

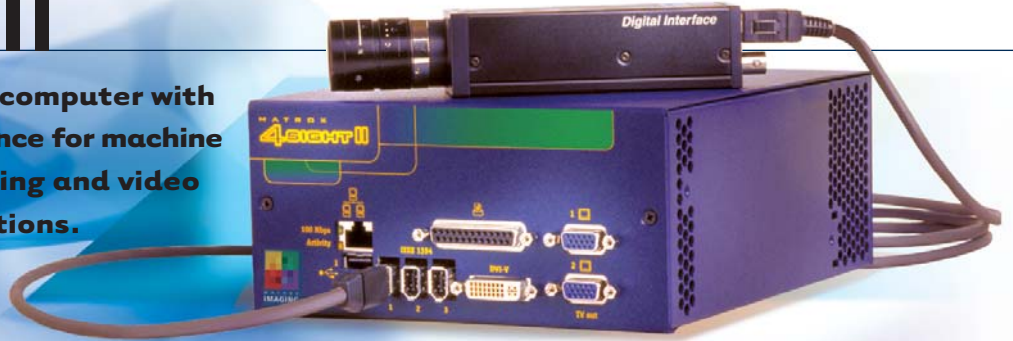
# Matrox



## 4Sight-II

Compact, industrial computer with desktop PC performance for machine vision, medical imaging and video surveillance applications.

**Now available with Microsoft Windows XP Embedded!**



Camera not included

### Industrial Imaging Platform

Matrox 4Sight-II 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-II 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.

### PC-based technology

Matrox 4Sight-II features an embedded Intel® Celeron® or Pentium® III<sup>1</sup> processor and Matrox's own G450 graphics controller with state-of-the-art DualHead display technology. Matrox 4Sight-II 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-II, 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-II the design stability required by both OEMs and integrators.

### Flexible video capture

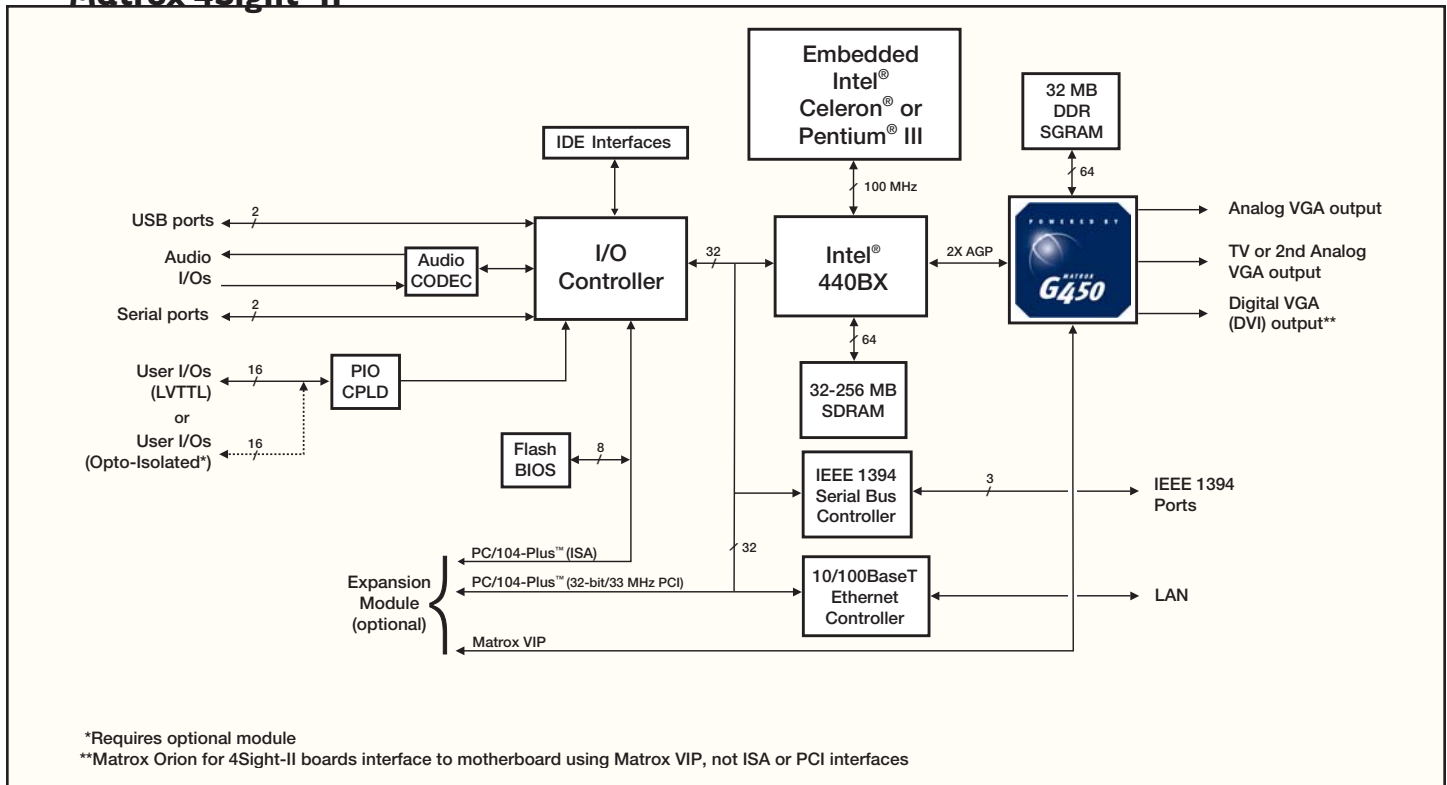
Matrox 4Sight-II captures from a variety of video sources by way of an integrated IEEE 1394 interface or one of the optional frame grabber modules. Capture from composite (CVBS) or Y/C NTSC/PAL, composite RS-170/CCIR, or non-standard monochrome or component RGB frame scan analog video sources. Acquire from digital RS-422/LVDS or Camera Link™ frame or line scan video sources, as well as IEEE 1394 IIDC video cameras. Matrox 4Sight-II has the flexibility to capture from just about any video device.

