognition (PatternMatching step), feature extraction and analysis (BlobAnalysis step), 1D and 2D measurements (Measurement, BeadInspection, and Metrology steps), color analysis (ColorMatcher step), 1D and 2D code reading and verification (CodeReader and CodeGrade steps), 2D calibration, basic image processing (IntensityChecker, ImageProcessing, and EdgeLocator steps), image compression, and industrial communication. Note: For partially licensed model (EV6I5M16DA), the use of 3D functionality as well as additional pattern recognition (ModelFinder), shape finding (RectangleFinder, CircleFinder, EllipseFinder, and SegmentFinder), character recognition (StringReader and SureDotOCR), classification (CNNClassIndex), and registration (PhotometricStereo) steps requires an additional license purchased separately. Refer to the Matrox Imaging Library 10 datasheet – MIL 10 Run-Time Licenses section for ordering details.

Matrox Design Assistant X Maintenance Program

Part number	Description
DAMAINTENANCE	One-year extension to Matrox Design Assistant X maintenance program per developer. Included in the original purchase price of the Matrox Design Assistant X development package, it entitles registered users to one year of technical support, access to updates, and Matrox Vision Academy online training website. Note: 75% discount for DAMAINTENANCE if purchased with MIL Maintenance (i.e., MILMAINTENANCE) for the same user. 50% educational discount for DAMAINTENANCE with proof of affiliation with an academic institution. Discounts cannot be combined.

Ordering Information (cont.)

Matrox Vision Academy Training

Online

For access	Description
www.matrox.com/imaging/vision_academy/login	Matrox Vision Academy Online provides a range of categorized instructional videos on how to use the software to create vision applications. Matrox Vision Academy Online is available to customers with current Matrox Design Assistant X maintenance subscriptions, as well as those evaluating the software. Visit www.matrox.com/imaging/en/vision_academy/ for more information.

Matrox Vision Academy Training

On-Premises

Part number	Description
DATRAIN **Ask for availability**	*Introduction to Matrox Design Assistant:* Three-day instructor-led training on developing machine vision applications using the Matrox Design Assistant IDE. *Key topics:* Developing a vision or inspection system; using flowcharts to replace coding; setting up operator view; choosing analysis and processing tools; interfacing with IDE. Visit www.matrox.com/imaging/en/vision_academy/on_premises/ for more information.

Endnotes:
1. The software may be protected by one or more patents; see www.matrox.com/patents for more information.
2. Platform permitting.
3. Certification pending.
4. Internet Explorer®, Google Chrome™ / Chromium, and Firefox®.
5. Not Edge Finder.
6. Contact Matrox Imaging for interfaces to other third-party 3D sensors.

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, leveraging the others' expertise and industry relations to provide innovative, timely products.

Matrox Imaging is an established and trusted supplier to top OEMs and integrators involved in machine vision, image analysis, and medical imaging industries. The components consist of smart cameras, vision controllers, I/O cards, and frame grabbers, all designed to provide optimum price-performance within a common software environment.

Industries served

Matrox Design Assistant is used to put together solutions for the aerospace, agricultural, automotive, beverage, cosmetic, construction material, consumer, electronic, energy, flat panel display, food, freight, machining, medical device, packaging, paper, pharmaceutical, printing, resource, robotics, semiconductor, shipping, textile, and transportation industries.

Contact Matrox

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Serving: Canada, United States, Latin America, Europe, Asia, Asia-Pacific, and Oceania
www.matrox.com/imaging

The use of the terms "industrial" or "factory-floor" do not indicate compliance to any specific industrial standards.