

# Common Module System X08

## Open Standards-Based Rugged Blade Servers

Configurable.  
Compact footprint.  
Zero vendor lock-in.

- Short 18" depth chassis with compute, storage, and 1-100 GbE switching elements
- Compatible with Open Compute Project (OCP), openEDGE ecosystem
- Supports 4th/5th Gen Intel® Xeon® Scalable processors, NVIDIA H100 GPUs, and PCIe 5.0, DDR5
- Superior resilience to shock, vibration, and temperature extremes



Modern applications demand bleeding-edge silicon; users demand more processing, bandwidth, and capabilities. Mercury's Common Module System (CMS) X08 answers these demands through a modular, extensible, and open standards-based platform with a standard board-to-module, module-to-rack, and rack-to-system interface.

Designed for networking, virtualization, big data, and signals intelligence workloads, the CMS X08 drives the world's most critical applications.

### CMS CHANGES THE RULES:

- **Accelerate development** Rapidly test, prototype, and deploy IT infrastructure by tapping into CMS and openEDGE hardware ecosystems
- **Eliminate complexity** Create compute-, storage-, and network-optimized systems by combining common server elements
- **Break vendor lock** Future-proof your architecture by leveraging the Open Compute Project (OCP) as a source of innovation
- **Maximize density** Shrink legacy rackmount deployments by 33% with half-width compute modules capable of aggregating 86 Xeon-SP cores per rack unit
- **Crush bottlenecks** Tackle spiraling data bandwidth requirements with a toolkit of modern protocols like 100-400 G Ethernet, PCI Express Gen 5.0, and Gen 5 NVMe
- **Survive at the edge** Bring data center capabilities to the field with the only OCP-based platform designed to MIL-STD-810H and MIL-STD-167-1A standards

Open standards-based

High-density, half-width form factor

Gen 5 PCIe and NVMe support

Designed for the field

**TECHNICAL SPECIFICATIONS**

**Module Mainboard**

Mercury rugged motherboard  
 Single socket E (LGA-4677)  
 4th/5th Gen Intel Xeon Scalable processor  
 8 DIMM slots, 1 DPC, 4800 MT/s ECC DDR5  
 Trusted Platform Module (TPM) 2.0  
 Intel Virtual RAID on CPU (VROC)

**Module Input/Output (I/O)**

(1) USB 3.1 Type A port (5 V/900 mA)  
 (1) Mini display port (1920x1080)  
 (1) IPMI port (RJ45)  
 (1) Debug port (USB Mini-B)

**Module OS Support**

Red Hat Enterprise Linux  
 Windows Desktop & Server  
 VMware ESXi

**Module Management**

Redfish and IPMI 2.0 support  
 Dedicated IPMI port per node

**Chassis Management**

Dedicated RMC for multi-node control  
 Dummy RMC module may be used to airgap nodes

**Chassis Form Factor**

1U, 1-slot, 18" depth (CMS000-1U18F)  
 2U, 3-slot, 18" depth (CMS000-2U18F)  
 3U, 5-slot, 18" depth (CMS000-3U18F)  
 Front I/O, front-to-back airflow  
 Reverse airflow option available

**Chassis Power**

Option 1:

- 1200 W @ 120 VAC
- 2400 W @ 240 VAC
- Dual redundant N+1 capability
- PSU compliant with MIL-STD-461G, CE102, above and below deck
- PSU compliant with MIL-STD-461G, RE102, below deck

Option 2:

- 2000 W @ -48 VDC
- Dual redundant N+1 capability

**Chassis Accessories**

1U rail kit for 4-post threaded racks  
 2U/3U rail kit for 4-post threaded racks  
 Rail kits are compatible with cabinets and transit cases up to 24" depth

**Environmental (Operating)\***

Shock:

- MIL-STD-810H
  - Half sine pulse
  - 30 G, 20 ms, 3 axis

Vibration:

- MIL-STD-167-1A
  - Sinusoidal sweep and dwell
  - 4-33 Hz
- MIL-STD-810H
  - Random vibration
  - 10-2000 Hz, 4.75 Grms

Altitude:

- MIL-STD-810H
  - 0-15,000 ft

Temperature:

- 0°C to 50°C at sea level

Humidity:

- MIL-STD-810H
  - 5-95% RH, non-condensing
- Conformal coating available

**Warranty**

3-year warranty  
 Extended warranty available

\* Mercury Systems designs all products to meet or exceed listed data sheet specifications. Some specifications including I/O, weight and thermal profiles are configuration dependent. Contact us for information specific to your desired configuration requirements.

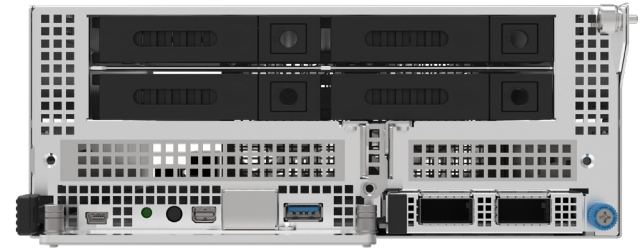


MODULES LIBRARY



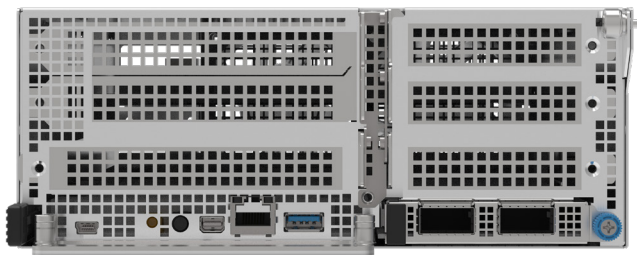
**1U Single-Slot x86 Compute Module (CMSX08-1H18FA)**

- Processor: (1) 4th/5th Gen Intel Xeon Scalable processor up to 300 W TDP
- Memory: (8) DIMM slots, 4800 MT/s ECC DDR5
- Storage: (2) 9.5 mm E1.S (Gen 5 x4) up to 7.68 TB/SSD (replaces HHHL x16 slot)
- Expansion: (1) HHHL x16, (1) FHHL x16, (1) OCP 3.0
- Typical weight (no cards): 8.7 lbs



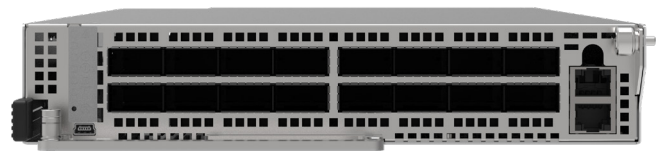
**2U Double-Slot x86 Storage Module (CMSX08-2H18FA)**

- Processor: (1) 4th/5th Gen Intel Xeon Scalable processor up to 300 W TDP
- Memory: (8) DIMM slots, 4800 MT/s ECC DDR5
- Storage: (2) 9.5 mm E1.S (Gen 5 x4) up to 7.68 TB per SSD (replaces HHHL x16 slot), (4) 15 mm U.2 (Gen 5 x4) up to 30.72 TB/SSD, FIPS140-2 options available, (2) internal 2280 M.2 (Gen 3 x4)
- Expansion: (1) HHHL x16, (1) FHHL x16, (1) OCP 3.0, (1) internal FHHL for RAID card
- Typical weight (no cards): 9.0 lbs



**2U Double-Slot x86 Peripheral Module (CMSX08-2H18FB)**

- Processor: (1) 4th/5th Gen Intel Xeon Scalable processor up to 300 W TDP
- Memory: (8) DIMM slots, 4800 MT/s ECC DDR5
- Storage: (2) 9.5 mm E1.S (Gen 5 x4) up to 7.68 TB/SSD (replaces HHHL x16 slot)
- Expansion: (1) HHHL x16, (1) FHHL x16, (1) OCP 3.0
- Additional expansion:
  - Option 1 - (1) FHFL double-width x16, (1) HHFL x16
  - Option 2 - (1) FHFL double-width x16, (2) HHFL x8
  - Option 3 - (2) FHFL x8 + (2) HHFL
- Typical weight (no cards): 9.0 lbs