### Key features

- integrated video capture, processing and display platform
- small footprint and rugged construction
- standard and non-standard analog and digital video acquisition including Camera Link™ and IEEE 1394 IIDC
- simultaneous primary analog/digital VGA and secondary TV/analog VGA display outputs
- true-color graphics overlay on live video output
- audio input and output
- Ethernet network interface
- USB, RS-232 and RS-422/RS-485 communication
- discrete LVTTTL or opto-isolated I/Os
- optional mass storage for video archiving
- available with Microsoft® Windows® XP Embedded, Windows NT® 4.0 or Windows® CE 3.0<sup>1</sup>
- also runs Microsoft® Windows NT® Embedded 4.0<sup>1</sup>, Windows® 2000 or Windows® XP
- programmed using Microsoft® development tools and Matrox Imaging Library (MIL)



## Matrox 4Sight-II



### Core functionality

Specifically designed to handle processing intensive imaging applications, Matrox 4Sight-II is available with an embedded Intel® Celeron® or Pentium® III<sup>1</sup> processor coupled to the field-proven Intel® 440BX processor bridge. Leading edge graphics capabilities are provided by the Matrox G450 graphics controller and include non-destructive graphics overlay on live video, arbitrary video scaling (up or down) and DualHead display technology. DualHead display technology allows for a primary analog or DVI<sup>2</sup> compliant digital VGA output along with a TV or a secondary analog VGA output. Associated with the G450 is a private 32 MB frame buffer and AGP 2X interface which free-up main memory and CPU bandwidth for image acquisition, processing and analysis.

### Persistent storage

Mass storage for the operating system, software libraries and application is provided by an IDE flash disk and/or IDE hard drive. Both are connected to the Matrox 4Sight-II motherboard using the dual IDE interface. The IDE interface supports the UltraDMA-66 high-speed mode of operation, which is ideal for video archiving applications.

The available IDE flash disk provides a storage capacity of 64 MB, while the optional compact and shock-resistant 2.5" IDE hard drive provides a storage capacity of 20 GB.

