



Stand-alone vision systems

Matrox Supersight e2 >>

High-performance computing (HPC) platform for computationally-demanding industrial imaging.



Benefits

- > **Tackle extreme applications with certainty** using a high-performance compute cluster platform
- > **Harness the full power of today's multi-core CPU, GPU, and FPGA technology** to provide image processing offload and acceleration
- > **Eliminate I/O bottlenecks** with a unique PCIe® 2.0 switched fabric backplane architecture
- > **Directly interface to external process equipment** through the integrated Gigabit Ethernet, RS-232/485 and USB 2.0 connectivity
- > **Minimize the need for revalidation** by utilizing a lifecycle managed platform with consistent long term availability
- > **Simplify system integration** by using an integrated platform from a single vendor and pre-qualified third-party components
- > **Solve applications rather than develop underlying tools** by leveraging standard Microsoft® development tools, Matrox Imaging Library (MIL)

HPC: made for imaging

Matrox Supersight brings together the latest technologies from multi-core CPUs to GPUs to FPGAs in a single pre-validated high-performance computing (HPC) platform, allowing OEMs to focus on developing applications with cutting-edge performance instead of integrating components. Matrox Supersight is fully supported by Matrox Imaging Library (MIL), an established collection of software tools for developing industrial imaging applications, in order to extract the maximum performance from the platform and deliver a complete solution in a timely manner. Backed by a carefully managed lifecycle and long term availability, the Matrox Supersight is a solid foundation for your next computationally-demanding application.

Processing trinity

Achieving maximum performance requires using the right technology in the right place within the application. FPGAs show great strength with image pre-processing tasks, general purpose CPUs are ideal for image processing and analysis, and GPUs provide substantial acceleration for image processing primitives. Matrox Supersight enables developers to put together all of these technologies into a complete HPC platform with enough compute density to surpass blade server offerings.

Consistent long-term availability

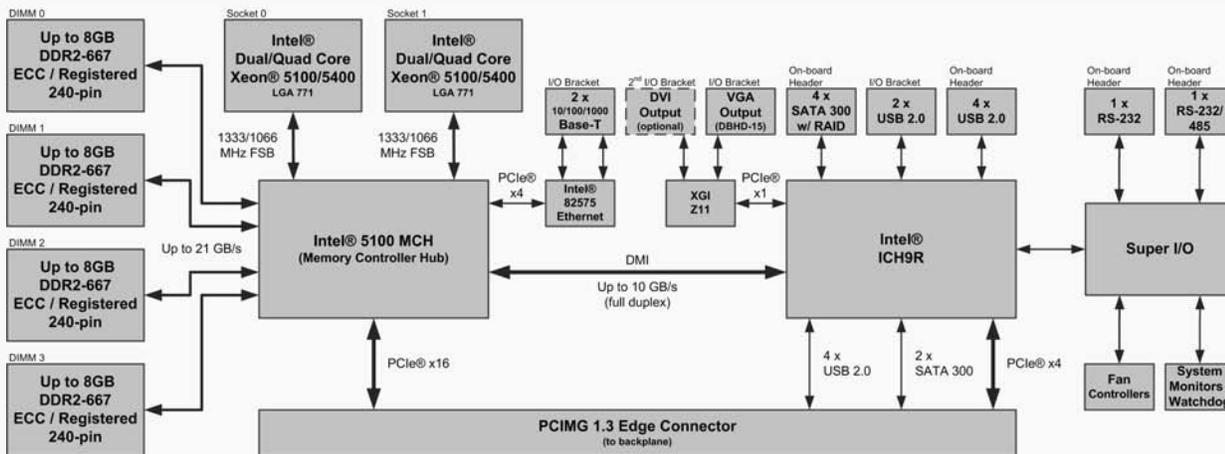
Carefully selected components are coupled with strict change control to ensure consistent long-term supply. Longevity of a stable supply lets OEMs maximize return on the original investment without incurring the additional costs associated with repeated validation of constantly-changing mainstream commercial platforms.

Distinctive switched fabric

A unique PCIe® 2.0 backplane provides the switched fabric to group processing elements (CPUs, GPUs and FPGAs) into compute clusters. Utilizing the point-to-point full-duplex nature of PCIe®, bus traffic from compute clusters is isolated ensuring optimal performance with increasing accelerator count. Unlike classical segmented backplanes, the Matrox Supersight backplane, through the Distributed MIL (DMIL) communication API, enables segments/clusters to look like a unified system.