**1U Single-Slot 40/50/100 GbE Switch (CMS100-1H18F)**

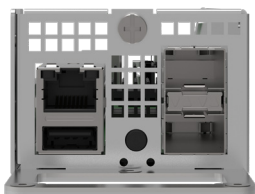
- Based on Mellanox SN2100 open Ethernet switch
- Ethernet ports: (16) splitable 100 GbE SFP28 40/100 GbE ports
- Other ports: RJ45 serial port, RJ45 Ethernet management port
- Throughput: Non-blocking bidirectional 3.2 Tb/s
- Latency: 300 ns for 100 GbE, consistent latency
- Layer 2/3 features: 10/25/40/50/56/100 GbE, multi chassis LAG (MLAG), Q-In-Q, 802.1 W rapid spanning tree, 802.1 s multiple STP, 802.3 ad link aggregation (LAG) & LACP, jumbo frames (9216 B), IPv4 & IPv6 route maps including BGP4, OSPFv2, BFD (BGP, OSPF, Static Routes), DHCPv4/v6 relay router port, int VLAN, NULL interface for routing
- OS options:
  - Mellanox Onyx (CMS100-1H18FA)
  - Cumulus Linux (CMS100-1H18FB)
  - ONIE (CMS100-1H18FC)
- Typical weight: 7.2 lbs

**MODULES LIBRARY (CONT.)**



**1U Single-Slot Spectrum-Based 1/10/25 GbE Switch (CMS025-1H18F)**

- Based on Mellanox SN2010 open Ethernet switch
- Ethernet ports: (18) 10/25 GbE SFP+, (4) splittable QSFP28 40/100 GbE ports
- Other ports: RJ45 serial port, RJ45 Ethernet management port
- Throughput: Non-blocking bidirectional 1.7 Tb/s
- Latency: 300 ns for 100 GbE, consistent latency
- Layer 2/3 features: 10/25/40/50/56/100 GbE, multi chassis LAG (MLAG), Q-In-Q, 802.1 W rapid spanning tree, 802.1 s multiple STP, 802.3 ad link aggregation (LAG) & LACP, jumbo frames (9216 B), IPv4 & IPv6 route maps including BGP4, OSFPv2, BFD (BGP, OSFP, Static Routes), DHCPv4/v6 relay router port, int VLAN, NULL interface for routing
- OS options:
  - Mellanox Onyx (CMS025-1H18FA)
  - Cumulus Linux (CMS025-1H18FB)
  - ONIE (CMS025-1H18FC)
- Typical weight: 7.2 lbs



**Rackmount Controller (CMS000-RMC)**

- Aggregates IPMI interfaces from all x86 nodes
- Ethernet ports: (1) RJ45 and (2) SFP+
- Typical weight: 0.9 lb

**Dummy Module (CMS000-DMY)**

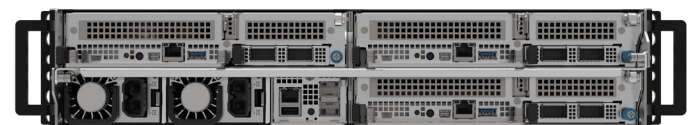
- Airgaps all nodes within chassis
- Typical weight: 0.9 lb

**CHASSIS LIBRARY**



**1U 1-Slot Front I/O Chassis (CMS000-1U18FA)**

- Accepts both CMS and openEDGE modules
- Supports (1) single-slot module, (2) power supplies, (1) rackmount controller
- Max node density: 1.0 nodes per RU
- Typical weight (empty): 11.8 lbs