### Other I/Os

Included on the Matrox 4Sight-II motherboard are two serial ports, one of which can be configured for RS-232 or RS-422/RS-485 operations. Also included is a parallel port and two USB ports that can be used for a keyboard and pointing device.

### Peripherals

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

### Matrox frame grabber modules

Designed specifically for Matrox 4Sight-II, the Matrox Orion/Standard for 4Sight-II module captures composite (CVBS) or Y/C NTSC/PAL, as well as composite RS-170/CCIR analog video and supports fast switching<sup>1</sup> between 12 video inputs. The Matrox Orion/RGB for 4Sight-II module adds the ability to capture NTSC/PAL video in component RGB form, while the Matrox Orion/Dual for 4Sight-II<sup>1</sup> module features two standard video decoders for the simultaneous capture of two video sources or ultra-fast switching between 24 video inputs.

### Matrox frame grabber modules (cont.)

Also available are the Matrox Meteor-II/Multi-Channel, Matrox Meteor-II/Digital<sup>3</sup> and Matrox Meteor-II/Camera Link<sup>3</sup> frame grabbers for PC/104-Plus™. Matrox Meteor-II/Multi-Channel for PC/104-Plus™ is a low-cost frame grabber for monochrome, component RGB interlaced or progressive scan video acquisition. Matrox Meteor-II/Digital<sup>3</sup> and Matrox Meteor-II/Camera Link<sup>3</sup> for PC/104-Plus™ are low-cost frame grabbers for RS-422/LVDS and Camera Link digital area or line scan video acquisition respectively. Refer to the respective brochures for additional details.

### Discrete digital I/Os

Matrox 4Sight-II features 16 discrete LVTTTL compatible I/Os with hardware interrupt capabilities directly on the motherboard or 16 discrete opto-isolated I/Os by way of an optional module.

### Chassis and power supply

The chassis for Matrox 4Sight-II encloses the motherboard, up to three PC/104-Plus™ boards, a single optional hard drive and/or a flash disk or two optional hard drives, and a fan. The chassis features a rugged construction with mounting points for securing the unit to other equipment. An external power supply is also included.

### Software Environment

#### Microsoft® Windows® XP Embedded or Windows® CE 3.0<sup>1</sup>

Matrox 4Sight-II can come pre-installed with Windows® XP Embedded or Windows® CE 3.0<sup>1</sup>. 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-II through Ethernet). Windows® XP Embedded can also more easily be tailored to only retain the functionality that is absolutely required by a give application.

Windows® CE provides hard real-time capabilities (i.e., deterministic response to interrupts and task switches even on heavily loaded systems), fast boot-up and immediate shut-down, and the lowest licensing cost. Programming under Windows® CE 3.0 is done using a subset of the Win32® API and also consists of a cross-platform environment. Matrox 4Sight-II can also come pre-installed with Windows NT® 4.0 and 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.

### Usage models

Matrox 4Sight-II can be configured to operate as a fully autonomous or network device. In either case, the application can be permanently resident or downloaded on power up. In the autonomous mode, the application executes without any remote interaction. In the network model, the application executes under the control of a supervisory application running on a remote PC, which communicates through the network link.

### Specifications

#### Motherboard

- EBX form factor (8" x 5¼" or 20.32 cm x 14.61 cm)
- Embedded Intel® Celeron® processor @ 1.2 GHz
- 168-pin DIMM slot (32, 64, 128 or 256 MB SDRAM)
- Matrox G450 graphics controller
- 32 MB DDR SGRAM graphics buffer
- 2X AGP
- simultaneous primary analog/digital VGA and secondary TV/analog VGA display outputs
- up to 1600 x 1200 @ 32-bpp
- supports non-destructive true-color graphics overlay of live video output without main CPU intervention
- independent TV output capable of CVBS, Y/C or RGB NTSC/PAL
- DVI<sup>2</sup> compliant digital VGA output
- 10/100 Mbps Ethernet port
- two USB ports
- three 400 Mbps IEEE 1394 ports
- dual IDE interface (supports UltraDMA-66)
- two RS-232 ports (one configurable as RS-232 or RS-422/RS-485)
- parallel port
- 16-bit stereo audio I/O (line level)
- 16 discrete LVTTTL or opto-isolated (optional module) compatible I/Os
- supports up to three PC/104-Plus™ expansion boards
- 512 KB flash BIOS from Phoenix Technologies

