Zebra **Supersight**

High-density computing platform for demanding industrial imaging

Overview

High-density computing with full-size expansion

Zebra® Supersight is a high-density industrial computing platform capable of accommodating up to four computers in a standard 4U enclosure. Each computer or compute cluster is equipped with an embedded Intel® Core™ processor, and works alone or together with the others to implement distributed computing. A high-speed PCIe® switched fabric backplane ensures efficient communication and data exchange between compute clusters as necessary. The same backplane accepts full-size PCIe expansion cards for a broad range of image acquisition, network interface, processing offload, and acceleration options from Aurora Imaging and third parties. Zebra Supersight vision controllers—Zebra Supersight Solo, Zebra Supersight Duo, and Zebra Supersight Quad—are fully supported by Aurora Imaging Library, formerly Matrox Imaging Library (MIL), an established collection of software tools for developing industrial imaging applications; this software development kit (SDK) helps developers deliver a complete solution in a timely manner. Backed by a carefully managed lifecycle and consistent long-term availability, the Zebra Supersight series provides a solid foundation for demanding machine vision applications.

Intel Core i7 power and PCIe Gen3 expansion

The Zebra Supersight delivers a high degree of computing performance and image-acquisition flexibility. With its scalable design, it provides the necessary level of performance required by complex machine-vision applications. Each System Host Board (SHB) is powered by an Intel Core i7 processor and can communicate with each other at high speed through a PCIe Gen3 switched fabric backplane. Each system accepts up to 10 full-length and one half-length full-height PCIe cards to suit a wide range of requirements. Zebra Supersight supports image-acquisition boards for all major interfaces—whether analog, Camera Link®, CoaXPress®, DisplayPort™, DVI, GigE Vision®, HDMI™, and SDI—as well as image processing offload using a field-programmable gate array (FPGA). Users can combine the required boards to build a robust, flexible platform for intensive image capture and processing tasks.

Consistent long-term availability

Carefully selected components, coupled with strict change control, ensures consistent long-term supply of the Zebra Supersight. This allows OEMs to maximize return on the original investment without incurring additional costs associated with repeated validation of constantly changing mainstream commercial platforms.

Switched fabric backplane

A unique PCIe Gen3, multi-segmented backplane provides the switched fabric to configure acquisition and processing elements in either one, two, or four computing clusters. The uniqueness of this backplane is that add-in cards can be plugged into any slot and still be assigned to an SHB, even if the card is in a different segment. With 11 PCIe Gen3 slots available, the backplane provides excellent expansion opportunities for Aurora Imaging and third-party video capture, accelerator/co-processor, graphics, and general I/O boards to fulfill the needs of demanding imaging applications.

Zebra Supersight at a glance

Scale system performance from one to four computing clusters for demanding image acquisition and processing needs

Support any camera interface type with the addition of appropriate Zebra frame grabber board(s)

Exchange data between compute clusters internally at high speed through a PCIe Gen3 switched fabric backplane

Maximize density in a 4U chassis with up to 10 full-length and one half-length, full-height PCIe Gen3 slots

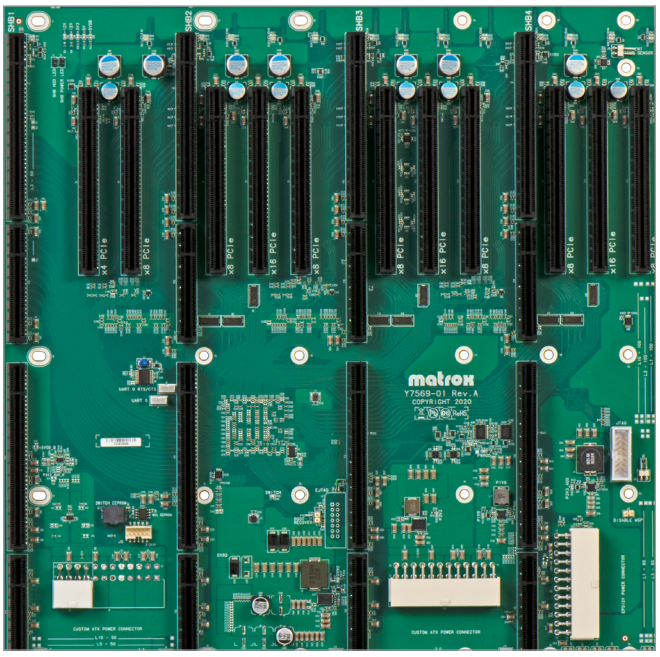
Tailor host data transfer bandwidth needs through PCIe x16, x8, and x4 interfaces

