Matrox **Iris E-Series** ≫

Powerful configurable smart cameras.

Key features

- applications configured using Matrox Design Assistant flowchart-based integrated development environment

- powerful embedded Intel® architecture processor running Microsoft® Windows® CE

- web-based monitoring

- high-fidelity monochrome CCD sensors

- externally triggered or internally controlled electronic shutter

- Ethernet network interface

- RS-232 serial communication

- auxiliary digital I/Os

- sturdy single or two-piece industrial design

No traditional programming skills required

Matrox Iris E-Series is a line of powerful smart cameras featuring Matrox Design Assistant, an intuitive flowchart-based integrated development environment (IDE). Developers can quickly and easily configure and deploy machine vision applications on a highly integrated platform without the need for programming. The integrated development environment provides access to a comprehensive set of highly-efficient and field-proven image analysis and measurement tools.

Single or two-piece design
Available in a uni-body or remote head plus processor unit design, the Matrox Iris E-Series is the right fit for typical machine vision applications. The two-piece design, by way of MDR26 connectors, makes use of the standard Camera Link® cabling to connect the remote head to the processor unit.

High-fidelity image sensors
Matrox Iris E-Series makes use of interline transfer progressive scan monochrome CCD image sensors with square pixels to produce fine, sharp and consistent details vital for accurate and precise image analysis. The family of available sensors include support for sub to megapixel resolutions and higher readout or frame rates. The sensors provide an externally triggered electronic full-frame shutter, which enables the capture of rapidly moving objects in crisp images.
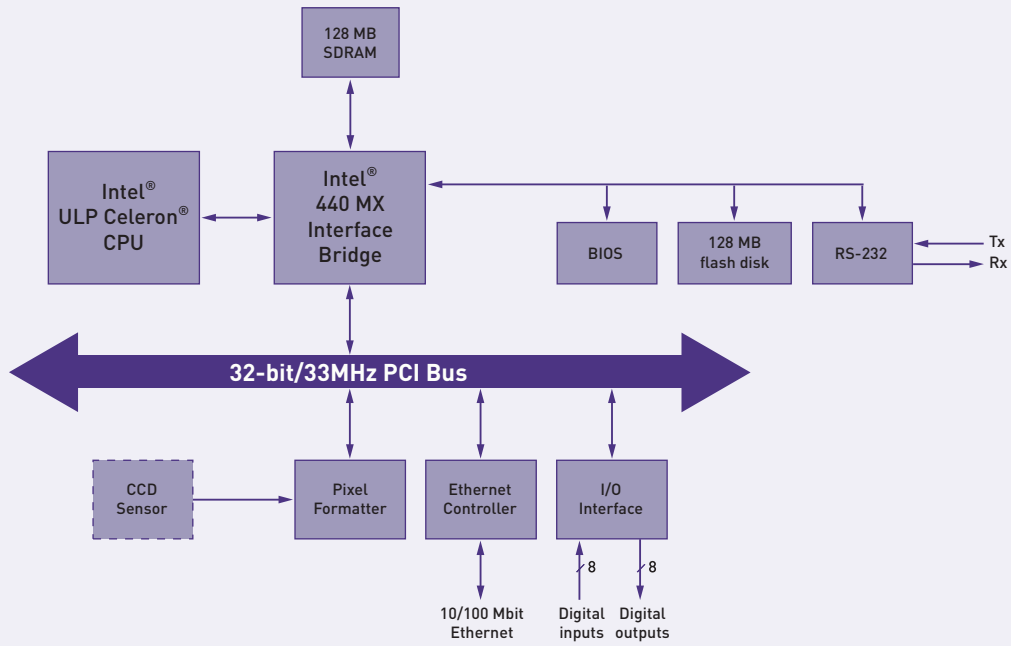
Embedded Intel® architecture processor
Advanced image processing and analysis, communication, and control operations are all performed on the Matrox Iris E-Series by the industry proven Intel® Ultra Low Power (ULP) Celeron® processor with Intel® 440MX companion interface bridge. The flash disk and SDRAM memory located within Matrox Iris E-Series provides ample space to store and execute the application and necessary run-time environment.