Matrox Supersight 5100 SHB



Easy integration and management

Matrox Supersight's high density makes it easy for OEMs to incorporate it into their systems. System health monitors including temperature, voltage and fan speed, in combination with a watchdog timer, allow the Matrox Supersight to detect, report and recover from errors and failures, quickly returning the system to operational status.

System Host Board (SHB)

With up to eight 64-bit Intel® Penryn cores split between two processors, each with an independent front side bus (FSB), the Matrox Supersight SHB is ideally suited to the most demanding processing tasks. With up to 32 GB of memory, registered ECC DIMMS greatly increase system reliability by protecting data. Advanced interrupt handling and hardware acceleration in the Intel® 82575 Gigabit Ethernet controller balance the Ethernet load between the CPUs freeing valuable resources for image processing.

Code Portability



Multi-core CPU

```
MsysAlloc(M_SYSTEM_HOST, ..., &MilSystem);
...
MbufAlloc2d(MilSystem, ..., &SrcImage);
...
MimConvolve(SrcImage, DestImage, Kernel);
```



GPU

```
MsysAlloc(M_SYSTEM_GPU, ..., &MilSystem);
...
MbufAlloc2d(MilSystem, ..., &SrcImage);
...
MimConvolve(SrcImage, DestImage, Kernel);
```



FPGA

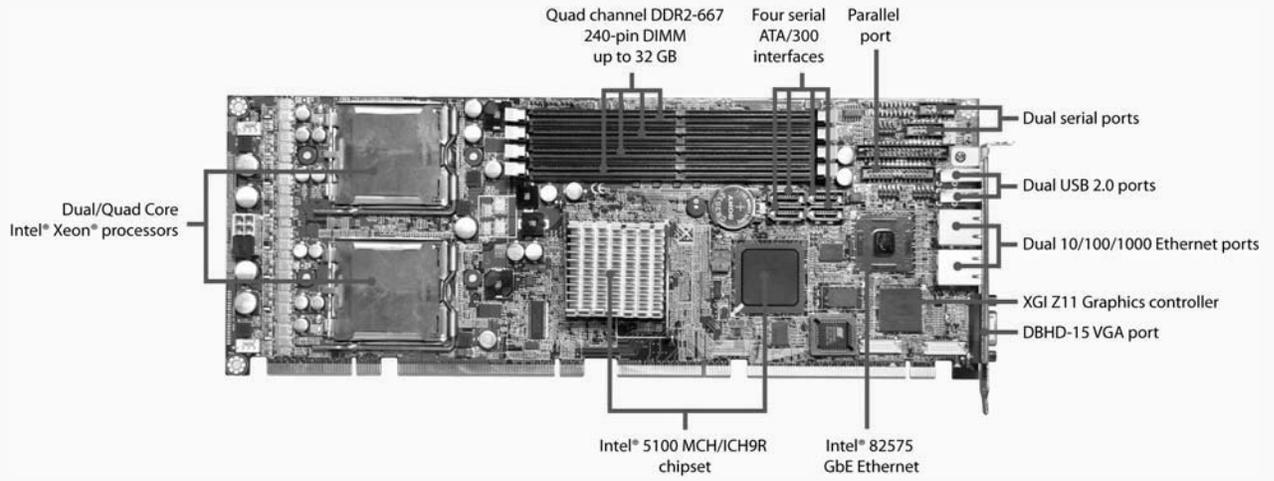
```
MsysAlloc(M_SYSTEM_SOLIOS, ..., &MilSystem);
...
MbufAlloc2d(MilSystem, ..., +M_ONBOARD, &SrcImage);
...
MimConvolve(SrcImage, DestImage, Kernel);
```



e²Link / DMIL

```
MsysAlloc("DMILPCIE:\computer\M_SYSTEM_HOST, ..., &MilSystem);
...
MbufAlloc2d(MilSystem, ..., &SrcImage);
...
MimConvolve(SrcImage, DestImage, Kernel);
```

➤ Matrox Supersight 5100 SHB (cont.)



➤ Matrox Supersight chassis



Front view



Rear view

Expansion options

Matrox Imaging provides the components necessary to create a scalable computing platform. Through the high-bandwidth PCIe® 2.0 switched fabric backplane, data can be moved seamlessly between acquisition and processing devices with negligible transfer times.

