



Stand-alone vision systems

Matrox 4Sight M >>

Third-generation compact industrial imaging computer.



Shown with Matrox Nexis option.
Lens not included.

Key features

- > integrated video capture, processing and display platform
- > small footprint and rugged construction
- > powerful embedded Intel® architecture processor
- > accommodates Matrox Nexis highly integrated image acquisition sub-system
- > also supports analog and digital video acquisition including Camera Link® and IEEE 1394 IIDC
- > real-time JPEG2000 image compression and decompression
- > simultaneous primary analog and secondary TV, analog VGA or digital VGA outputs
- > audio input and output
- > separate Ethernet and Gigabit Ethernet network interfaces
- > USB 2.0, RS-232 and RS-485 communication
- > TTL compatible I/Os with support for third-party industrial I/O solutions
- > mass storage for video archiving
- > watchdog timer for monitoring overall system integrity
- > available with Microsoft® Windows® XP Embedded
- > programmed using Microsoft® development tools and Matrox Imaging Library (MIL)

Industrial Imaging Platform

Matrox 4Sight M is a self-contained imaging platform offering desktop PC performance in a compact, industrial enclosure. It provides the core functionality needed to build high-performance and cost-sensitive machine vision, medical imaging or video surveillance systems. Image capture, processing and display, along with networking and general purpose I/Os, are all integrated into a single unit. Available with Matrox 4Sight M is the field-proven Matrox Imaging Library (MIL), a software development toolkit with an extensive set of image capture, processing, analysis, display and archiving functions.

Embedded Intel® architecture processor

Matrox 4Sight M features an Intel® Celeron® M or Pentium® M processor and companion chipset with an integrated graphics controller. Matrox 4Sight M leverages PC technology for high-performance, low-cost components while ensuring interoperability by offering a single integrated solution from a single vendor. With Matrox 4Sight M, you spend less time integrating individual system components, giving you more time to develop your application. Careful component selection and a firm commitment to long-term supply gives Matrox 4Sight M the design stability required by both OEMs and integrators.

Complete imaging system

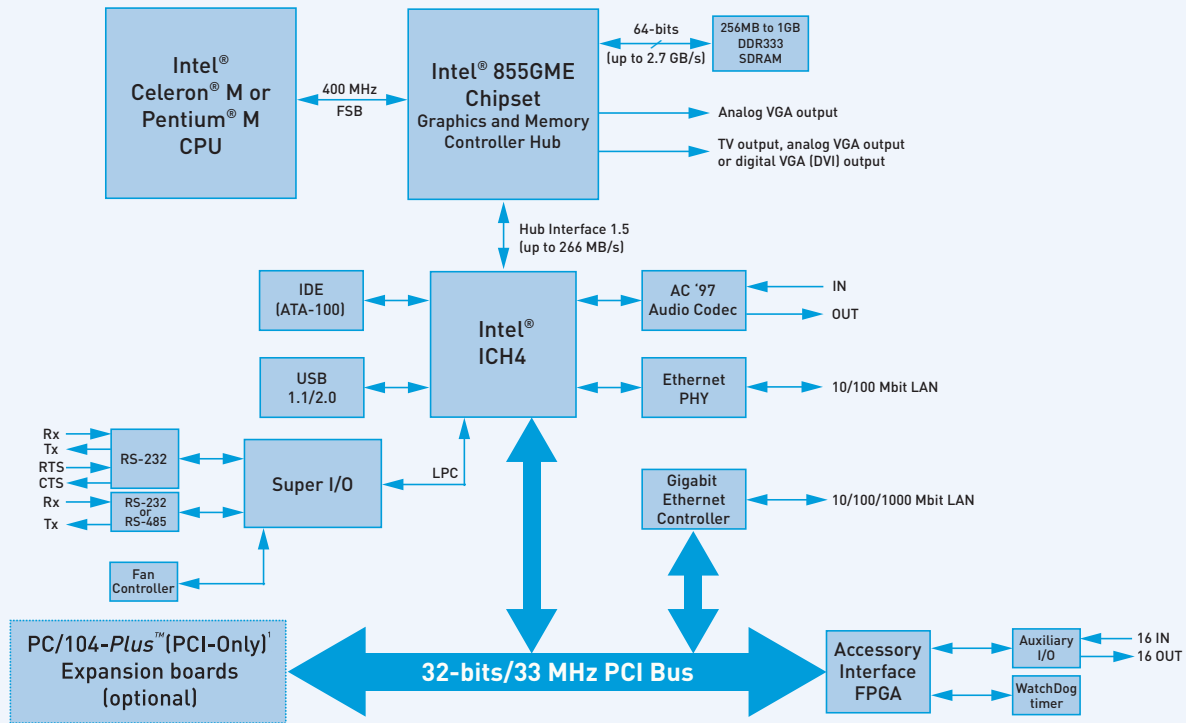
Adding the Matrox Nexis to the Matrox 4Sight M yields a truly complete image capture, processing and display platform from a single vendor. Matrox Nexis features a variety of remote camera heads with a dual camera control unit (CCU) and frame grabber on a single PC/104-Plus™ board.

