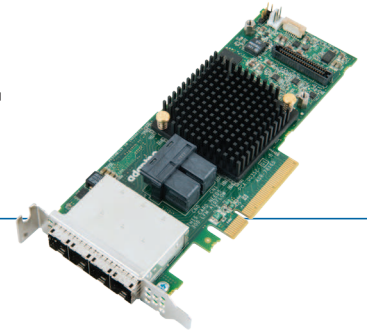


# Adaptec 78165 SAS/SATA RAID Adapter

## High Port Count, Low Profile 6Gb/s PCIe Gen3 Solution

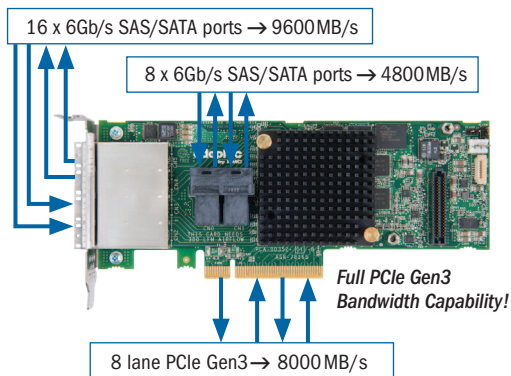


### The industry's first 24-port, low profile RAID adapter

As the newest addition to the Adaptec 6Gb/s Series 7 RAID adapter family, the Adaptec 78165 is the first RAID adapter in the market to offer 24 native SAS/SATA ports (8 internal and 16 external) in a low profile/MD2 form factor.

The Series 7 RAID adapter family features PMC's 24 port PM8015 RAID-on-Chip (ROC), which combines an x8 PCIe Gen3 interface with 6Gb/s SAS/SATA ports to enable a new generation of high performance RAID adapters unmatched by any other ROC in the industry.

While the PCIe Gen3 interface doubles bandwidth to the host compared to PCIe Gen2, it requires at least 16 6Gb/s SAS/SATA ports to double the bandwidth to the storage devices. Competing 6Gb/s solutions have only 8 ports, and cannot leverage that advantage.



#### New Levels of Performance

The 78165 performs at up to 6.6 GB/s on sequential reads and up to 2.6 GB/s on sequential writes on parity RAID 5, more than doubling the performance of competing host-based RAID adapters.

With 16 direct-connected solid-state drives (SSDs), the 78165 can deliver over 450,000 IOPS — nearly 10x the performance of previous-generation RAID adapters.

#### Advanced Data Protection

Adaptec RAID Code (ARC) on the 78165 delivers maximum reliability with RAID levels 0, 1, 1E, 5, 6, 10, 50 and 60. ARC also offers RAID Level Migration (the ability to easily migrate RAID levels), Online Capacity Expansion (expand capacity without powering down the server), and Copyback Hot Spare (when a failed drive has been replaced, data is automatically copied from the hot spare back to the restored drive).

The 78165 features auto-configuration capability, allowing users to operate in HBA mode (expose drives to the host directly) or Simple Volume mode (use fast DRAM cache to reduce latency and improve performance) without the need for setup tools. In RAID mode, it can mix and match all devices and handle them at the same time.

#### Connectivity

The 78165 supports all types of devices including drives, tapes, autoloaders, and external RAID systems. It supports migration of disk drives from standard Host Bus Adapters (HBAs) as well as onboard SATA or SAS interfaces from the motherboard.

#### Mini SAS HD Connectors

Mini SAS connectors allow for greater flexibility in configuration options by supporting up to 24 native SAS ports in a low profile/MD2 form factor. The connectors can be combined with a wide range of Adaptec SAS HD cables, including straight connectors or Adaptec's first to market right angle connectors.

#### Zero-Maintenance Cache Protection (ZMCP)

The 78165 is compatible with third-generation Adaptec ZMCP, which provides instant battery-free protection of cached data via the AFM-700 flash-based cache protection module (sold separately).

#### Adaptec maxView Storage Manager

Adaptec maxView provides the powerful features of Adaptec Storage Manager™ in an HTML5 web interface that can be viewed in standard desktop or mobile browsers without the need for separate software installation.

#### Hybrid RAID

With Hybrid RAID 1 & 10, the 78165 offers maximum performance and reliability by combining SSDs and HDDs in a single mirroring array. By performing read operations from the faster SSD and write operations on both the SSDs and HDDs the result is tremendous performance gains over standard HDD RAID arrays.

#### Broad Operating System Support

The 78165 supports all major operating systems, including Windows, Linux, VMware and FreeBSD.

#### Compatibility, Reliability, and Support

Extensive testing with the 78165 and third-party components ensures the utmost compatibility and are backed by a three year warranty and the company's technical support team.

