Smart Storage Solutions Overview
SmartRAID 3100 RAID Adapters
SmartHBA 2100 Host Bus Adapters
HBA 1100 Host Bus Adapters
Series 8 RAID Adapters
SAS Expander Card
Cables
Smart Storage Solutions Overview

Smart Storage Performance, Power, Security, and Reliability

With the massive growth of data centers, performance, power, and reliability are more important considerations than ever.

Performance requirements are driven by both the increased adoption of flash-based SSDs and the increasing sizes of HDD arrays. Data centers are looking to take advantage of the performance that these flash-based drives promise, and require storage solutions that can deliver manageability and data availability without compromising performance.

Power is a significant component of a data center’s operating expenses. Optimizing power for cold storage tiers in the data center, for example, delivers substantial benefits to the bottom line.

Data security has become one of the highest priorities for data centers and cloud computing environments as enterprises seek to safeguard customer information, classified company documentation and communications, financial records, employee payroll records, and other confidential data.

As more mission-critical data finds its way to data centers, end customers insist on reduced downtime, improved response times to issues, and a more positive end-user experience overall.

The Microsemi Adaptec SmartRAID 3100, SmartHBA 2100, and HBA 1100 product families are based on the company’s latest 28nm SmartIOC 2100 and SmartROC 3100 storage controller integrated circuits (ICs). The SmartRAID 3162-8i/e adapter includes maxCrypto™, the industry’s only data-at-rest controller-based encryption solution that provides a superior solution over self-encrypting drives. Microsemi’s unified Smart Storage stack powers the entire family of products, leveraging core IP that has shipped in over 30 million servers. Microsemi’s Smart Storage stack delivers one of the industry’s most reliable and highest-performing storage controller software platforms.

Microsemi’s new Smart Storage adapters satisfy the most important needs of the modern data center: power, performance, security, and reliability.
Technology Leadership with Data Encryption

Data security has become one of the highest priorities for data centers and cloud computing environments as they seek to safeguard customer information, classified company documentation and communications, financial records, employee payroll records, and other confidential data. Solutions for data-at-rest encryption are now a security requirement in many market segments such as health care, finance, e-commerce, federal government branches, and insurance—representing a significant overall percentage of the deployed storage. In fact, government legislation is now in place mandating data security and privacy, such as the Health Insurance Portability and Accountability Act, Gramm–Leach–Billey Act, Sarbanes–Oxley Act, and the European Union General Data Protection Regulation. Data center managers face the challenge of safeguarding data while still meeting continually-increasing performance demands for large-scale applications such as web serving, file serving, databases, online transaction processing (OLTP), machine learning, and high-performance computing (HPC). Encryption is a method of encoding information so that it can only be read by using the proper key. The encryption process can be software-based or hardware-based. While the CPU is responsible for powering software-based encryption, hardware-based encryption is performed within a chip located on the drive itself or on the storage adapter.

Software encryption comes at the expense of valuable CPU resources. Self-encrypting drives offer a high performance hardware-based solution but require significant operational overhead and do not provide the security and flexibility of controller-based encryption.

Available on the SmartRAID 3162-8i /e version of the Smart Storage series of storage adapters, maxCrypto hardware encryption delivers data protection with little to no impact on latency or I/O performance. Leveraging the SmartROC 3100 RAID-on-Chip (RoC) controller, the Smart Storage maxCrypto solution integrates seamlessly into existing storage infrastructures allows data centers to deploy a uniform, scalable encryption strategy across the enterprise.
Smart Storage Solutions Overview

Each New Product Family Has Unique, Differentiating Features

**SmartRAID 3100**

The SmartRAID 3100 is optimized for enterprise storage applications that require the highest level of data availability and data center applications that benefit from caching.

