



# Enhancing Data Center Performance

## Features & Benefits

By leveraging SMART's advanced memory solutions and services, Data Centers can:

- **Enhance Performance:** Increase memory bandwidth and capacity to support demanding applications.
- **Optimize Resource Utilization:** Dynamically allocate memory to eliminate bottlenecks and stranded memory.
- **Improve Reliability:** Reduce downtime with highly reliable memory modules tested under rigorous conditions.
- **Streamline Operations:** Minimize qualification costs and shorten product launch cycles with comprehensive qualification services.

## Problem Statement

Data centers face significant challenges in maintaining high performance and efficiency. Traditional memory configurations often lead to bottlenecks, limiting server capacity and causing stranded memory. This results in reduced system performance, increased downtime, and higher operational costs. Additionally, the demand for high-bandwidth, low-latency memory solutions is growing, especially for applications like in-memory databases, High-Performance Computing (HPC), Artificial Intelligence (AI), and cloud workloads.

## Solution Overview

SMART Modular Technologies offers advanced memory solutions designed to address these challenges and provide critical competitive advantages for data centers.

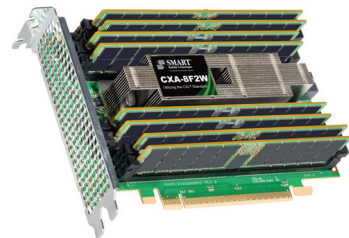
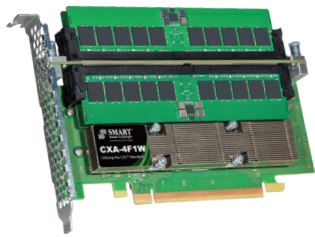
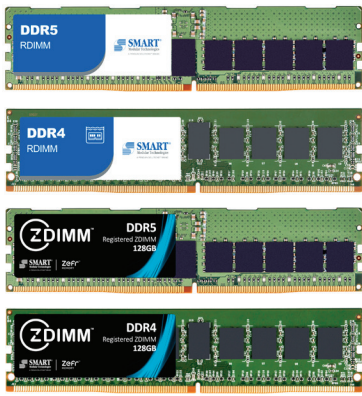
**Memory Expansion with CXL<sup>®</sup> Technology:** SMART's memory modules utilize CXL (Compute Express Link) technology to increase memory bandwidth and capacity. This eliminates conventional server bottlenecks by dynamically allocating memory to workloads that need it, ensuring efficient use of resources. New E3.S Memory Module (CMM) and Add-in Card (AIC) options enable high-speed, low-latency cache coherent access to data, supporting new solution architectures and form factors for enhanced performance.

**Highly Reliable Memory Modules:** SMART's ZDIMM memory modules undergo a comprehensive 5-part test process (temperature, speed, load, system, and time) to ensure long-term reliability. The Zefr testing process emulates the most strenuous use cases, significantly reducing downtime and enhancing system stability.

**High Density Memory - RDIMMs:** SMART provides high-density RDIMMs that deliver massive computing power for HPC, AI, grid, and cloud workloads. These modules are ideal for data centers requiring large amounts of server memory, offering up to 256GB DDR4 and DDR5 RDIMMs.

**Extensive Memory Qualification Services:** SMART Memory Test Lab (SMTL) offers extensive memory qualification services to minimize qualification costs and resources, save engineering time, and shorten product launch cycles. SMART's engineering resources help solve problems and maintain an uninterrupted supply chain of qualified memory.

**Liquid Immersion DDR5 RDIMM:** SMART's Liquid Immersion DDR5 RDIMMs combine the high performance of DDR5 technology with enhanced protection against corrosion and environmental threats, ensuring reliability and longevity in demanding environment.



## Product Summary Overviews

### DRAM for Data Center Applications

Technology	Module Type	Speeds	Densities
DDR5	ZDIMM	DDR5-4800/5600	16GB - 128GB
	Liquid Immersion RDIMM		32GB - 256GB
DDR4	ZDIMM	DDR4-3200	16GB - 64GB
	RDIMM		4GB - 32GB
	LRDIMM		128GB

Individual part numbers can be found on [www.smartm.com](http://www.smartm.com)

### CMM-E3S Memory Module

SMART Part Number	Description
STXBB64GMCF4S40HA	64GB Memory modules in E3.S 2T form-factor with dual ranks/channel DDR5, utilizing CXL 2.0
STXBB96GMCF4S40HM	96GB Memory modules in E3.S 2T form-factor with dual ranks/channel DDR5, utilizing CXL 2.0
STXBB128GMCF4S40MB	128GB Memory modules in E3.S 2T form-factor with dual ranks/channel DDR5, utilizing CXL 2.0

### NV-CMM Memory Module

SMART Part Number	Description	Density
STXBB32GNM44S18MF	E3.S 2T, DDR4-3200, utilizing CXL 2.0	32GB

### 4-Socket AIC

SMART Part Number	Description	Configuration
STXPLXXXGMC4RD5	PCIe x8, FHHL, utilizing CXL 2.0	Single-width AIC without DDR5 RDIMMs
STXPL128GMC4RD5	PCIe x8, 128GB, FHHL, utilizing CXL 2.0	Single-width AIC with four 32GB DDR5 RDIMMs
STXPL256GMC4RD5	PCIe x8, 256GB, FHHL, utilizing CXL 2.0	Single-width AIC with four 64GB DDR5 RDIMMs
STXPL512GMC4RD5	PCIe x8, 512GB, FHHL, utilizing CXL 2.0	Single-width AIC with four 128GB DDR5 RDIMMs

### 8-Socket AIC

SMART Part Number	Description	Configuration
STXPLXXXGAB8RD5	PCIe x16, DDR5, AIC FHHL, utilizing CXL 2.0	Card PN without DDR5 RDIMMs
STXPL256GAB8RD5	PCIe x16, 256GB, DDR5, FHHL utilizing CXL 2.0	Card PN with eight of 32GB DDR5 RDIMMs
STXPL512GAB8RD5	PCIe x16, 512GB, DDR5, FHHL, utilizing CXL 2.0	Card PN with eight of 64GB DDR5 RDIMMs
STXPL001TAB8RD5	PCIe x16, 1TB, DDR5, FHHL, utilizing CXL 2.0	Card PN with eight of 128GB DDR5 RDIMMs

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For more information, please visit: [www.smartm.com](http://www.smartm.com)

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