Acquisition

Matrox Imaging provides the industry's most comprehensive line of image acquisition boards covering all major interfaces including Camera Link®, GigE Vision™, IEEE 1394 IIDC, SDI, Digital (RS-422/LVDS) as well as standard and non-standard analog. Refer to the individual Matrox interface boards brochures for more information.

Processing acceleration

FPGA-based image processing is a powerful addition to an image acquisition board providing substantial offload of the host processors for image processing primitives without consuming additional slots.

GPU-based image processing, through the use of pre-qualified third-party boards, provide substantial acceleration for sequences of image processing primitives.

CPU-based image processing provides the ultimate flexibility providing optimal performance for high-level image processing routines.

Software Environment

Operating System

Matrox Supersight comes pre-loaded with Microsoft® Windows® Vista™ Business for Embedded Systems, which provides all the features of the standard operating system with an extended life cycle needed to ensure longevity of supply. Native 64-bit support enables the handling of large amounts of system memory.

Matrox Imaging Library (MIL)

A complete imaging platform needs to include not only hardware but a robust development environment. The Matrox Imaging Library (MIL) is a high-level programming library with an extensive set of optimized functions for capture, processing, analysis, display, I/O and archiving. Refer to the MIL brochure for additional information.

As new processing and acceleration hardware becomes available, MIL with its common high-level API, enables developers to quickly and easily adapt the application to take full advantage of the performance provided by these with minimal recoding; effectively protecting the original development investments.

Specifications

System Host Board (SHB)

- PICMG 1.3 SHB
 - one (1) PCIe® x16
 - one (1) PCIe® x4
- Intel® 5100 (San Clemente) + ICH9R chipset
- two(2) 771-pin LGA Sockets
- up to two (2) 64-bit Intel® Xeon® processor(s)
 - 80W maximum
 - Quad-core 5400/5300 sequence (Harpertown/Clovertown)
 - Dual-core 5200/5100 sequence (Wolfdale/Woodcrest)
- 1333/1066 MHz front side bus
- XGI Z11 graphics controller
 - up to 32MB dedicated memory
 - one (1) RGB (VGA) display output
 - one (1) optional DVI-I display output
 - up to 1600 x 1200 @ 60 Hz
- four (4) 240-pin DIMM Sockets
- up to 32GB 667/533MHz DDR2 ECC Registered SDRAM
 - dual channel (memory must be populated in pairs)
- six (6) SATA/300 ports with raid 0,1,5,10 support
 - four (4) on-board
 - two (2) through PICMG 1.3 edge connector (backplane)
- two (2) Gigabit Ethernet ports (10/100/1000)
- ten (10) USB 2.0 ports
 - two (2) on the PCI bracket
 - four (4) through pin headers
 - four (4) through PICMG 1.3 edge connector (backplane)
- two (2) serial ports
 - One (1) RS-232
 - One (1) RS-232/RS-485
- one (1) parallel port
- one (1) FDD channel
- one (1) watchdog timer
 - programmable from 0.5 s to 254.5 min
- hardware health monitoring
 - fan
 - temperature
 - voltage

14-Slot PCIe® 2.0 Backplane

- four (4) PICMG 1.3 host slots
- ten (10) PCIe® 2.0 x16 75W slots¹
- two (2) SATA/300 connectors
- three (3) USB 2.0 connectors
 - two (2) ports per connector

CPU options

- up to two (2) Intel® Xeon® (E5440)
 - quad-core
 - 2.83 GHz
 - 1333 MHz front side bus
 - 12 MB (2 x 6 MB) L2 cache
 - 64-bit architecture
- up to two (2) Intel® Xeon® (L5410)
 - quad-core
 - 2.33 GHz
 - 1333 MHz front side bus
 - 12 MB (2 x 6 MB) L2 cache
 - 64-bit architecture

Memory options

- 4 GB Dual-channel DDR2-667 ECC Registered
- 8 GB Dual-channel DDR2-667 ECC Registered
- 16 GB Dual-channel DDR2-667 ECC Registered
- 32 GB Dual-channel DDR2-667 ECC Registered

Hard disk options

- up to four (4) hard disks
 - 250 GB
 - SATA/300
 - 5400 RPM
 - 8 MB cache
 - Hot swappable

Optical drive options

- one (1) slim optical disk drive
 - 24x CD R/W
 - 8x DVD-ROM
 - SATA/300
 - 2 MB cache

Chassis

- Dimensions
 - length: 48.0 cm (19.5")
 - width: 48.2 cm (19.0")
 - height: 4U, 17.8 cm (7.00")
- Mounting
 - 19" rackmount
 - Removable rack ears
 - Removable rack handles
- Drive bays
 - front-accessible
 - four (4) 2.5", hot-swappable hard disk bays
 - one (1) slim CD/DVD bay

Specifications (cont.)

