



Stand-alone vision systems

Matrox Nexis >>

Highly integrated camera system.



Key features

- > camera control unit and frame grabber board for PC/104-Plus™ or x1 PCIe™
- > drives and simultaneously acquires from up to two (PC/104-Plus™) or four (PCIe™) camera heads
- > links to camera heads are fully-digital and include power
- > choice of compact and ultra-compact camera heads
- > high-fidelity color or monochrome CCD sensors with electronic shutter
- > trigger inputs and strobe outputs
- > sturdy industrial design
- > available software is sold separately and includes Matrox Imaging Library (MIL)/ActiveMIL and MIL-Lite/ActiveMIL-Lite
- > supports Microsoft® Windows® XP

Foundation for a complete imaging system

Matrox Nexis is a highly integrated camera system from a single vendor geared for machine vision applications. When part of the Matrox 4Sight M industrial imaging computer, it offers a truly integrated hardware platform for image capture, processing and display. Matrox Nexis features a variety of remote camera heads coupled to a camera control unit (CCU) and frame grabber board. The CCU design enables the Matrox Nexis to perform simultaneous capture from up to two and four independent camera heads with the PC/104-Plus™ and PCIe™ models respectively.

Combined CCU and frame grabber

The Matrox Nexis' CCU and frame grabber board provides an all-digital connection with power for up to two (PC/104-Plus™) or four (PCIe™) camera heads over cables up to 5 meters (16.4 feet) in length. Also provided are one trigger input and one strobe output per camera connection, status LEDs and auxiliary digital I/Os.

Choice of cameras heads

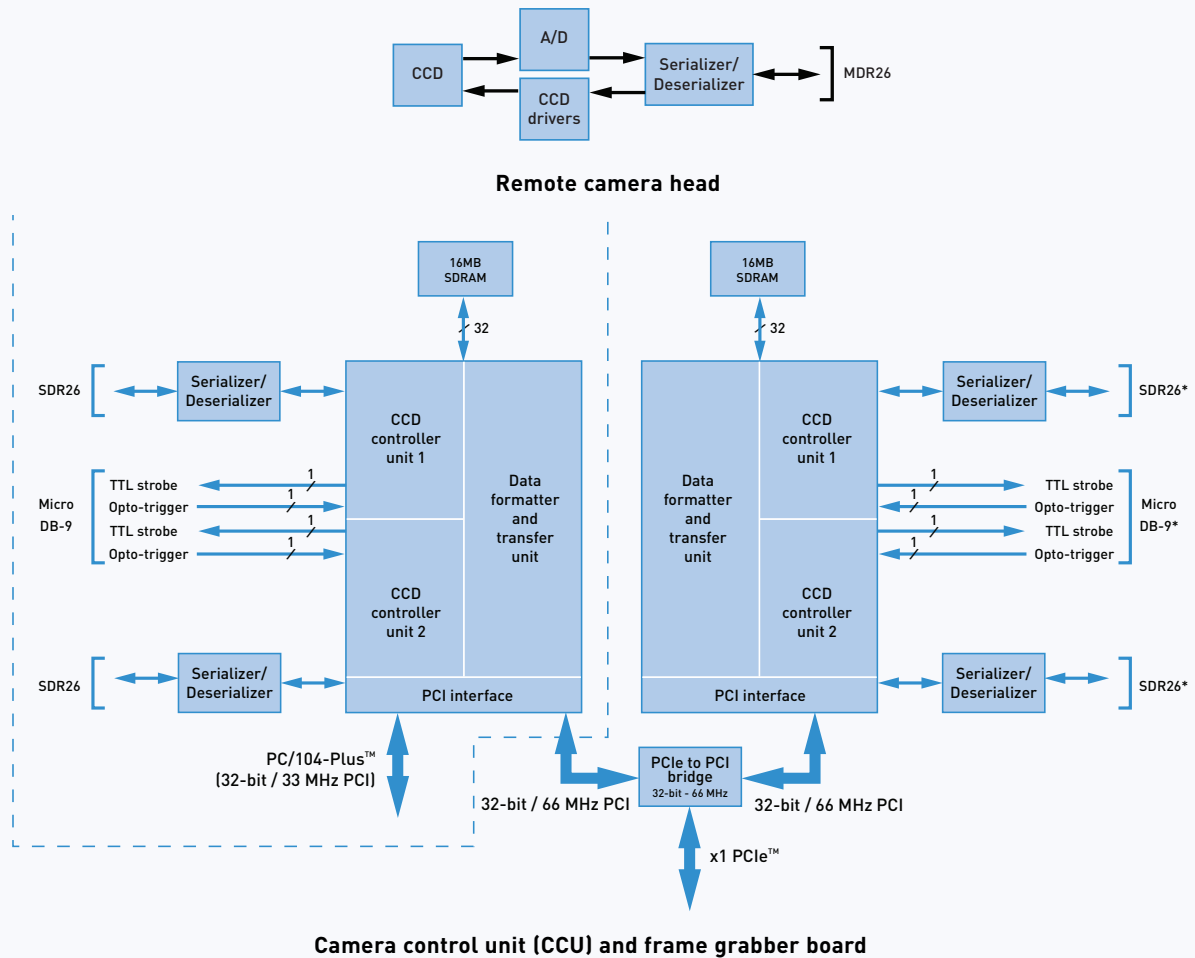
Matrox Nexis offers a variety of camera body styles and image sensors. All camera heads are available in a compact body. An ultra-compact body is also available to fit in tight spaces and/or to meet low inertial requirements. Camera heads connect to the board using standard cables.