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

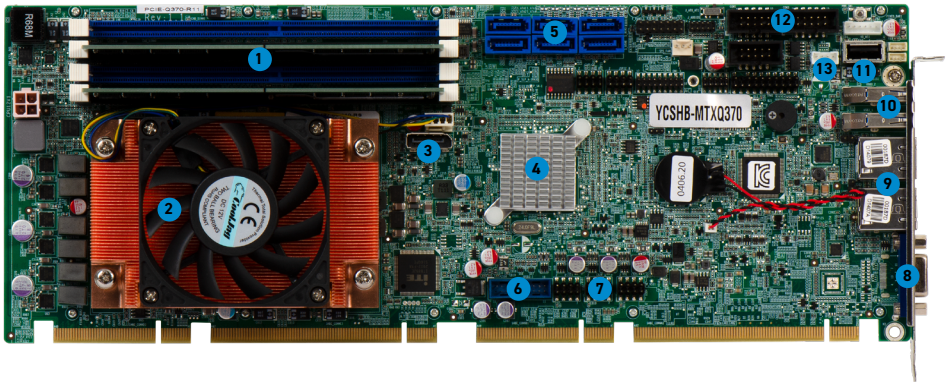
Solve applications rather than develop underlying tools by leveraging standard Microsoft® development tools and Aurora Imaging Library software

Zebra Supersight PCIe Gen3 backplane



Characteristics

Zebra Supersight SHB



1. Four DDR4 2666 Mbps DIMM sockets
2. Intel CPU
3. Internal DisplayPort
4. Intel Q370 PCH
5. Six SATA III interfaces
6. Two internal USB 3.1 headers
7. Six internal USB 2.0 headers
8. VGA port
9. Two Gigabit Ethernet ports
10. Two USB 3.1 ports
11. Internal USB 2.0 headers
12. Three internal RS-232 headers
13. One internal RS-422/RS-485 headers