## Specifications (cont.)

### Matrox Orion/Standard for 4Sight-II module (optional)

- analog composite (CVBS) or Y/C NTSC/PAL
- analog composite RS-170/CCIR
- supports VCRs
- square pixel digitization
- arbitrary scaling
- controllable AGC (freeze with manual adjust)
- YUV 4:2:2 pixel formats
- opto-isolated trigger input (sync. to video)
- connect up to 12 CVBS or 6 Y/C or combinations
- fast channel switching<sup>1</sup>
- TTL auxiliary I/Os (2 in/2 out)
- can only be used with Matrox 4Sight-II<sup>4</sup>

### Matrox Orion/RGB for 4Sight-II module (optional)

Same features as Matrox Orion/Standard for 4Sight-II module plus:

- analog component RGB in NTSC/PAL video format
- three discrete 10-bit ADCs
- selectable input gain
- 7 MHz low pass filter
- adjustable ADC references
- three 256 x 8-bit programmable LUTs
- connect 2 RGB or up to 6 monochrome sources
- can only be used with Matrox 4Sight-II<sup>4</sup>

### Matrox Orion/Dual for 4Sight-II<sup>1</sup> module (optional)

Same features as Matrox Orion/Standard for 4Sight-II module plus:

- simultaneous capture from two video sources
- connect up to 24 CVBS
- ultra-fast channel switching
- can only be used with Matrox 4Sight-II<sup>4</sup>

### 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)<sup>3</sup>

See Matrox Meteor-II/Digital brochure for details

### Matrox Meteor-II/Camera Link for PC/104-Plus™ (optional)<sup>3</sup>

See Matrox Meteor-II/Camera Link brochure for details

### Chassis (optional)

- 0.048" (1.2 mm) cold roll steel
- integrated fan rated at 18-38 cfm
- dimensions: refer to diagram

### Hard drive (optional)

- 2.5" form factor
- shock resistant
- IDE interface
- 20 GB
- mounted inside chassis