Matrox Nexis camera heads make use of interline transfer progressive scan 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, higher readout or frame rates, and monochrome or color (by way of a mosaic filter) imaging. The sensors provide an externally triggered electronic full-frame shutter, which enables the capture of rapidly moving objects in crisp images.

Integrated into the Matrox 4Sight M

Matrox Nexis is integrated with the Matrox 4Sight M platform by way of the PC/104-Plus™ stackable form factor. Matrox 4Sight M can accommodate up to two CCU/frame grabber boards, enabling it to simultaneously acquire from up to four independent Matrox Nexis camera heads¹ (see bottom of page 3). The Matrox 4Sight M stand-alone platform equipped with the Matrox Nexis is a truly complete image capture, processing and display platform.





--- PC/104-Plus version

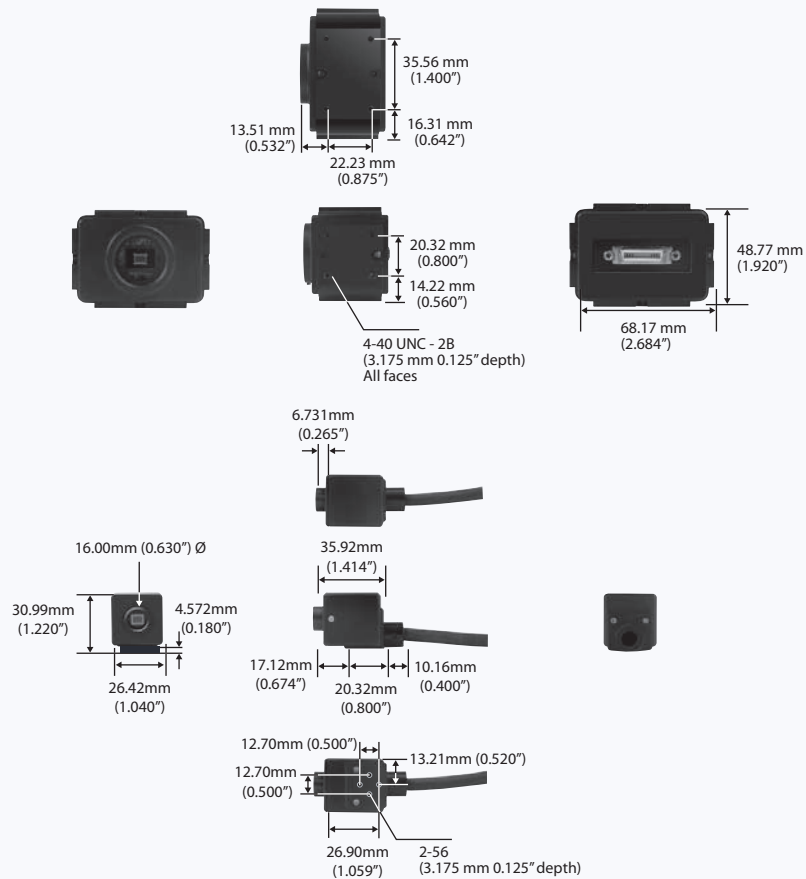
* Present on adapter bracket.