Flexible video capture

Matrox 4Sight M can also capture from a variety of video sources by way of one of the optional adapter boards. Capture from composite (CVBS) or Y/C NTSC/PAL, composite RS-170/CCIR, or non-standard monochrome or component RGB frame scan analog video sources. Acquire from digital RS-422/LVDS, IEEE 1394a/b or Camera Link® frame or line scan video sources. Matrox 4Sight M has the flexibility to capture from just about any video device.



Matrox 4Sight M



Core functionality

Specifically designed to handle processing intensive imaging applications, Matrox 4Sight M is available with an Intel® Celeron® M or Pentium® M processor coupled to the highly integrated Intel® 855GME graphics and memory controller hub. The Intel® Extreme Graphics 2 2D/3D accelerator features DirectDraw® support, non-destructive graphics overlay on live video, arbitrary video scaling (up or down) and dual display technology. Dual display technology allows for a primary analog VGA output along with a TV, analog VGA output or a DVI compliant digital VGA output. Matrox 4Sight M includes a watchdog timer for automatic recovery from application or system failure.

Persistent storage

Mass storage for the operating system, software libraries and application is provided by an IDE hard drive. The dual IDE interface supports the ATA-100 high-speed mode of operation, which is ideal for video archiving applications. The compact and shock-resistant 2.5" IDE hard drive provides ample storage capacity.

Network interface and other I/Os

Matrox 4Sight M features Ethernet and Gigabit Ethernet interfaces to provide the connectivity to emerging factory floor networks. Two serial interfaces (one RS-232 and the other RS-232/RS-485) and 32 digital I/Os (16 input and 16 output) enables the direct interaction with other factory automation devices. Four USB 2.0 interfaces are used to connect keyboard, pointing device and other PC peripherals.

Peripheral boards

The addition of Matrox and third-party peripherals is made possible through the PC/104-Plus™ (PCI-Only) standard stackable form factor. Matrox 4Sight M can support up to three PC/104-Plus™ (PCI-Only) boards. A removable plate on the back of the chassis provides external access to third-party peripherals.

Matrox frame grabber boards

As an alternative to the Matrox Nexis image acquisition subsystem, Matrox 4Sight M is available with Matrox Morphis Dual for PC/104-Plus™, Matrox Meteor-II/Multi-Channel for PC/104-Plus™, Matrox Meteor-II/Digital for PC/104-Plus™ and Matrox Meteor-II/Camera Link for PC/104-Plus™ frame grabber boards as well as Matrox IEEE 1394b PC/104-Plus™ adaptor.

The Matrox Morphis Dual for PC/104-Plus™ board performs standard video capture and/or real-time JPEG2000 image compression/decompression. As a frame grabber, it can simultaneously capture from two independent video sources or rapidly switch between multiple video sources for sequential capture.

The Matrox Meteor-II/Multi-Channel for PC/104-Plus™ frame grabber handles analog monochrome or component RGB interlaced or progressive scan video acquisition. The Matrox Meteor-II/Digital and Matrox Meteor-II/Camera Link for PC/104-Plus™ frame grabbers for their part, are available for RS-422/LVDS and Camera Link® digital area or line scan video acquisition respectively. Refer to the respective brochures for additional details.

Matrox frame grabber boards (cont.)

The Matrox IEEE 1394b PC/104-Plus™ adaptor supports both IEEE 1394a and 1394b devices including IEEE 1394 IIDC cameras.

Software Environment

Microsoft® Windows® XP Embedded

Matrox 4Sight M can come pre-installed with Windows® XP Embedded. Windows® XP Embedded is a derivative of Windows® XP Professional that features the same user interface, reliability, performance, security, networking and remote management capabilities but with a lower licensing cost. In addition, Windows® XP Embedded includes features specific to embedded applications such as the write filter. The write filter allows the operation system to work in read-only mode from the storage media. With the write filter, an unexpected power-down will not corrupt the operation system. Programming under Windows® XP Embedded is done using the standard Win32® API and consists of a cross-platform environment (i.e., PC linked to Matrox 4Sight M through Ethernet). Windows® XP Embedded is easily tailored to only retain the functionality that is absolutely required by a given application. Matrox 4Sight M can also run Windows® 2000 or Windows® XP.