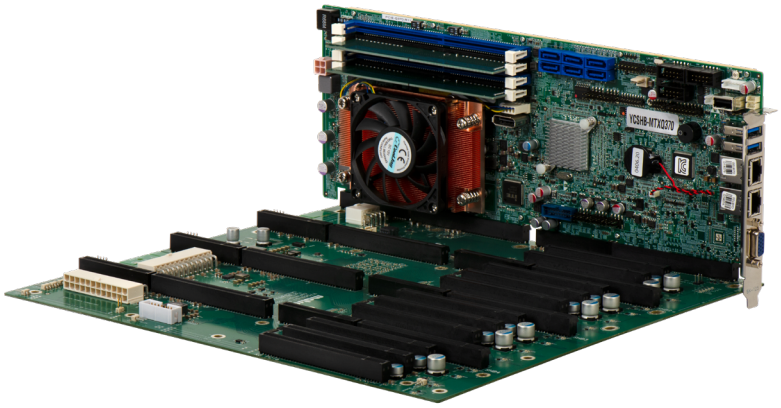
Zebra Supersight front and back views

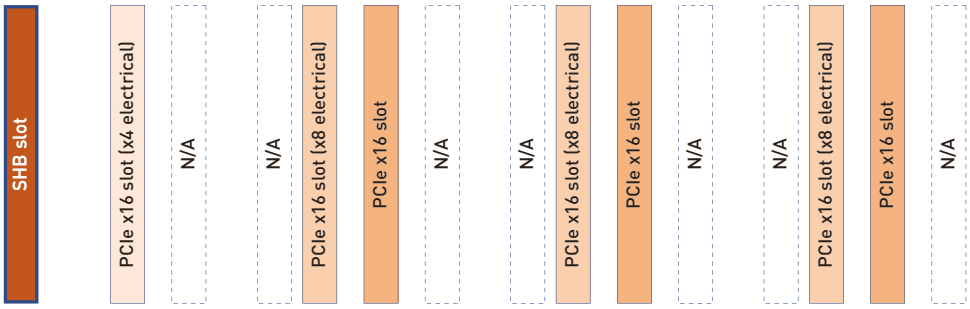
Front view

Rear view

Configurations

Zebra Supersight Solo (7-slot) configuration

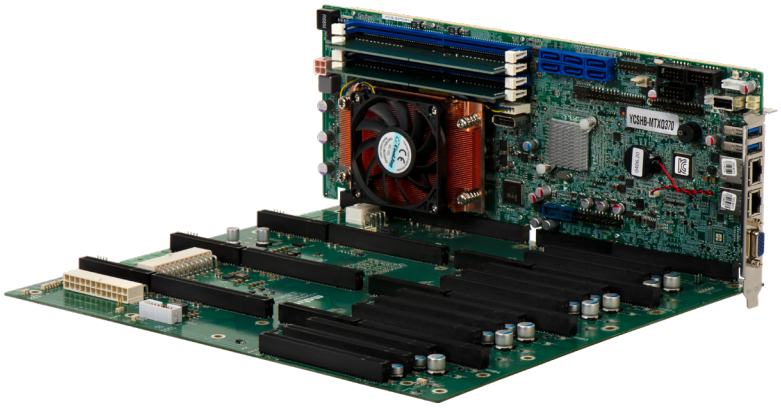


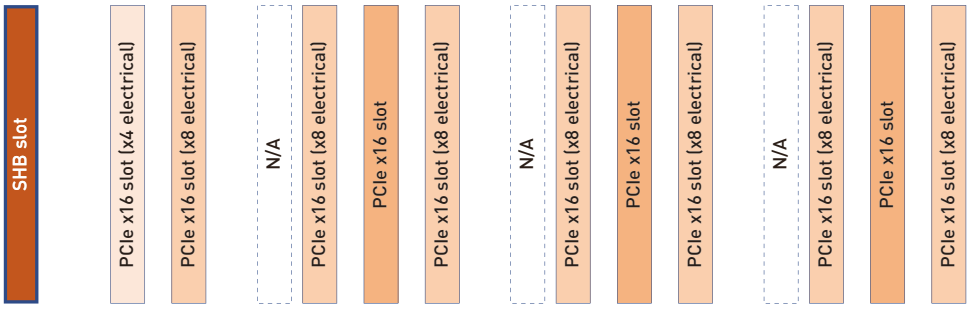


Note: Zebra Supersight Solo (7-slot) has a single SHB/cluster with seven expansion slots.

Configurations (cont.)

Zebra Supersight Solo (11-slot) configuration

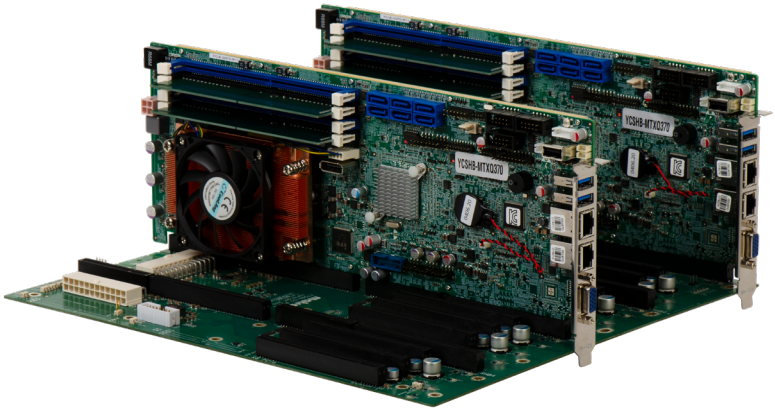


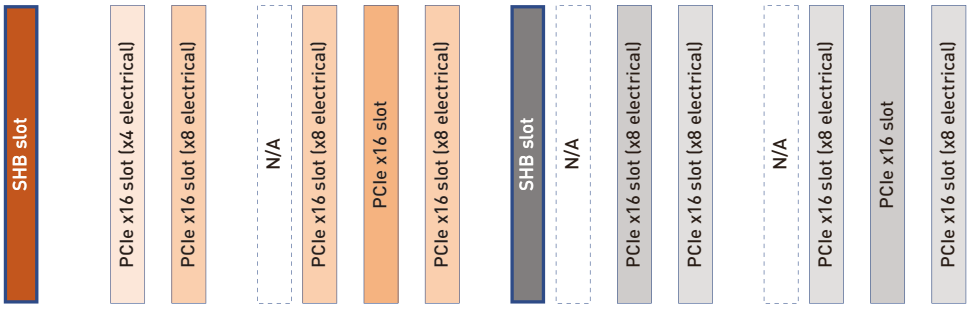


Note: Zebra Supersight Solo (11-slot) has a single SHB/cluster with 11 expansion slots.