- Adapters with up to 24 ports using 28nm SAS/SATA-optimized silicon, offering the industry’s lowest power
- Zero maintenance cache protection (ZMCP) with a cache size up to 4 GB with integrated cache backup circuitry for optimal cost, thermal performance, and operating efficiency
- Board options without cache backup
- Mixed mode enables drives to be independently configured as raw drives or as part of a logical volume
- RAID levels 0, 1, 10, 5
- Industry’s only basic hardware RAID solution with more than 8 ports
- maxCache 4.0 included on 315x and 316x adapters
- maxCrypto™ controller-based encryption on the 3162-8i /e adapter

**SmartHBA 2100**

The SmartHBA 2100 is optimized for software-defined storage (SDS) applications that require hardware RAID for OS boot drives as well as entry-level RAID for SMBs.

- The only basic hardware RAID solution offering a fully featured, high-performance host bus adapter (HBA) for drives configured as raw drives, required for multi-path IO and SDS applications
- RAID levels 0, 1, 10, 5
- Industry’s only basic hardware RAID solution with more than 8 ports
- Mixed mode enables drives to be independently configured as raw drives or as part of a logical volume
- Board options without cache backup
- maxCache 4.0 included on 315x and 316x adapters
- maxCrypto™ controller-based encryption on the 3162-8i /e adapter

**HBA 1100**

The HBA 1100 is optimized for SDS, cold storage, and raw high-performance connectivity.

- Adapters with up to 24 ports using 28nm SAS/SATA-optimized silicon, offering the industry’s lowest power
- Support for host-managed and host-aware shingled magnetic recording (SMR) drives
- Broad OS driver support, including inbox driver support
- Performance of up to 1.7M IOPS
Smart Storage Solutions Overview

SMART STORAGE PLATFORM
BRILLIANT CONNECTIVITY

- HBA 1100
- SmartHBA 2100
- SmartRAID 3100

Unified Drivers, Firmware, and Management Tools

Security
maxCrypto™
3rd generation controller-based encryption

Power
> 40% power savings, reducing TCO in the Data Center

Reliability
>30M server deployments

Performance
> 70% boost in IOPs unleashing flash/SSDs

HBA 1100

Hyperscale Data Centers
Original Equipment Manufacturers
Original Design Manufacturers
SmartRAID 3100 RAID Adapters

The 12 Gbps SmartRAID 3100 adapters, coupled with 12 Gbps SSDs, provide maximum read/write bandwidth and IOPS for the most performance-hungry transactional and database applications. The onboard DRAM-based read and write cache accelerates RAID and spinning media. Furthermore, the SmartRAID 3100, built upon the unified Smart Storage stack, unlocks all features and performance of the HBA 1100 when the drives are configured as raw devices.

The newest addition to the family, the SmartRAID 3162-8i /e, provides the industry’s only data-at-rest controller-based encryption solution. maxCrypto™ encrypts data on RAID arrays and single drive RAID 0 with AES 256 encryption. It works at line speed, accelerated by silicon engines, with all SAS and SATA devices that are supported in RAID (SSDs and HDDs). It supports local encryption key management, and provides a superior solution over self-encrypting drives.

SmartRAID 3100 Specifications

All products listed in the following table contain an 8-lane PCIe Gen3 host bus interface, a SmartROC 3100 processor, an MD2 low-profile form factor, dimensions of 2.535” H × 6.6” L (64 mm × 167 mm), and can be scaled to a maximum of 256 SAS/SATA devices*. OS support for Microsoft Windows, Red Hat Linux, SUSE Linux, Fedora, Debian Linux, Ubuntu Linux, Sun Solaris, FreeBSD, VMware ESXi, open-source Linux drivers, and inbox drivers. The latest drivers are available at storage.microsemi.com/en-us/support/start.