Matrox Imaging Library

Matrox Imaging Library (MIL) is a high-level programming library with an extensive set of optimized functions for image capture, processing, analysis, display and archiving. MIL-Lite, a subset of MIL, is also available for applications that only require image capture, display and archiving. Refer to the respective brochures for more information.

Specifications

Motherboard

- EBX form factor (8" x 5¾" or 20.32 cm x 14.61 cm)
- 1.3 GHz Intel® Celeron® M or 1.6 GHz Intel® Pentium® M
- 184-pin DIMM slot (256 MB, 512 MB, or 1GB PC2700)
- Intel® Extreme Graphics 2 2D/3D accelerator with up to 64 MB of memory (taken from main memory)
- simultaneous primary analog and secondary TV/analog VGA/digital VGA display outputs
- up to 1600 x 1200 @ 85 Hz or 2048 x 1536 @ 75 Hz
- independent TV output capable of CVBS, Y/C or RGB NTSC/PAL
- DVI compliant digital VGA output
- 10/100 Mbit and 10/100/1000 Mbit Ethernet ports
- four USB 2.0 ports
- dual IDE interface (supports ATA-100)
- two serial ports (one RS-232 and one RS-232/RS-485)
- 16-bit stereo audio I/O (line level)
- 32 auxiliary I/Os
 - TTL compatible
 - 16 input and 16 outputs (open collector)
 - 100mA max. @ 5 to 24 Vdc
 - compatible with Opto 22 Snap I/O and G4 series
- watchdog timer
- supports up to three PC/104-Plus™ expansion boards
- 1 MB flash BIOS from Phoenix Technologies

Matrox IEEE 1394b PC/104-Plus™ adaptor (optional)

- two 6-pin bilingual IEEE 1394a/b ports
- one 6-pin IEEE 1394b port (AC coupled for galvanic isolation)
- four configurable inputs
 - opto-triggers or user inputs
- four configurable outputs
 - TTL strobes or user outputs
- power supply to IEEE 1394 bus
 - power can be cycled under software (MIL/MIL-Lite) control

Matrox 4Sight M front and back



- | | |
|------------------------------|----------------------------------------------|
| 1. Auxiliary I/Os | 5. Analog VGA output |
| 2. 10/100 Mbit Ethernet | 6. TV/analog VGA/digital VGA (DVI) output |
| 3. 10/100/1000 Mbit Ethernet | |
| 4. USB 2.0 ports | |

- | | |
|-------------------|-------------------------|
| 7. Power switch | 11. Serial Port 2 |
| 8. Audio Input | 12. Analog Video Inputs |
| 9. Audio Output | 13. Power Input |
| 10. Serial Port 1 | 14. Status LEDs |

Specifications (cont.)

Matrox Nexis (optional)

See Matrox Nexis brochure for details

Matrox Meteor-II/Multi-Channel for PC/104-Plus™ (optional)

See Matrox Meteor-II/Multi-Channel brochure for details

Matrox Meteor-II/Digital for PC/104-Plus™ (optional)

See Matrox Meteor-II/Digital brochure for details

Matrox Meteor-II/Camera Link for PC/104-Plus™ (optional)

See Matrox Meteor-II/Camera Link brochure for details

Matrox Morphis Dual for PC/104-Plus™ (optional)

See Matrox Morphis brochure for details

Chassis

- 0.048" (1.2 mm) cold roll steel
- integrated fan rated at 18-38 cfm
- dimensions: 20.828 L x 8.387 H x 18.415 W cm (8.200" x 3.302" x 7.250")

Hard drive

- 2.5" form factor
- shock resistant
- IDE interface (ATA/100)
- 40 GB
- mounted inside chassis

Power supply

- input: 100~240 VAC
- output: 6A @ 12 Vdc or 72 W (for Intel® Celeron® M)

Environmental information

- operating temperature: 10° C to 50° C (50° F to 122° F)
- relative humidity: up to 90% (non-condensing)