Configurations (cont.)

Zebra Supersight Duo configuration

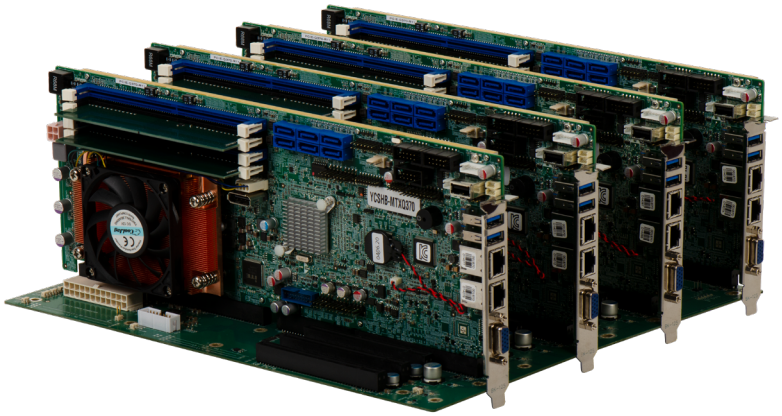


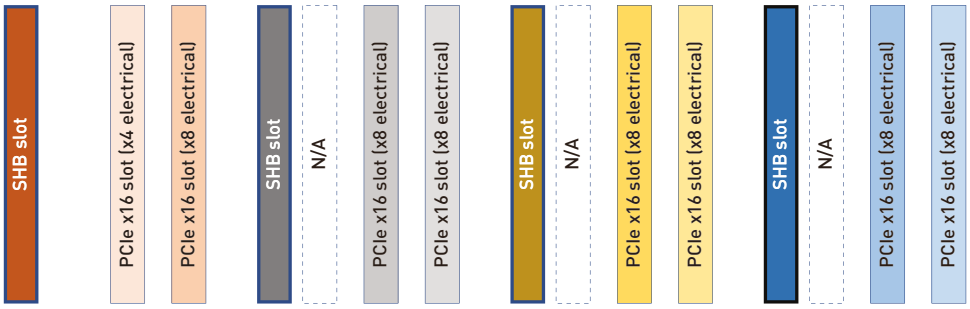


Note: Zebra Supersight Duo has two SHBs/clusters with 10 expansion slots.

Configurations (cont.)

Zebra Supersight Quad configuration





Note: Zebra Supersight Quad has four SHBs/clusters with eight expansion slots.

Characteristics (cont.)

Power and storage

A 1,000 W power supply lets the Zebra Supersight system accommodate multiple frame grabber, graphics, and other add-in boards. Integrated 2.5 inch hard drives provide a greater level of shock and vibration resistance over standard desktop models. Quick-release, hot-swappable drive bays with RAID support increase system reliability and facilitate maintenance.

Image acquisition options

Aurora Imaging offers the industry's most comprehensive line of image acquisition boards for all major interfaces including Camera Link, CoaXPress, DisplayPort, DVI, GigE Vision, HDMI, and SDI, as well as standard and non-standard analog. Refer to the individual Zebra frame grabber datasheets for more information.

CPU offload

FPGA-based image processing is a powerful addition to an image acquisition board, relieving the host processor(s) without consuming additional slots. Refer to the individual Zebra frame grabber datasheets for more information.

Software Environment

Microsoft Windows 10 IoT Enterprise

Zebra Supersight comes pre-loaded with Microsoft Windows® 10 IoT Enterprise (64-bit), which provides the familiarity, functionality, performance, and reliability of standard Windows 10 Enterprise.

Field-proven application development software

A complete imaging platform must include not only hardware but also robust software tools. Aurora Imaging Library[1] is a comprehensive SDK with a 25-year history of reliable performance. This toolkit features interactive software and programming functions for image capture, processing, analysis, annotation, display, and archiving operations, with the accuracy and robustness needed to tackle the most demanding applications. Particularly useful for the Zebra Supersight is Distributed Aurora Imaging Library, a functionality that enables the partitioning of an application across multiple compute clusters with efficient command and data exchange. Refer to the Aurora Imaging Library datasheet for more information.