#### Product Highlights

- 6Gb/s throughput at each port
- 24 native SAS ports (8 internal and 16 external)
- Low profile/MD2 form factor
- Direct connect to backplanes (No expander needed)
- Mini SAS HD connectors and SAS HD cables — for fit and function in dense server configurations



#### PMC PM8015 ROC

Support for up to 256 SAS and SATA devices

Support for SSD, HDD, Autoloader, Tape

Auto configuration of HBA and Simple Volume modes — “set it and forget it”

Adaptec Flash Module (AFM-700) for Zero Maintenance Cache Protection with 2GB NAND flash

# Adaptec 78165 SAS/SATA RAID Adapter

Adaptec Series 7 SAS/SATA RAID Adapter Family	
<b>Benefits</b>	Ideal for space-limited entry-level server to high-end server platforms and high-performance workstations without compromising robust 6Gb/s performance and proven Adaptec reliability.
<b>Key Differentiators</b>	<ul style="list-style-type: none"> <li>– 24 native SAS ports</li> <li>– Low profile/MD2 form factor</li> <li>– Third generation ZMCP (AFM-700) optional</li> <li>– Complete portfolio of SAS HD cables available</li> </ul>
<b>Customer Needs</b>	– High I/O transaction and high bandwidth processing; solutions that reduce energy consumption and maintenance costs; low profile form factor.
<b>Key Software Features</b>	<ul style="list-style-type: none"> <li>– Optimized Disk Utilization</li> <li>– HBA Mode and Simple Volume Mode for automatic deployment</li> <li>– Supports up to 256 SATA or SAS devices using SAS expanders</li> <li>– Hybrid RAID 1 &amp; 10</li> <li>– Quick initialization</li> <li>– Online Capacity Expansion</li> <li>– Copyback Hot Spare</li> <li>– Dynamic caching algorithm</li> <li>– Native Command Queuing (NCQ)</li> <li>– Background initialization</li> <li>– Hot-plug drive support</li> <li>– RAID Level Migration</li> <li>– Hot spares - global, dedicated, and pooled</li> <li>– Automatic/manual rebuild of hot spares</li> <li>– SES and SAF-TE enclosure management</li> <li>– Configurable stripe size</li> <li>– S.M.A.R.T. support</li> <li>– Multiple arrays per disk drive</li> <li>– Dynamic sector repair</li> <li>– Staggered drive spin-up</li> <li>– Bootable array support</li> <li>– Support for Tape Devices, Autoloaders</li> </ul>
<b>Management Utilities</b>	<p><b>Adaptec maxView Storage Manager</b></p> <ul style="list-style-type: none"> <li>– Web based GUI Management Utility</li> <li>– OS Support: Windows, Linux, Solaris VMware</li> <li>– Remote configuration, monitoring &amp; notification</li> <li>– Remote firmware updates</li> <li>– SMI-S Support</li> <li>– SMTP</li> </ul> <p><b>ARCCONF</b></p> <ul style="list-style-type: none"> <li>– Command Line Interface</li> <li>– SMI-S support for VMware</li> </ul> <p><b>Adaptec BIOS Configuration Utility (CTRL+A)</b></p> <ul style="list-style-type: none"> <li>– Legacy configuration utility</li> <li>– Flashable BIOS support</li> </ul> <p><b>Adaptec uEFI BIOS Configuration Utility</b></p> <ul style="list-style-type: none"> <li>– HII based configuration utility</li> <li>– Flashable BIOS support</li> </ul>
<b>Operating Systems</b>	Microsoft Windows, Red Hat Linux, SUSE Linux, Fedora, Debian Linux, Ubuntu Linux, Sun Solaris, FreeBSD, VMware ESX. The latest drivers are available at <a href="http://www.adaptec.com/support">www.adaptec.com/support</a> .
<b>Physical Dimensions</b>	2.535"H x 6.6"L (64mm x 167mm)
<b>Operating Temperature</b>	0°C to 55°C* (with 200 LFM airflow; without flash), 0°C to 50°C* (with 200 LFM airflow; with flash) <b>Note:</b> This Adaptec card contains a powerful RAID processor which requires adequate airflow to operate reliably. Please install this card only into server or PC chassis with recommended airflow (200 LFM).
<b>Operating Current</b>	1.1A@3.3 VDC and 1.3A@12.VDC measured on PCIe Gen3 systems with 6G drives (max 21.93W)
<b>Regulatory Certification</b>	CE, FCC, UL, C-tick, VCCI, KCC, CNS
<b>Environmental Compliance</b>	RoHS
<b>MTBF</b>	700,000 hours at 40°C (ongoing testing)
<b>Warranty</b>	3 years

Adaptec RAID	78165
<b>Order Part Number</b>	2280900-R
<b>RAID Levels</b>	0, 1, 1E, 5, 6, 10, 50, 60
<b>Form Factor</b>	MD2 - Low Profile 2.535"H x 6.6"L
<b>Ports</b>	8 Internal 16 External
<b>Connectors</b>	2 X SFF-8643 4 X SFF-8644
<b>Bus Interface</b>	8-Lane PCIe Gen3
<b>Processor</b>	PMC PM8015
<b>Cache</b>	1024MB
<b>Cache Protection</b>	AFM-700 (optional)
<b>SAS HD Cables</b>	Not included



For more information about SAS HD cables, please visit: [www.adaptec.com/cables](http://www.adaptec.com/cables)



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