Integrating the Matrox Nexis with the Matrox 4Sight M

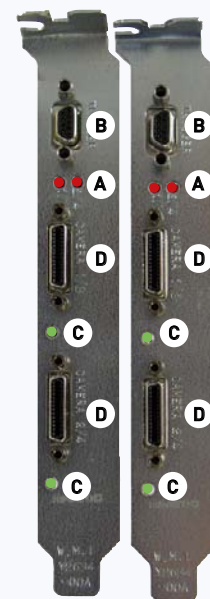
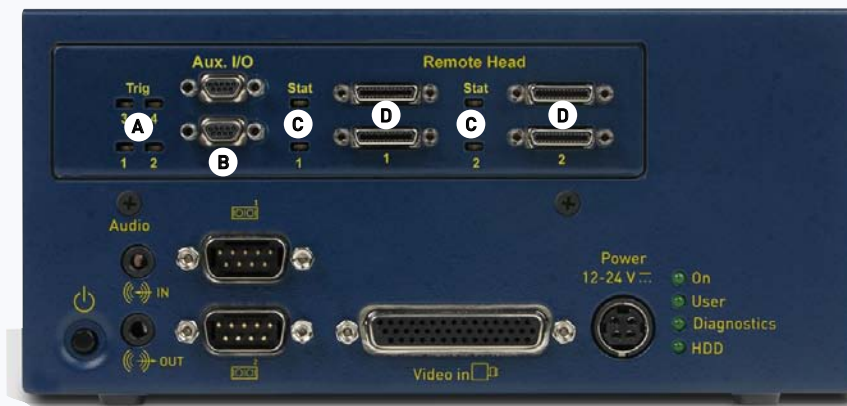


Single Matrox Nexis PC/104-Plus™ board installed in a Matrox 4Sight M.

» Dimensions - camera heads



» Matrox Nexis connectors and LEDs



- A. Trigger status LEDs.
- B. Auxiliary I/Os for trigger inputs and strobe outputs.
- C. Acquisition status LEDs.
- D. SDR26 connectors for camera heads.

Matrox 4Sight M faceplate for two Matrox Nexis PC/104-Plus™ boards (left) and PCIe™ board (right).

Software

Software support is available for Microsoft® Windows® XP, and consists of Matrox Imaging Library (MIL)/ActiveMIL or MIL-Lite/ActiveMIL-Lite development toolkits for creating custom applications.

Specifications

Camera heads

	S300T*	S300CT*	S300HT*	S300HMM12[S/R]02*	S700T*	S1200T*	S1200HT*	
CCD sensor ²	Geometry	diagonal 4.5 mm (1/4"-type)	diagonal 4.5 mm (1/4"-type)	diagonal 6 mm (1/3"-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	color	monochrome	monochrome	monochrome	monochrome	monochrome
	Make and model	Sony ICX098BL	Sony ICX098BQ	Kodak KAI-0340S	Kodak KAI-0340S	Sony ICX204AL	Sony ICX205AL	Sony ICX267AL
Effective resolution (H x V)	640 x 480	640 x 480	640 x 480	640 x 480	1024 x 768	1280 x 1024	1280 x 1024	
Frame rate	up to 30 fps	up to 30 fps	up to 100 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 mm x 5.6 mm	5.6 mm x 5.6 mm	7.4 mm x 7.4 mm	7.4 mm x 7.4 mm	4.65 mm x 4.65 mm	4.65 mm x 4.65 mm	4.65 mm x 4.65 mm	
Gain range	2 to 36 dB	2 to 36 dB	6 to 42 dB	6 to 42 dB	2 to 36 dB	2 to 36 dB	2 to 36 dB	
Shutter speeds	45 µs to 0.5 s	45 µs to 0.5 s	45 µs to 83 ms	45 µs to 83 ms	45 µs to 0.5 s	45 µs to 0.5 s	45 µs to 0.5 s	
External trigger latency	85 µs	85 µs	25 µs	25 µs	75 µs	155 µs	80 µs	
External trigger to output strobe delay	2µs (minimum)							
Dimensions	refer to Dimensions figure							
Lens type	CS mount	CS mount	CS mount	M12 mount ³	CS mount	CS mount	CS mount	
Connectors	MDR26	MDR26	MDR26	direct to PCB	MDR26	MDR26	MDR26	
Cable length	up to 5 meters (16.4 feet)							
Weight (g/oz.)	185 g (6.5 oz.)	185 g (6.5 oz.)	185 g (6.5 oz.)	35 g (1.23 oz.)	185 g (6.5 oz.)	185 g (6.5 oz.)	185 g (6.5 oz.)	