Aurora Imaging Library is licensed for the Zebra Supersight on a per-chassis basis. Zebra Supersight vision controllers automatically grant access to the Aurora Imaging Library interface (GenTL, GigE Vision, and USB3 Vision), DMIL, and industrial/robot communications run-time functionality.

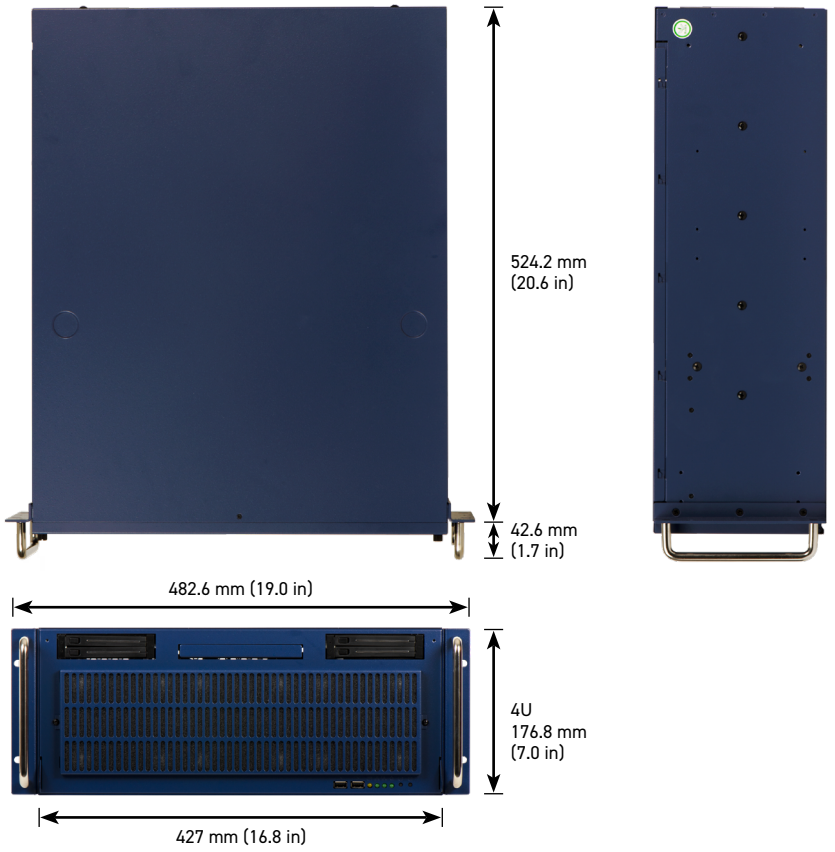
Specifications

Zebra Supersight
SHB
PCIe Gen3 x16 and x4 host interfaces[2]
Intel® Q370 PCH
LGA1151 socket
Intel Core i7-8700 processor
Integrated Intel UHD graphics 630
One (1) VGA on I/O bracket
One (1) DisplayPort 1.2 on SHB board
Four (4) 240-pin DDR4 long-DIMM sockets
Up to 64 GB DDR4-2666 SDRAM
Six (6) SATA III 6.0 Gbps ports with raid 0, 1, 5, and 10 support
Six (6) ports on SHB main board
One (1) port shared on M.2 Key M connector
Two (2) Gigabit Ethernet ports (10/100/1,000)
Eleven (11) USB ports
Two (2) USB 3.1 on I/O bracket
Two (2) USB 3.1 via PCB headers
One (1) USB 2.0 on SHB main board
Six (6) USB 2.0 via PCB headers
Three (3) RS-232 and one (1) RS-422/485 serial ports via PCB header connector
One (1) PS/2 combo connector
11-slot PCIe Gen3 backplane
Up to four (4) host slots
PCIe Gen3 x16 and a PCIe Gen3 x4 interfaces[2]
Up to ten (10) PCIe x8 and one (1) x4 slots (all mechanically x16)[2]
If SHB is not installed then a x16 slot is available in that cluster
Memory
16 GB DDR4-2666
Storage
Up to four (4) 2.5 in SATA devices[3]
Chassis
Dimensions (L x W x H): 52.4 x 48.2 x 17.8 cm (20.6 x 19.0 x 7.0 in)
Mounting
Horizontal
19 in rackmount
Removable rack ears
Removable rack handles
Drive bays
Front-accessible
Four (4) 2.5 in, hot-swappable bays

Specifications (cont.)