MATROX IMAGING

Matrox Iris E-Series

128 MB
SDRAM

Intel®
ULP Celeron®
CPU

Intel®
440 MX
Interface
Bridge

BIOS

128 MB
flash disk

RS-232

Tx
Rx

32-bit/33MHz PCI Bus

CCD
Sensor

Pixel
Formatter

Ethernet
Controller

I/O
Interface

8   8

10/100 Mbit
Ethernet

Digital
inputs

Digital
outputs

- - - - - - - in main body or remote head

Figure 1

Cross-platform development

1 Matrox Design Assistant IDE on PC workstation

2 Create flowchart and HTML (web) page
using Matrox Design Assistant

4 Execute application

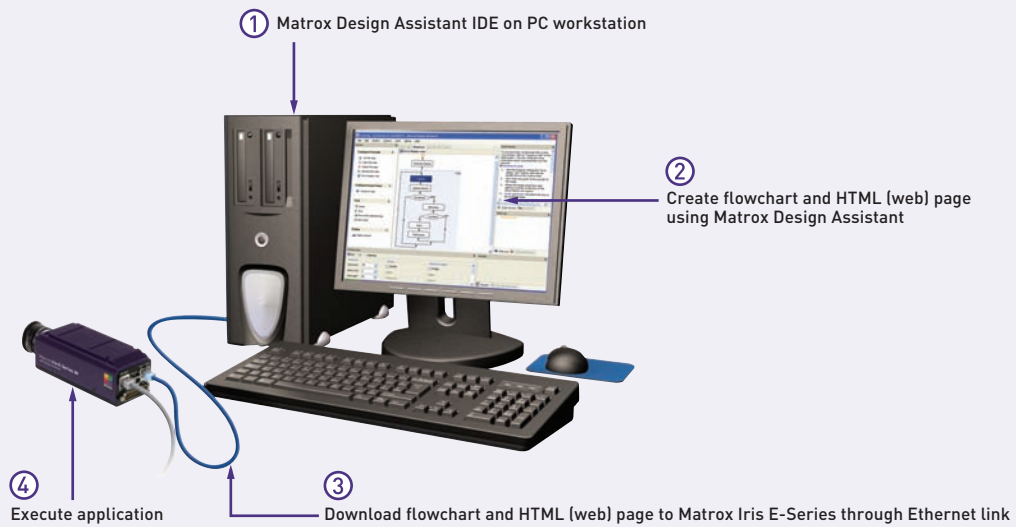3 Download flowchart and HTML (web) page to Matrox Iris E-Series through Ethernet link

Figure 2

Communication and I/O

Matrox Iris E-Series features a 10/100 Mbit Ethernet interface for connecting to factory floor networks. A RS-232 serial interface and 16 industrial digital I/Os (8 input and 8 output) enable the direct interaction with factory automation devices.

Software Environment

Matrox Design Assistant

The pivotal component of the Matrox Iris E-Series is Matrox Design Assistant, a flowchart-based integrated development environment (see Figure 3) running on a PC. Application development using Matrox Design Assistant is visually a step-by-step approach, where each step is taken from an existing toolbox and is set up through a configuration pane. The toolbox includes industry-proven image analysis and measurement tools as well as I/O and communication tools (see Figure 4).

Decision making steps are implemented using a conditional expression builder pane (see Figure 5), which provides quick access to image analysis and measurement results. Additional productivity features include the means to execute mathematical expressions using results, portal (web) pages for calibrating an image to the real-world scene and viewing a live image. Also included is context sensitive help which provides instant feedback during flowchart design.