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Part Number</th>
<th>RAID Levels</th>
<th>SAS/SATA Ports</th>
<th>Connectors</th>
<th>Cache</th>
<th>SSD Cache</th>
<th>Cache Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartRAID 3162-8i</td>
<td>2299800-R</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td>2 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup on board ASCM-17F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3162-8i /e</td>
<td>2299600-R</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td>2 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup on board ASCM-17F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-24i</td>
<td>2294700-R</td>
<td>24 internal</td>
<td>6 (x4) SFF-8643</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-8i16e</td>
<td>2294600-R</td>
<td>8/16 external</td>
<td>2 (x4) SFF-8643</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-16i</td>
<td>2295000-R</td>
<td>16 internal</td>
<td>4 (x4) SFF-8643</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-8i8e</td>
<td>2295100-R</td>
<td>8/8 external</td>
<td>2 (x4) SFF-8643</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-8e</td>
<td>2290800-R</td>
<td>8 external</td>
<td>2 (x4) SFF-8644</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3154-8i</td>
<td>2291000-R</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td>4 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3152-8i</td>
<td>2290200-R</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td>2 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3102-8i</td>
<td>2294800-R</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td>2 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3151-4i</td>
<td>2294900-R</td>
<td>4 internal</td>
<td>1 (x4) SFF-8643</td>
<td>1 GB DDR4/2100 MHz</td>
<td>maxCache 4.0</td>
<td>Embedded Flash backup tethered ASCM-35F supercap</td>
<td></td>
</tr>
<tr>
<td>SmartRAID 3101-4i</td>
<td>2291700-R</td>
<td>4 internal</td>
<td>1 (x4) SFF-8643</td>
<td>1 GB DDR4/2100 MHz</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*238 SSD/HDD maximum. Remaining device count is reserved for expanders and enclosure management.

For more information, visit www.microsemi.com/product-directory/smart-storage-platform/4323-12g-smartraid-3100-series-adapters
**SmartHBA 2100 Host Bus Adapters**

**Microsemi Adaptec SmartHBA 2100**

The SmartHBA 2100 series is part of the Smart Storage Solutions family, forged through the convergence of Microsemi SAS/SATA protocol controller expertise, more than 30 years of Microsemi board innovation, and the new Smart Storage stack.

The SmartHBA 2100 series uniquely combines the capabilities of a full-featured HBA, like the HBA 1100, with those of a basic hardware RAID adapter. With an optimal mix of resiliency, efficiency, and ease-of-use, it adds the robustness of true host-offloading hardware RAID, offers open-source driver compatibility, and comes with a full set of storage management tools.

**Maximum Performance**

The SmartHBA 2100 series provides the highest levels of storage performance and scalability for next-generation data centers. The SmartHBA 2100 provides connectivity to large numbers of storage devices, including HDDs, SSDs, and SMR drives. These adapters can aggregate the performance of devices to the limits of the PCIe Gen3 host bus at 6.6 Gbps, and achieve up to 1.7M IOPS and 60 percent higher IOPS performance with SATA devices without additional overhead or latency.

**Resiliency, Efficiency, and Data Availability**

The SmartHBA 2100 is an ideal solution for server-based storage systems that require maximum bandwidth and I/O connectivity, low power consumption, high reliability, plus options for data availability. The Smart Software stack even allows a combination of RAID and raw devices. This is useful in SDS environments where hardware RAID significantly increases OS boot reliability, but full HBA features and performance are otherwise needed.

The SmartHBA 2100 offers over 40 percent power savings compared to prior generations and significant power advantages over competing solutions, giving it the lowest total cost of ownership (TCO) for an HBA/basic RAID solution. It delivers a robust and scalable solution that can handle the toughest system workloads and configurations, from an array of high-performance SSDs to high-capacity HDDs. The SmartHBA 2100 can be used with or without SAS expanders.

**SmartHBA 2100 Specifications**

All products listed in the following table contain an 8-lane PCIe Gen3 host bus interface, a SmartIOC 2100 processor, an MD2 low-profile form factor, and can be scaled to a maximum of 256 SAS/SATA devices*. OS support for Microsoft Windows, Red Hat, SuSE, CentOS, Ubuntu, VMware ESXi, FreeBSD, Solaris, Citrix Xen Server, and open-source Linux drivers. The latest drivers and OS support are available at storage.microsemi.com/en-us/support/start.