Zebra Supersight
Chassis (cont.)
I/O interfaces
Two (2) front-accessible USB 2.0 ports
Additional features
Hinged front panel
Push-button power switch
Recessed reset button
Power and HDD notification LEDs
Fifteen (15) slot chassis
Power supply
Integrated 1,000 W power supply
AC input
100–240 VAC
47–63 Hz
14 A/7 A at any low/high range input voltage
80 Plus Bronze rated
Power-factor corrected
DC output
+3.3 VDC @ 25 A
+5 VDC @ 25 A
+12 V1DC @ 50 A
+12 V2DC @ 50 A
-12 VDC @ 0.8 A
+5 VSB @ 3.5 A
Supplemental power connectors
Six (6) 4-pin peripheral (12 V DC & 5 V DC)
One (1) 8-pin EPS CPU
Five (5) 6-pin PCIe power 75 W (12 V DC) or 8-pin PCIe power 150 W (12 V DC)
Certifications
FCC class A
CE class A
RoHS-compliant
Environmental
Operating temperature: 10°C to 35°C (50°F to 95°F)
Storage temperature: -40°C to 85°C (-40°F to 185°F)
Relative humidity: Up to 90% (non-condensing)
Software
Pre-loaded with Microsoft Windows 10 IoT Enterprise 2019 (64-bit)
Pre-loaded with Aurora Imaging Library run-time environment[1]

Dimensions


524.2 mm
(20.6 in)
42.6 mm
(1.7 in)
482.6 mm (19.0 in)
4U
176.8 mm
(7.0 in)
427 mm (16.8 in)

Ordering Information

Part number	Description
Hardware	
S-SOLO7-MTRX	Zebra Supersight with single SHB featuring an Intel Core i7-8700, 16 GB DDR4 SDRAM, 500 GB HDD, and Microsoft Windows 10 IoT Enterprise 2019. Unit features a 7-slot PCIe Gen3 backplane and 1,000 W power supply. Pre-loaded with Aurora Imaging Library run-time environment. Partially licensed for Aurora Design Assistant and Aurora Imaging Library. Note: The use of this product is governed by Microsoft Software License Terms among others.
S-SOLO-MTRX	Zebra Supersight with single SHB featuring an Intel Core i7-8700, 16 GB DDR4 SDRAM, 500 GB HDD, and Microsoft Windows 10 IoT Enterprise 2019. Unit features an 11-slot PCIe Gen3 backplane and 1,000 W power supply. Pre-loaded with Aurora Imaging Library run-time environment. Partially licensed for Aurora Design Assistant and Aurora Imaging Library.. Note: The use of this product is governed by Microsoft Software License Terms among others.
S-DUO-MTRX	Zebra Supersight with two SHBs featuring an Intel Core i7-8700, 16 GB DDR4 SDRAM, 500 GB HDD, and Microsoft Windows 10 IoT Enterprise 2019. Unit features a 10-slot PCIe Gen3 backplane and 1,000 W power supply. Pre-loaded with Aurora Imaging Library run-time environment. Partially licensed for Aurora Design Assistant and Aurora Imaging Library. Note: The use of this product is governed by Microsoft Software License Terms among others.
S-QUAD-MTRX	Zebra Supersight with four SHBs featuring an Intel Core i7-8700, 16 GB DDR4 SDRAM, 500 GB HDD, and Microsoft Windows 10 IoT Enterprise 2019. Unit features an eight-slot PCIe Gen3 backplane and 1,000 W power supply. Pre-loaded with Aurora Imaging Library run-time environment. Partially licensed for Aurora Design Assistant and Aurora Imaging Library. Note: The use of this product is governed by Microsoft Software License Terms among others.
Software	
Included with S-SOLO7-MTRX, S-SOLO-MRTX, S-DUO-MTRX and S-QUAD-MTRX	Licensed for the Aurora Design Assistant / Aurora Imaging Library. Interface, Distributed Aurora Imaging Library and Industrial and Robot Communications run-time packages. See Aurora Design Assistant and Aurora Imaging Library datasheets for more information. Aurora Imaging Library-Lite software available for download from www.matrox.com/imaging Support Aurora Imaging Library-Lite DOWNLOAD.

Endnotes:
1. The software may be protected by one or more patents; see www.matrox.com/patents for more information.
2. PCIe connectors are all x16 mechanical but not electrical.
3. SSD available on demand. Contact Sales for more information.

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