In addition to flowchart design, Matrox Design Assistant enables the creation of a custom, web-based user interface for the application through an integrated HTML visual editor (see Figure 6). Once development is complete, the compiled flowchart and HTML page are downloaded to and stored on the Matrox Iris E-Series. The application's user interface can then be viewed from any PC using Microsoft® Internet Explorer®.
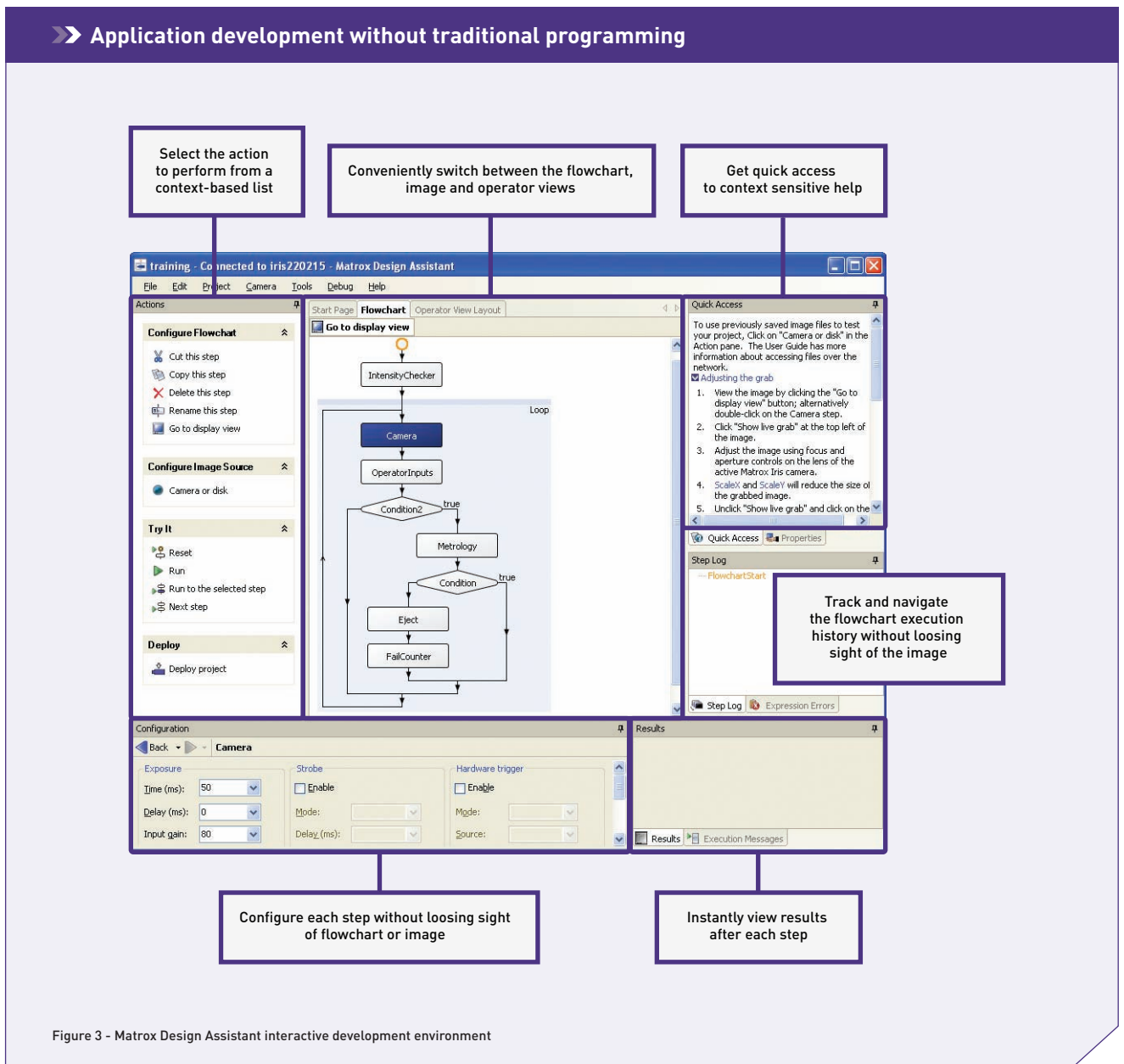
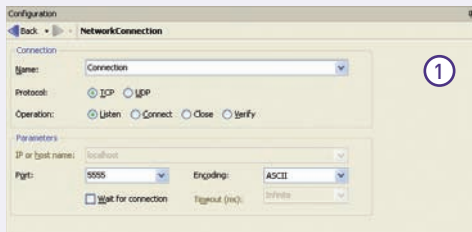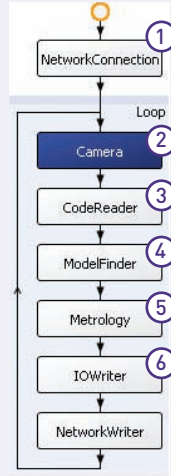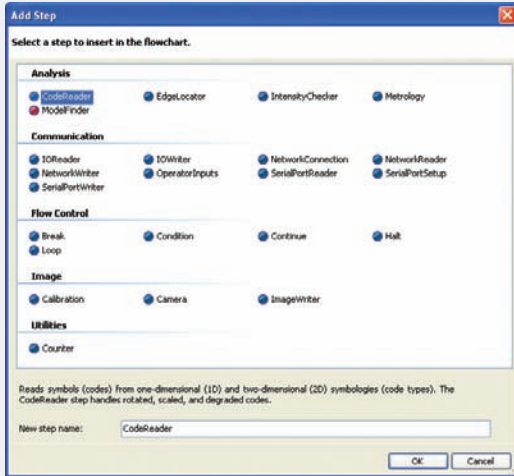## ›› Application development without traditional programming

