Microsemi Adaptec® Flash Module 700 Kit: AFM-700
Third-Generation Zero-Maintenance Cache Protection

Maximum Data Protection and Cost Savings

Enabling the onboard cache on a RAID adapter card significantly enhances the performance—especially in RAID 5 and RAID 6 scenarios—by accommodating both read caching and write caching of data. But data stored in the cache for write caching can be lost if the cache is not protected against a power or system failure. Now in its third generation, Microsemi Adaptec Zero-Maintenance Cache Protection (ZMCP) drastically reduces a RAID adapter's total cost of ownership (TCO) through the use of flash memory versus lithium-ion batteries.

## Designed for Microsemi Adaptec RAID Adapters

The AFM-700 for ZMCP is included with the Series 8Q (12 Gbps). The 81605ZQ and 81605Z have the flash backup embedded on the board. ZMCP is available as an option for Series 8 (12 Gbps) and Series 7 (6 Gbps) RAID adapters with the AFM-700 kit, which includes a mounting plate to secure the cap module to an unused PCIe slot.

Advanced Technology

The AFM-700 features NAND flash memory and super capacitor technologies that work together to save cached data in the event of system power loss. The super capacitor charges while the system is booting. When the module detects loss of power, the super capacitor keeps critical parts of the RAID adapter active long enough to allow data to be copied from the onboard adapter cache to the flash memory. The flash memory can store data for years without power. When power is returned, the data is copied back to the onboard adapter cache and operation resumes as normal with all outstanding I/O requests intact.

Ease of Use

Data center administrators can use ZMCP's new real-time health and instant capacity monitoring features to instantly check the temperature, capacity, and remaining lifetime of the super capacitor through Microsemi's Adaptec maxView Storage Manager, a web-based interface.
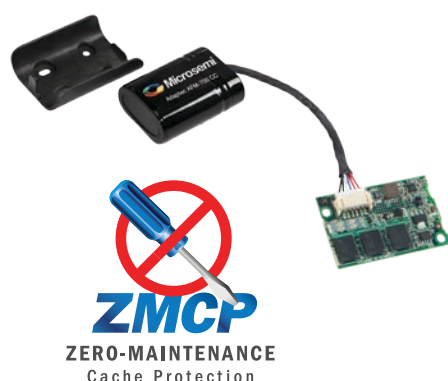
Highlights

Third-Generation Cached Data Protection for 12 Gbps and 6 Gbps RAID Adapters

- Add-on module for Series 8 and Series 7
- Included with Series 8Q and Series 7Q
- Flash backup embedded into 81605ZQ and 81605Z

Real-Time Health Monitoring

- Monitors health of cache protection
- Monitors capacity levels

Instant RAID Cache Protection

- Fully charged within four minutes instead of hours
- RAID performance optimized immediately

Maintenance-Free Cached Data Protection

- Stores protected data for years
- No need to monitor battery charge level
- No shutdown required for battery replacement

Lower Operating Costs

- No monitoring, maintenance, replacement, or disposal costs because of batteries

No Data Loss from Power Failures

- Replaces lithium-ion batteries

Single-Level Cell (SLC) Flash

- Faster writes and better reliability than multi-level cell (MLC) flash

Environmentally Conscious

- No toxic battery disposal
- Simplified IATA compliance

Microsemi Adaptec® Flash Module 700 Kit: AFM-700
Third-Generation Zero-Maintenance Cache Protection

Backup Battery Units (BBUS) vs. ZMCP: Maintenance Requirements

Lithium-ion BBUs	ZMCP
Batteries must be "conditioned" during initial deployment, adding custom steps and several hours to the deployment process.	No action required
Battery performance must be continually monitored so that failing batteries can be replaced.	No action required
A failed battery must be replaced within 72 hours, and sometimes sooner.	No action required
Batteries must be replaced on a regular maintenance cycle, so replacement batteries must be kept available at each location and maintenance staff must be on-site or on-call.	No action required
Replacement batteries age even when on the shelf, so a continual purchasing process must be developed and implemented.	No action required
Lithium-ion batteries must be properly disposed. A process to dispose of the hazardous material must be created, staffed, and funded.	No action required

Flash Module 700 (AFM-700)

Reasons to buy	The AFM-700 provides Zero-Maintenance Cache Protection for Series 8, Series 8Q/8Z (12 Gbps), Series 7, and Series 7Q (6 Gbps) RAID adapters to protect data in the controller cache without incurring monitoring, maintenance, replacement, or disposal costs.
Customer needs	Solutions that require advanced protection of data and reduced total cost of ownership (TCO).
Compatible products	12 Gbps RAID Adapters • ASR 8885 • ASR 8805 • ASR 8885Q (included) • ASR 81605Z (flash backup embedded) • ASR 81605ZQ (flash backup embedded) 6 Gbps RAID Adapters • ASR 72405 • ASR 78165 • ASR 71685 • ASR 71605 • ASR 7805 • ASR 71605Q (included) • ASR 7805Q (included)
Operating temperature	0 °C to 50 °C (with 200 LFM airflow)
Operating current	In addition to the operating currents for the adapters listed below, the AFM-700 typically draws 500 mA during its initial charge cycle. No further power is required once the super capacitor is fully charged. 12 Gbps RAID Adapters • ASR-8805/8885/8885Q: 1.0 A at 3.3 V and 1.1 A at 12 V • ASR-81605Z/81605ZQ: 1.5 A at 3.3 V and 1.0 A at 12 V 6 Gbps RAID Adapters • ASR-7805/7805Q: 0.1 A at 3.3 V and 1.5 A at 12 V • ASR-71605/71605Q: 0.1 A at 3.3 V and 1.6 A at 12 V • ASR-71685/72405: 0.1 A at 3.3 V and 1.8 A at 12 V • ASR-78165: 1.1 A at 3.3 V and 1.3 A at 12 V
Cable length	Cable connected to the AFM-700: ~7 inches; extension cable: ~18 inches
Regulatory certification	CE, FCC, UL, C-tick, VCCI, KCC
Environmental compliance	RoHS
Typical lifespan	5 years at 50 °C
Warranty	3 years
Part number	2275400-R

Power Matters.™

Microsemi Corporate Headquarters
One Enterprise, Aliso Viejo, CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996
email: sales.support@microsemi.com
www.microsemi.com

Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for aerospace & defense, communications, data center and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; enterprise storage and communication solutions, security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 4,800 employees globally. Learn more at www.microsemi.com.