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Part Number</th>
<th>Dimensions</th>
<th>SAS/SATA Ports</th>
<th>Connectors</th>
<th>RAID Levels</th>
<th>Caching</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartHBA 2100-24i</td>
<td>2301600-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>24 internal</td>
<td>6 (x4) SFF-8643</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SmartHBA 2100-8ie</td>
<td>2301900-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>8 internal/8 external</td>
<td>2 (x4) SFF-8643/ 2 (x4) SFF-8644</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SmartHBA 2100-8i</td>
<td>2290400-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>8 internal</td>
<td>2 (x4) SFF-8643</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SmartHBA 2100 4i4e</td>
<td>2292200-R</td>
<td>2.535&quot; H × 5.2&quot; L</td>
<td>4 internal/4 external</td>
<td>1 (x4) SFF-8643/ 1 (x4) SFF-8644</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*238 SSD/HDD maximum. Remaining device count is reserved for expanders and enclosure management.

For more information, visit www.microsemi.com/product-directory/smart-storage-platform/4324-12g-smarthba-2100-series-adopters
HBA 1100 Host Bus Adapters

Microsemi Adaptec HBA 1100
The HBA 1100 is part of the Smart Storage Solutions family, forged through the convergence of Microsemi SAS/SATA protocol controller expertise, more than 30 years of Microsemi board innovation, and acquired smart IP technology.

Optimized for New Devices and New Use Cases
The HBA 1100 supports SMR HDDs and their specific command sets (ZAC/ZBC for SAS/SATA SMR drives), enabling cost-efficient solutions for warm and cold storage applications. It also supports the latest SAS and SATA SSDs. The HBA 1100 is also optimized for software-defined storage solutions, such as Microsoft Storage Spaces Direct, VMWare vSAN, and OpenStack Swift/Ceph.

Maximum Performance
The HBA 1100 series provides the highest levels of storage performance and scalability for next-generation data centers. Using the new SmartPQI host OS device drivers that are optimized for low latency solid-state drives, HBA 1100 adapters can aggregate the performance of devices to the limits of the PCIe Gen3 host bus at 6.6 Gbps, and achieve up to 1.7M IOPS and 60 percent higher IOPS performance with SATA devices without additional overhead or latency. The HBA 1100-24i, with 24 internal ports, delivers the lowest latency and highest performance when connected to SSDs, with no need for expanders in most rack server applications.

HBA 1100 Specifications
All products listed in the following table contain an 8-lane PCIe Gen3 bus interface, a SmartIOC 2100 processor, an MD2 low-profile form factor, and can be scaled to a maximum of 256 SAS/SATA devices*. OS support for Microsoft Windows, Red Hat, SuSE, CentOS, Ubuntu, and VMware ESXi, FreeBSD, Solaris, and Citrix XEN Server. The latest drivers are available at storage.microsemi.com/en-us/support/start.

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Part Number</th>
<th>Dimensions</th>
<th>SAS/SATA Ports</th>
<th>Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBA 1100-24i</td>
<td>2293800-R</td>
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<td>24 internal</td>
<td>6 (×4) SFF-8643</td>
</tr>
<tr>
<td>HBA 1100-16i</td>
<td>2293500-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>16 internal</td>
<td>4 (×4) SFF-8643</td>
</tr>
<tr>
<td>HBA 1100-16e</td>
<td>2293600-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>16 external</td>
<td>4 (×4) SFF-8644</td>
</tr>
<tr>
<td>HBA 1100- 8i8e</td>
<td>2293700-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>8 internal/8 external</td>
<td>2 (×4) SFF-8643/2 (×4) SFF-8644</td>
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<tr>
<td>HBA 1100-8i</td>
<td>2293200-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>8 internal</td>
<td>2 (×4) SFF-8643</td>
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<tr>
<td>HBA 1100-8e</td>
<td>2293300-R</td>
<td>2.535&quot; H × 6.6&quot; L</td>
<td>8 external</td>
<td>2 (×4) SFF-8644</td>
</tr>
<tr>
<td>HBA 1100-4i</td>
<td>2293400-R</td>
<td>2.535&quot; H × 5.2&quot; L</td>
<td>4 internal</td>
<td>1 (×4) SFF-8643</td>
</tr>
</tbody>
</table>

*238 SSD/HDD maximum. Remaining device count is reserved for expanders and enclosure management.