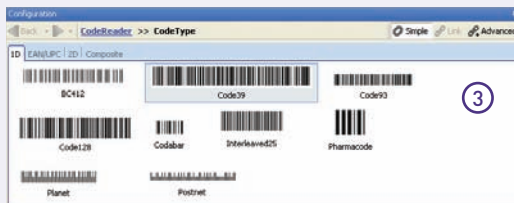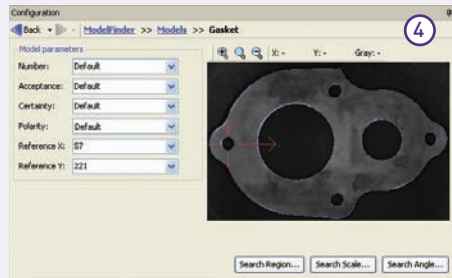Figure 3 - Matrox Design Assistant interactive development environment

Configure the networking method
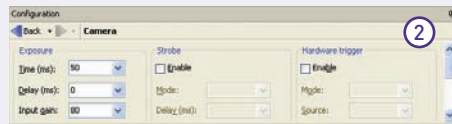
Control image acquisition

Read the more popular 1D and 2D code symbolgies
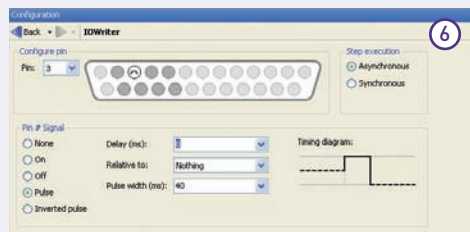
Find objects by locating straight edges (EdgeLocator) or using geometric pattern recognition (ModelFinder shown here)

Visually set up digital outputs

Analyze objects using image intensity (IntensityChecker) or use metrology to measure and construct geometric features and validate tolerances (shown here)

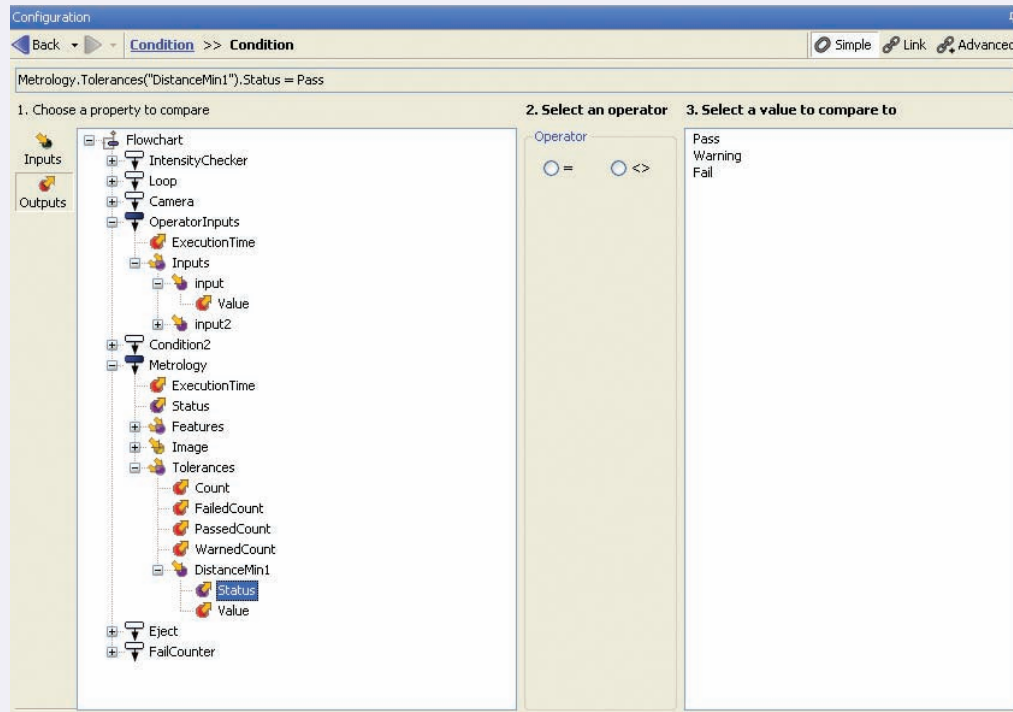Figure 4 - All the available tools and a sample of some of these