Dual/Quad CCU and frame grabber board

Form factor

- PC/104-Plus™ or x1 PCIe™

CCU

- drive (power) and control for Matrox Nexis camera heads
- can interface to any Matrox Nexis camera head
- opto-isolated trigger input
- TTL strobe output
- trigger status LED

Frame grabber

- simultaneous capture from up to four independent camera heads
- LVDS-based digital interface
- input cropping (ROI)
- horizontal and/or vertical flipping
- BGR32 packed, BGR24 packed, YUV422 packed and MON08 pixel formats
- Bayer filter (for color sensors) performed in hardware
- two independent acquisition status LEDs

Host Interface

- 32-bit / 33 MHz conventional PCI or x1 PCIe™
- interrupts for start and end of frame and sequence capture

Connectors

- SDR26 for each camera head connection (except for ultra-compact head)
- micro DB-9 for trigger inputs and strobe outputs

Dimensions

- 9.0 cm L x 9.6 cm H (3.5" x 3.78") PC/104-Plus™
- 16.8 cm L x 11.1 cm H (6.61" x 4.37") PCIe™ main board
- 5.4 cm L x 11.1 cm H (2.13" x 4.37") daughter board

Environmental information⁴

- operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
- relative humidity: up to 90% (non-condensing)
- FCC Class A
- CE class A
- RoHS-compliant

Software Environments

- host driver for Microsoft® Windows® XP
- programmed under Microsoft® Windows® using MIL/MIL-lite ('C' DLLs) with Microsoft® Visual® C++ (.NET)

Ordering Information

Dual CCU / frame grabber board for PC/104-Plus™

Sold pre-installed in Matrox 4 Sight M. Refer to Matrox 4Sight M brochure for ordering information.

Dual / Quad CCU / frame grabber board for PCIe™

Part number	Description
NEXIS2E*	Matrox Nexis dual CCU/frame grabber board for x1 PCIe™
NEXIS4E*	Matrox Nexis quad CCU/frame grabber board for x1 PCIe™.

Camera heads

Part number	Description
S300T*	Matrox Nexis camera head with monochrome 640 x 480 30 fps CCD sensor and 2 m cable.
S3000T*	Matrox Nexis camera head with color 640 x 480 30 fps CCD sensor and 2 m cable.
S300HT*	Matrox Nexis camera head with monochrome 640 x 480 100 fps CCD sensor and 2 m cable.
S300HMM12(S/R)02*	Matrox Nexis camera micro head with monochrome 640 x 480 100 fps CCD sensor with 2 m cable.
S700T*	Matrox Nexis camera head with monochrome 1024 x 768 20 fps CCD sensor and 2 m cable.
S1200T*	Matrox Nexis camera head with monochrome 1280 x 1024 7.5 fps CCD sensor and 2 m cable.
S1200HT*	Matrox Nexis camera head with monochrome 1280 x 1024 15 fps CCD sensor and 2 m cable.

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Software

Part number	Description
MIL LITE 8 WIN	MIL-Lite board control library (see MIL-Lite brochure for more details).
MIL 8 WIN P or U	Matrox Imaging Library (MIL) (see MIL brochure for more details).

Notes:

1. Limited by required and available bandwidth over conventional PCI bus.
2. Interline transfer progressive scan CCD with square pixels.
3. M12 x 0.5" micro lens with a Back Focal Length (BFL) between 4.5 mm and 7.5 mm. Available from third-parties such as www.edmundoptics.com, www.opdev.com, www.optics-online.com or www.ukoptics.com.
4. For dual CCU/frame grabber board and camera heads.