For more information, visit www.microsemi.com/product-directory/host-bus-adapters/4054-hba-1100
Series 8 RAID Adapters

Microsemi Adaptec 12 Gbps RAID Adapters

The 12 Gbps PCIe Gen3 Series 8 family of SAS/SATA RAID adapters meet storage needs, from entry-level to the most performance-hungry transactional database applications. Storage innovations available within the Series 8 family include performance-accelerating maxCache SSD solutions for Series 8Q; cache-protecting zero maintenance cache protection for Series 8Q and Series 8; hybrid RAID solutions for managing both HDDs and SSDs; and the maxView storage manager, which makes it simple to monitor and configure all Series 8 adapters.

Series 8 family products are available for shipment, although SmartRAID 3100 or SmartHBA 2100 are recommended for new designs.

Series 8 Specifications

All products listed in the following table contain an 8-lane PCIe Gen3 host bus interface, a 12 Gbps RoC processor, an MD2 low-profile form factor, dimensions of 2.535" H x 6.6" L (64 mm x 167 mm), and can be scaled to a maximum of 256 SAS/SATA devices*.

OS support for Microsoft Windows, Red Hat Linux, SUSE Linux, Fedora, Debian Linux, Ubuntu Linux, Sun Solaris, FreeBSD, and VMware ESXi. The latest drivers are available at storage.microsemi.com/en-us/support/start.

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Part Number</th>
<th>RAID Levels</th>
<th>SAS/SATA Ports</th>
<th>Connectors</th>
<th>Cache</th>
<th>SSD Cache</th>
<th>Cache Protection</th>
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<tbody>
<tr>
<td>RAID 81605ZQ</td>
<td>2281600-R</td>
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<td>16 internal</td>
<td>4 internal SFF-8643</td>
<td>1024 MB</td>
<td>maxCache 3.0</td>
<td>Flash backup embedded AFM-700 Supercap (included)</td>
</tr>
<tr>
<td>RAID 8885Q</td>
<td>2277100-R</td>
<td></td>
<td>8 internal</td>
<td>2 internal SFF-8643</td>
<td>1024 MB</td>
<td>maxCache 3.0</td>
<td>AFM-700 (included)</td>
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<tr>
<td>RAID 81605Z</td>
<td>2287101-R</td>
<td>Hardware RAID 0, 1, 1E, 5, 6, 10, 50, 60</td>
<td>16 internal</td>
<td>4 internal SFF-8643</td>
<td>1024 MB</td>
<td>NA</td>
<td>Flash backup embedded AFM-700 Supercap (included)</td>
</tr>
<tr>
<td>RAID 8885</td>
<td>2277000-R</td>
<td>8 internal</td>
<td>2 internal SFF-8643</td>
<td>1024 MB</td>
<td>NA</td>
<td>AFM-700 (optional) 2275400-R</td>
<td></td>
</tr>
<tr>
<td>RAID 8805</td>
<td>2277500-R</td>
<td>8 internal</td>
<td>2 internal SFF-8643</td>
<td>1024 MB</td>
<td>NA</td>
<td>AFM-700 (optional) 2275400-R</td>
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<td>RAID 8405</td>
<td>2277600-R</td>
<td>4 internal</td>
<td>1 internal SFF-8643</td>
<td>1024 MB</td>
<td>NA</td>
<td>AFM-700 (optional) 2275400-R</td>
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<tr>
<td>RAID 8805E</td>
<td>2294001-R</td>
<td>Hardware RAID 0, 1, 10</td>
<td>8 internal</td>
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<td>512 MB</td>
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<td>NA</td>
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<td>RAID 8405E</td>
<td>2293901-R</td>
<td>Hybrid RAID 1, 10</td>
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<td>1 internal SFF-8643</td>
<td>512 MB</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

*238 SSD/HDD maximum. Remaining device count is reserved for expanders and enclosure management.