Figure 5 – Easily specify mathematical expressions for decision making using results from flowchart steps
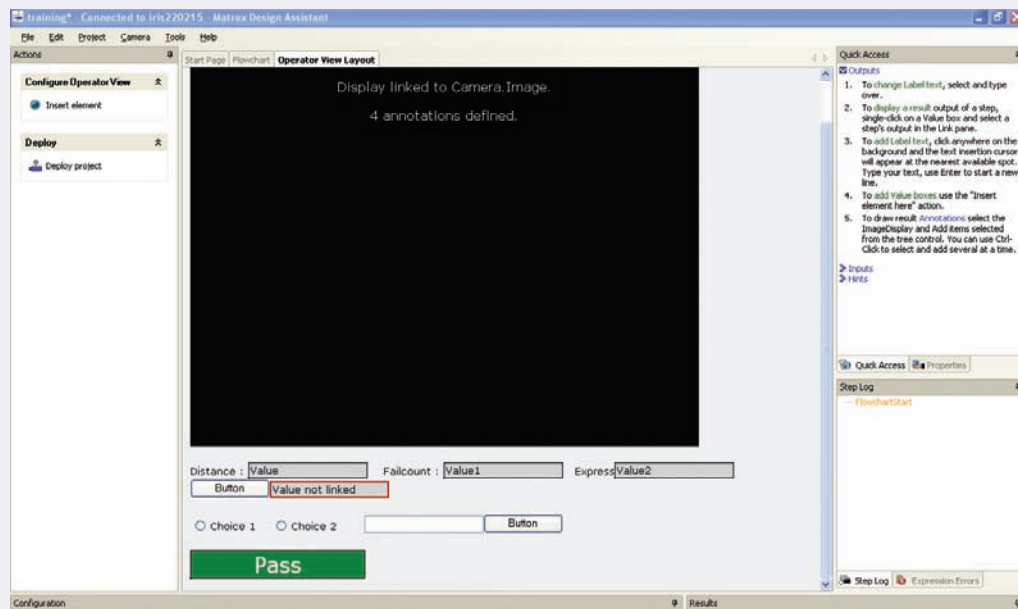
Figure 6 – Set up the web-based operator view using the integrated HTML visual editor

⟫ Dimensions - Uni-body

46.78 mm (1.842")

8.89 mm (0.350")

20.75 mm (0.817")

Optional
Mounting
Block

20.75 mm (0.817")

41.7 mm (1.642")   59.74 mm (2.352")

19.05 mm (0.750")

60.55 mm (2.384")

51.31 mm
(2.020")

Matrox **Iris E-Series** ⟫
With Design Assistant

PWR / RS232   LINK   STAT

PWR   USER   10/100 BaseT

INDUSTRIAL I/O

149.36 mm (5.881")