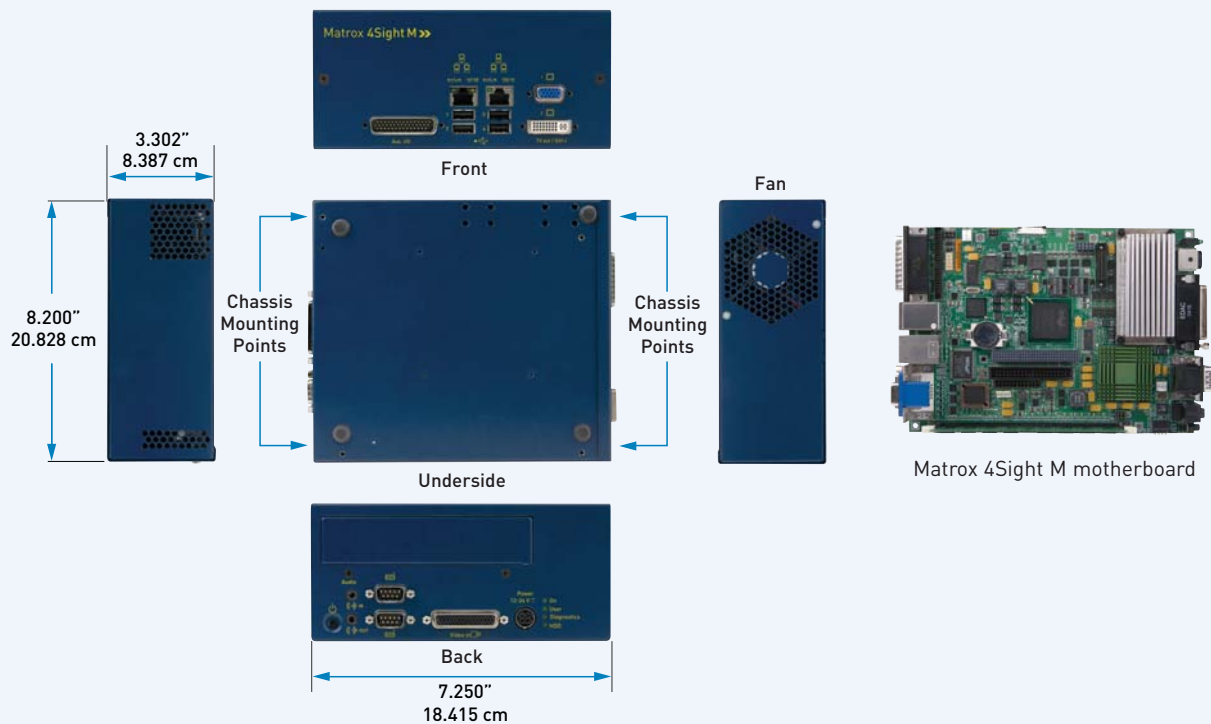
Certifications

- UL/CUL TUV
- FCC part 15 class A
- CE class A
- RoHS-compliant
- EN55022:1995 class B
- EN61000-3-2:1995 class D
- EN61000-3-3:1995
- EN61000-4-2:1995 operating class A
- EN61000-4-3:1995 operating class A
- ENV50204:1995 operating class A
- EN61000-4-4:1995 operating class A
- EN61000-4-5:1995 operating class A
- EN61000-4-6:1996 operating class A
- EN61000-4-11:1994 operating class A/B
- EN60721 3M5 operating (industrial vibration)

Software Environments

- available with Windows® XP Embedded
- also runs Microsoft® Windows® 2000 or Windows® XP

Matrox 4Sight M chassis and motherboard



Ordering Information

Hardware

| Part number | Description |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4M 13C 8 HD1 X 1N A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, single Nexis for PC/104-Plus™ and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X 2N A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, two Nexis for PC/104-Plus™ and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X MC A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, Meteor-II/Multi-Channel for PC/104-Plus™ and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X DR A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Windows XPE, Meteor-II/Digital for PC/104-Plus™ (RS-422) and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X DL A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Windows XPE, Meteor-II/Digital for PC/104-Plus™ (LVDS) and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X CL A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Windows XPE, Meteor-II/Camera Link® for PC/104-Plus™ and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X FW A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Windows XPE, IEEE 1394b PC/104-Plus™ adaptor and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X 2V A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, Morphis for PC/104-Plus™ (with 2 video decoders) and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X J2 A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, Morphis for PC/104-Plus™ (with JPEG2000 accelerator) and power supply with appropriate power cord. |
| 4M 13C 8 HD1 X VJ A, E or U* | 4Sight M integrated unit with 1.3 GHz Celeron M, 256 MB DIMM, 40 GB hard drive, Window XPE, Morphis for PC/104-Plus™ (with 2 video decoders and JPEG2000 accelerator) and power supply with appropriate power cord. |

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Ordered separately

Software

| Part number | Description |
|------------------|------------------------------------------------------------------------------------------------------------|
| MIL LITE 8 WIN | MIL-Lite board control library for Windows® 2000 and Windows® XP (see MIL-Lite brochure for more details). |
| MIL 8 WIN P or U | Matrox Imaging Library (MIL) for Windows® 2000 and Windows® XP (see MIL brochure for more details). |

Notes:

1. ISA interface not supported except for pins 1 through 10 of J1/P1.

See appropriate brochure for Matrox Nexis, Morphis Dual for PC/104-Plus™, Meteor-II/Multi-Channel for PC/104-Plus™, Meteor-II/Digital for PC/104-Plus™, and Meteor-II/Camera Link® for PC/104-Plus™.