### Flash disk (optional)

- 2.5" form factor
- IDE interface
- 64 MB
- mounted inside chassis

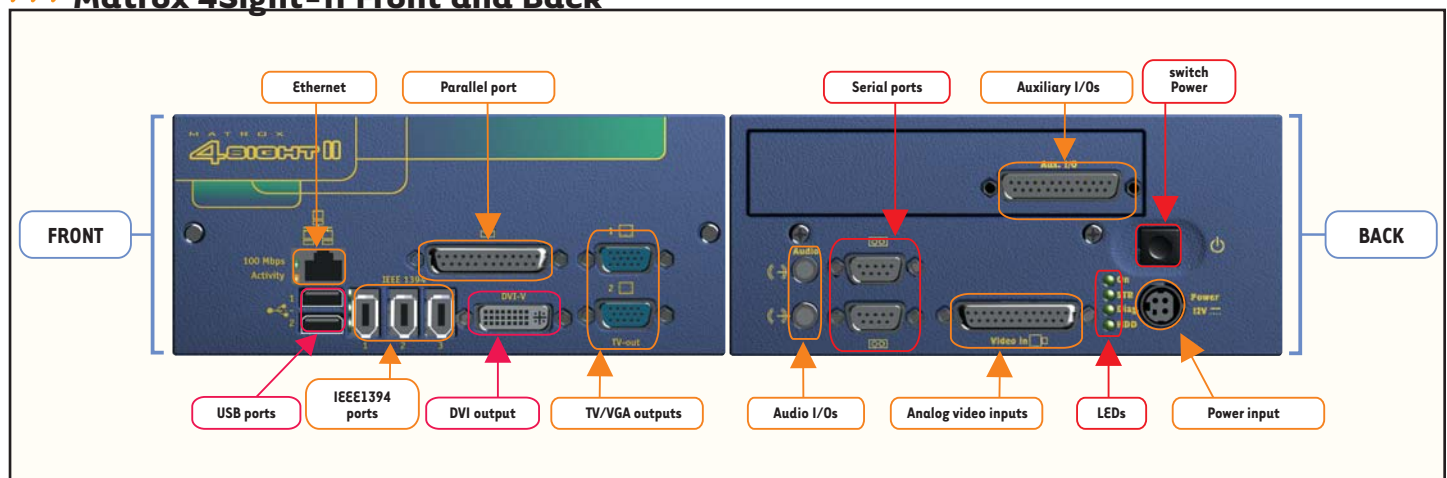
### Power supply

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

### Environmental information

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

## Matrox 4Sight-II Front and Back



## Specifications (cont.)

### Certifications

- UL/CUL TUV
- FCC part 15 class B
- CE class B
- EN55022:1995 class B
- EN61000-3-2:1995 class D
- EN61000-3-3:1995 pass
- EN61000-4-2:1995 operating class A
- EN6100-4-3:1995 operating class A
- ENV50204:1995 operating class A
- EN6100-4-4:1995 operating class A
- EN6100-4-5:1995 operating class A
- EN6100-4-6:1996 operating class A
- EN6100-4-11:1994 operating class A/B
- EN60721 3M5 operating (industrial vibration)

### Software Environments

- available with Windows® XP Embedded, Windows NT® 4.0 or Windows® CE 3.0<sup>1</sup>
- also runs Microsoft® Windows NT® Embedded 4.0<sup>1</sup>, Windows® 2000 or Windows® XP