154.13 mm (6.068")
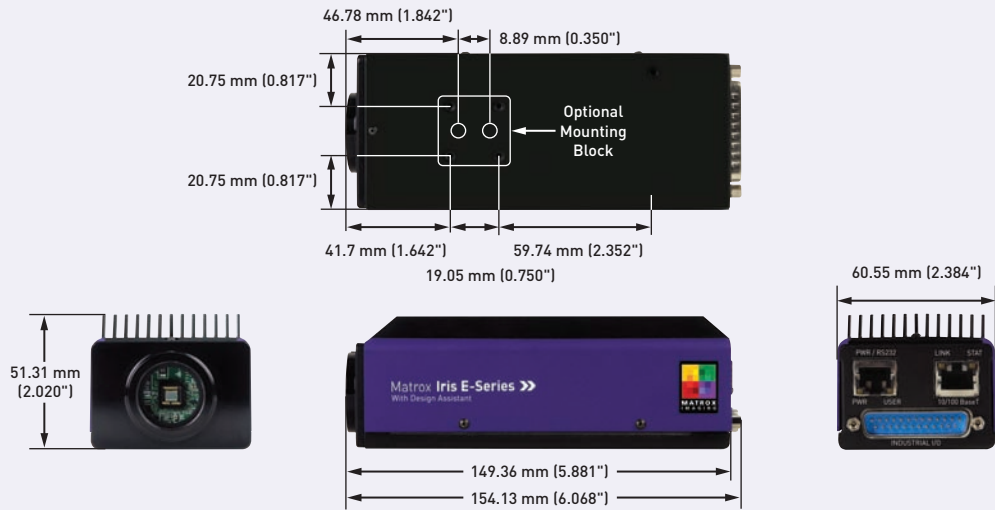
Figure 7

⟫ Dimensions - Remote Head and Processor Unit

35.56 mm
(1.400")

16.31 mm
(0.642")

22.23 mm (0.875")

13.51 mm (0.532")

20.32 mm
(0.800")

14.22 mm
(0.560")

4-40 UNC - 2B
(3.175 mm 0.125" depth) All faces

48.77 mm
(1.920")

68.17 mm (2.684")

42.84 mm (1.687")

8.89 mm (0.350")

20.75 mm (0.817")

Optional
Mounting
Block

20.75 mm (0.817")

36.65 mm (1.443")   59.74 mm (2.352")

19.05 mm (0.750")

60.55 mm (2.384")

51.31 mm
(2.020")

Matrox **Iris E-Series** ⟫
With Design Assistant

PWR / RS232   LINK   STAT

PWR   USER   10/100 BaseT

INDUSTRIAL I/O

145.42 mm (5.725")

150.19 mm (5.913")

Figure 8

Specifications

		Iris E300(R)*	Iris E300H(R)*	Iris E700(R)*	Iris E1200(R)*	Iris E1200H(R)*
Sensor board						
CCD sensor[1]	Geometry	diagonal 4.5 mm (1/4"-type)	diagonal 6 mm (1/3"-type)	diagonal 6 mm (1/3"-type)	diagonal 8 mm (1/2"-type)	diagonal 8 mm (1/2"-type)
	Format	monochrome	monochrome	monochrome	monochrome	monochrome
	Make and model	Sony ICX098BL	Kodak KAI-0340S	Sony ICX204AL	Sony ICX205AL	Sony ICX267AL
Effective resolution (H x V)		640 x 480	640 x 480	1024 x 768	1280 x 1024	1280 x 1024
Frame rate		up to 30 fps	up to 100 fps	up to 20 fps	up to 7.5 fps	up to 15 fps
Pixel size (H x V)		5.6 μm x 5.6 μm	7.4 μm x 7.4 μm	4.65 μm x 4.65 μm	4.65 μm x 4.65 μm	4.65 μm x 4.65 μm
Gain range		2 to 36 dB	6 to 42 dB	2 to 36 dB	2 to 36 dB	2 to 36 dB
Shutter speeds		100 μs to 0.5 s	45 μs to 83 ms	100 μs to 0.5 s	100 μs to 0.5 s	100 μs to 0.5 s
External trigger latency		85 μs	25 μs	75 μs	155 μs	80 μs
External trigger to output strobe delay		2μs (minimum)				
CPU board						
CPU		400MHz Intel® ULP Celeron®				
Volatile memory		128 MB SDRAM				
Non-volatile memory		128 MB flash disk				
I/O board						
Network interface		10/100 Mbit Ethernet				
Serial interface		RS-232				
Digital I/Os		8 inputs and 8 outputs				
Mechanical, electrical and environmental information						
Dimensions		refer to Figure 8 or Figure 9				
Lens type		CS mount[2]				
Connectors		RJ-45 for power and RS-232, RJ-45 for Ethernet and DB-25 for digital I/Os, and MDR26 for remote head to main body connection[3]				
Remote head distance		up to 5 meters (16.4 feet)				
Weight		435 g (15.3 oz.) for uni-body / 185 g (6.5 oz.) for remote head and 435 g (15.3 oz.) for main body				
Power consumption		375 mA @ 24 VDC or 9 W (typical)				
Digital I/O ratings		100 mA max. @ 5 to 24 VDC				
Operating temperature		0 °C to 45 °C (32 °F to 113 °F)				
Ventilation requirements		natural convection				
Operating humidity		up to 95% (non-condensing)				
Certifications		FCC class A, CE class A and RoHS-compliant				
Software environment						
PC development tools		Matrox Design Assistant IDE - Matrox Iris E-Series Edition				
PC requirements		Microsoft® Windows® XP Professional with Service Pack 2 or Microsoft® Vista, Microsoft® Internet Explorer 7.0, 310 MB hard disk space, 10/100 Mbit Ethernet port, and DVD drive				