For more information, visit www.microsemi.com/product-directory/raid-adapters/4022-series8
Microsemi Adaptec SAS Expander Card

The 12 Gbps 82885T SAS expander card offers a scalable connectivity/fanout option for additional drives when used in conjunction with a SAS RAID adapter or SAS HBA. The 82885T SAS expander card offers 36 ports in a low-profile MD2 form factor. Of the 28 internal ports, four ports are dedicated for a controller, and the rest are available for connection to SAS or SATA drives. The eight external ports are available for optional connections to external JBODs or a SAS adapter.

Configuration Flexibility

The 82885T mounts internally to any available PCIe slot, away from the backplane, and features mini-SAS HD connectors out the top for cabling flexibility in dense server environments. The 82885T enables a low-cost drive expansion solution when mated with a RAID adapter or HBA. The expander draws power from the PCIe slot (requires 4 or more lanes), but there is no data transfer to the slot. Alternatively, power can also be supplied to the expander card through a standard 4-pin auxiliary power connector.

Enclosure Management Support

The 82885T supports SGPIO and SES2 enclosure management, allowing enclosure information to be routed from all daisy-chained 82885T cards to the HBA or RAID adapter. All device and slot mapping information is provided to the HBA or RAID adapter by the last 82885T card in the chain.

Microsemi Adaptec SAS Expander Card Specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>Ordering Part Number</th>
<th>Ports</th>
<th>Connector</th>
<th>Form Factor</th>
<th>Dimensions</th>
<th>PCIe Slot Power</th>
<th>Auxiliary Power Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>82885T</td>
<td>Single: 2283400-R</td>
<td>28 internal/8 external</td>
<td>7 x SFF-8643, 2 x SFF-8644</td>
<td>MD2–low profile</td>
<td>2.535&quot; H x 6.6&quot; L (64 mm x 167 mm)</td>
<td>Through PCIe x4 interface</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Universal Compatibility with Existing Storage Infrastructure

The 82885T is fully compatible with Microsemi Adaptec 12 Gbps and 6 Gbps RAID adapters and HBAs, allowing seamless integration and management within an end-to-end Microsemi Adaptec solution. The 82885T is also compatible with third-party adapters and HBAs, and has also been tested for interoperability with a wide variety of SAS and SATA HDDs and SSDs.

For more information, visit www.microsemi.com/product-directory/storage/3707-sas-expander-cards
# Cables

Microsemi Adaptec 12 Gbps and 6 Gbps SAS HD Cables

Microsemi Adaptec SmartRAID 3100, SmartHBA 2100, HBA 1100, HBA 1000, and Series 8/8Q/8E RAID adapters are configured with mini-SAS HD connectors to allow for maximum performance and connectivity in a MD2 low-profile form factor. Pick the right cable for your internal or external storage solution.

## Internal Cables

<table>
<thead>
<tr>
<th>Connector to Adapter</th>
<th>12 Gbps Internal</th>
<th>6 Gbps Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFF-8643 right angle</td>
<td>ACK-I-HDmSAS-HDmSAS</td>
<td>ACK-I-HDmSAS-4SAS-SB</td>
</tr>
<tr>
<td>Part # 1 meter: 2282600-R</td>
<td>Part # .5 meter: 2282500-R</td>
<td>Part # .8 meter: 2280000-R</td>
</tr>
<tr>
<td>Part # .5 meter: 2282200-R</td>
<td>Part # .8 meter: 2279800-R</td>
<td>Part # .8 meter: 2279900-R</td>
</tr>
</tbody>
</table>

## External Cables

<table>
<thead>
<tr>
<th>Connector to Adapter</th>
<th>12 Gbps External</th>
<th>6 Gbps External</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFF-8644</td>
<td>ACK-E-HDmSAS-HDmSAS</td>
<td>ACK-E-HDmSAS-4SAS-SB</td>
</tr>
<tr>
<td>Part # 2 meters: 2282600-R</td>
<td>Part # 2 meters: 2280300-R</td>
<td>Part # 2 meters: 2280300-R</td>
</tr>
</tbody>
</table>

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