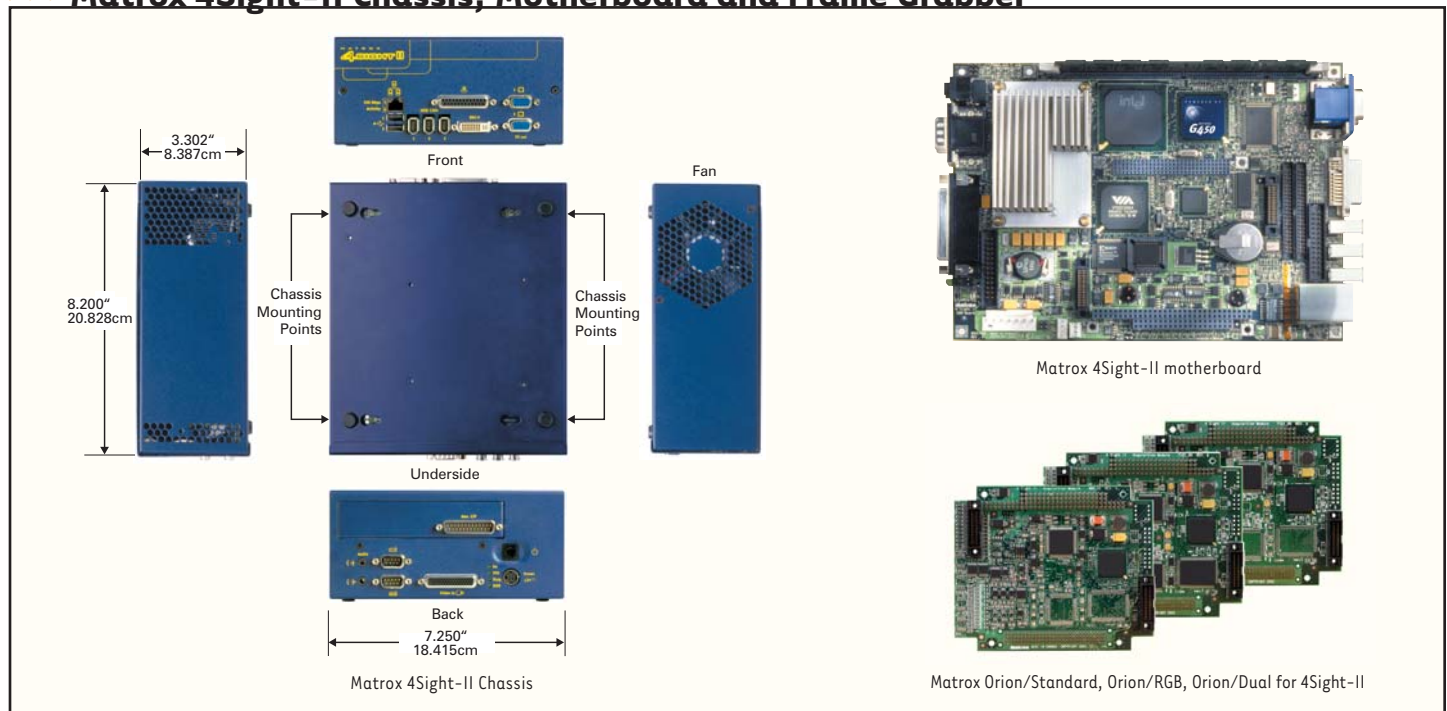
## Ordering Information

### Part number Description

#### Hardware

- |                                            |                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F2 12C 8 HD1 E 00 0 A, E or U              | 4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT and power supply with appropriate power cord.                               |
| F2 12C 8 HD1 E AS 0 A, E or U              | 4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Orion/Standard for 4Sight-II and power supply with appropriate power cord. |
| F2 12C 8 HD1 E AR 0 A, E or U              | 4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Orion/RGB for 4Sight-II and power supply with appropriate power cord.      |
| F2 12C 8 HD1 E AD 0 A, E or U <sup>1</sup> | 4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Orion/Dual for 4Sight-II and power supply with appropriate power cord.     |

## Matrox 4Sight-II Chassis, Motherboard and Frame Grabber



## Ordering Information (cont.)

Part number	Description
<b>Hardware</b>	
F2 12C 8 HD1 E MC 0 A, E or U	4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Window NT, Meteor-II/Multi-Channel for PC/104-Plus™ and power supply with appropriate power cord.
F2 12C 8 HD1 E DR 0 A, E or U	4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Meteor-II/Digital for PC/104-Plus™ (RS-422) and power supply with appropriate power cord.
F2 12C 8 HD1 E DL 0 A, E or U	4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Meteor-II/Digital for PC/104-Plus™ (LVDS) and power supply with appropriate power cord.
F2 12C 8 HD1 E CL 0 A, E or U	4Sight-II integrated unit with 1.2 GHz Celeron, 256 MB DIMM, 20 GB hard drive, Windows NT, Meteor-II/Camera Link™ for PC/104-Plus™ and power supply with appropriate power cord.

Ordered separately:

### Software

MIL LITE 7	MIL-Lite board control library (see MIL-Lite brochure for more details).
MIL 7 DEV P or U	Matrox Imaging Library (MIL) (see MIL brochure for more details).
MIL LITE 7 CE	MIL-Lite for Windows CE <sup>5</sup> (see MIL-Lite brochure for more details).
MIL 7 DEV CE	MIL for Windows CE <sup>5</sup> (see MIL brochure for more details).

Note: Application development for Microsoft® Windows® CE 3.0 requires eMbedded Visual® C++ 3.0 available for download or purchase from Microsoft®.

### Input cables

DBHD44-T0-13BNC	7' or 2.13 m cable, DBHD-44 to thirteen BNCs for Matrox Orion/Standard and Matrox Orion/RGB for 4Sight-II. Includes six SVHS to BNC adapters.
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See appropriate brochure for Matrox Meteor-II/Multi-Channel, Meteor-II/Digital and Meteor-II/Camera Link™ for PC/104-Plus™.

### Notes:

1. Contact local representative or Matrox Imaging Sales for availability.
2. Digital VGA output is also compatible with DFP interface.
3. Matrox Meteor-II/Digital and Meteor-II/Camera Link for PC/104-Plus not supported under Windows CE.
4. Matrox Orion for 4Sight-II boards interface to motherboard using Matrox VIP, not ISA or PCI interfaces.
5. MIL/MIL-Lite for Windows® CE does not include ActiveMIL/ActiveMIL-Lite and Intellicam, and does not support non-tearing and extended desktop display modes. Moreover, MIL for Windows® CE does not support run-time hardware license keys.

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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](mailto:imaging.info@matrox.com) or <http://www.matrox.com/imaging>

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