Ordering Information

Hardware

Part number	Description
IE300*	Matrox Iris E-Series smart camera with monochrome 640 x 480 30 fps CCD sensor, 400 MHz ULP Celeron, 128MB SDRAM, 128 MB flash disk and Windows CE 5.0 license.
IE300R*	Same as above but with remote head and 2 m cable.
IE300H*	Matrox Iris E-Series smart camera with monochrome 640 x 480 100 fps CCD sensor, 400 MHz ULP Celeron, 128MB SDRAM, 128 MB flash disk and Windows CE 5.0 license.
IE300HR*	Same as above but with remote head and 2 m cable.
IE700*	Matrox Iris E-Series smart camera with monochrome 1024 x 768 20 fps CCD sensor, 400 MHz ULP Celeron, 128MB SDRAM, 128 MB flash disk and Windows CE 5.0 license.
IE700R*	Same as above but with remote head and 2 m cable.
IE1200*	Matrox Iris E-Series smart camera with monochrome 1280 x 1024 7.5 fps CCD sensor, 400 MHz ULP Celeron, 128MB SDRAM, 128 MB flash disk and Windows CE 5.0 license.
IE1200R*	Same as above but with remote head and 2 m cable.
IE1200H*	Matrox Iris E-Series smart camera with monochrome 1280 x 1024 15 fps CCD sensor, 400 MHz ULP Celeron, 128 MB SDRAM, 128 MB flash disk and Windows CE 5.0 license.
IE1200HR*	Same as above but with remote head and 2 m cable.
IRIS-PWR+CBL*	Matrox Iris power supply and cables kit. Includes power supply with all power cords (North America, Europe and UK), power supply/RS-232 cable, DB-25 to open end cable for digital I/Os (requires customization) and mounting block.

Hardware (cont.)

Part number	Description
IRIS-LENSES*	Matrox Iris lenses kit. Includes one CS-mount 4 mm lens and one CS-mount 8 mm lens (kit does not apply for IE1200[H][R]).
IRIS-1200LENS*	Matrox Iris IE1200[H][R] lens. Includes one C-mount 12 mm lens and a C to CS-mount adapter ring.

CS-mount lenses are also available from PENTAX Precision Co., Fujinon or other third parties.

Software

Matrox Design Assistant for Matrox Iris E-Series flowchart-based integrated development environment (IDE) DVD is bundled with every Matrox Iris E-Series smart camera. Moreover, each Matrox Iris E-Series smart camera includes a license for the Code Reader, Metrology, Intensity Checker, Edge Locator, calibration, I/O and communication features. Additional features like Model Finder require the installation of an additional license.

Software Maintenance Program

Included in the original purchase price of Matrox Iris E-Series, it entitles registered users to one year of technical support and free updates.

Part number	Description
DA IRIS MAINT	One year program extension to Matrox Design Assistant for Matrox Iris E-Series maintenance program.

Notes:

1. Interline transfer progressive scan CCD with square pixels.
2. Can also accommodate a C mount lens when using a 5 mm extension tube.
3. Use standard Camera Link® cables.

For more information, please call: 1-800-804-6243 (toll free in North America) or (514) 822-6020 or e-mail: imaging.info@matrox.com or http://www.matrox.com/imaging

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