Chassis (cont.)

- I/O Interfaces
 - six (6) USB 2.0 ports
 - four (4) front accessible
 - two (2) internal with license dongle retention
- Additional features
 - hinged front panel with lock
 - ATX rocker power switch
 - recessed reset button
 - power and HDD notification LEDs
 - fifteen (15) slots

Power supply

- 2040 W power supply
- AC input
 - 100-240VAC
 - 47-63 Hz
 - 40 A
 - Power factor corrected
- DC output
 - +3.3VDC @ 80A²
 - +5 VDC @ 110A²
 - +12VDC @ 150A
 - -12VDC @ 2.5A
 - +5VSB @ 4A

- supplemental power connectors
 - seven (7) 4-pin peripheral (12V DC & 5V DC)
 - one (1) 4-pin SP4 peripheral (12V DC & 5V DC)
 - four (4) 8-pin EPS CPU
 - six (6) 6-pin PCIe® Power 75W (12V DC)
 - or 8-pin PCIe® Power 225W

Certifications

- UL/CUL TUV pending
- FCC part 15 class A pending
- CE class A pending
- RoHS-compliant pending

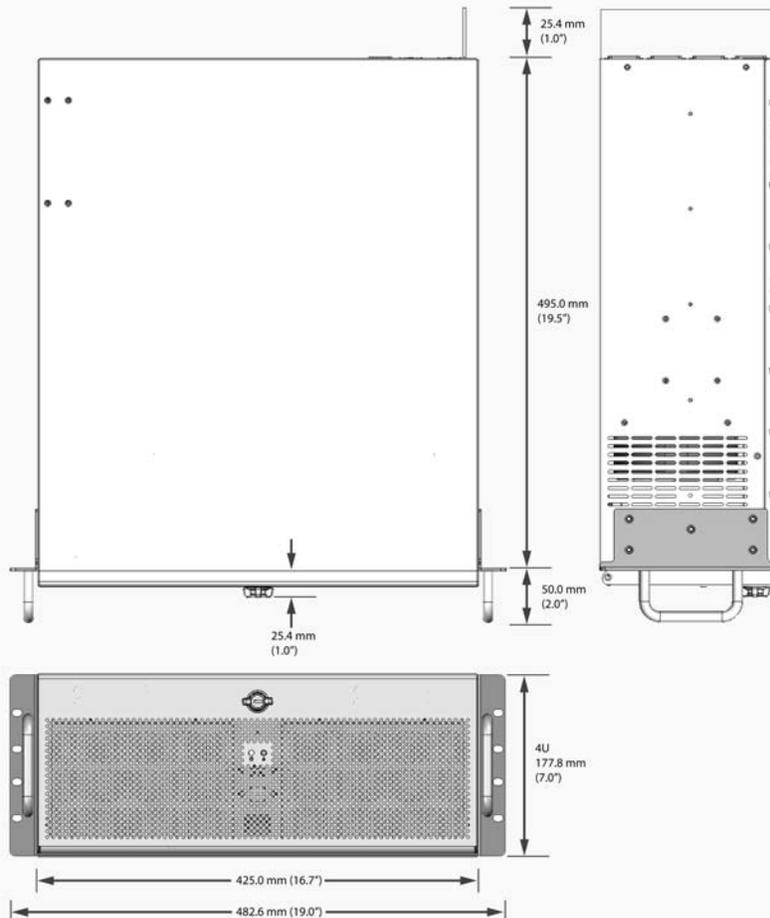
Operating system

- pre-loaded with Microsoft® Windows® Vista Business for Embedded Systems

Environmental

- 10°C (50°F) to 35°C (95°F) operating temperature
- -40°C (-40°F) to 85°C (185°F) storage temperature
- up to 90% (non-condensing) relative humidity

» Dimensions



Ordering Information

Contact Matrox Imaging or your local representative for more information.

Note:

1. Maximum of 144 active lanes, see block diagram for valid configurations.
2. Maximum power of 710W for combined 3.3V and 5V .

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or e-mail: imaging.info@matrox.com or <http://www.matrox.com/imaging>

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Preliminary