**2U 3-Slot Front I/O Chassis (CMS000-2U18FA)**

- Accepts both CMS and openEDGE modules
- Configuration options:
  - (3) Single-slot modules, (2) Power supplies, (1) Rackmount controller
  - (1) Double-slot module, (1) Single-slot module, (2) Power supplies, (1) Rackmount controller
- Max node density: 1.5 nodes per RU
- Typical weight (empty): 14.8 lbs



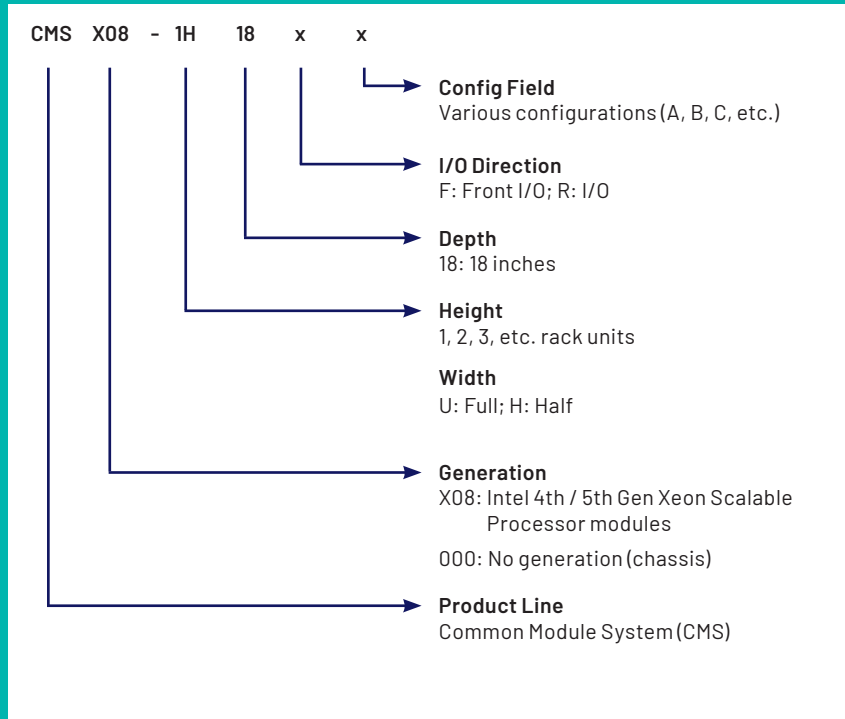
**3U 5-Slot Front I/O Chassis (CMS000-3U18FA)**

- Accepts both CMS and openEDGE modules
- Configuration options:
  - (5) Single-slot modules, (2) Power supplies, (1) Rackmount controller
  - (1) Double-slot module, (3) Single-slot modules, (2) Power supplies, (1) Rackmount controller
  - (2) Double-slot modules, (1) Single-slot module, (2) Power supplies, (1) Rackmount controller
- Max node density: 1.7 nodes per RU
- Typical weight (empty): 17.8 lbs

APPLICATIONS

- Artificial Intelligence (AI)
- Machine Learning (ML)
- Deep Learning (DL)
- Big Data Analytics
- High Performance Computing (HPC)
- 5G and beyond
- Virtualization
- Industrial Automation
- Virtual Reality (VR)
- Image Processing
- Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR)
- Signals Intelligence (SIGINT)
- Sensor Fusion

CONFIGURATION MODEL CHART



A member of the



Partnering with



Corporate Headquarters

50 Minuteman Road  
 Andover, MA 01810 USA  
 +1 978.967.1401 tel  
 +1 866.627.6951 tel  
 +1 978.256.3599 fax

International Headquarters

**Mercury International**  
 Avenue Eugène-Lance, 38  
 PO Box 584  
 CH-1212 Grand-Lancy 1  
 Geneva, Switzerland  
 +41 22 884 51 00 tel

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Visit: [mrcy.com/cms-x08](https://mrcy.com/cms-x08)

Contact: [servers@mrcy.com](mailto:servers@mrcy.com)



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