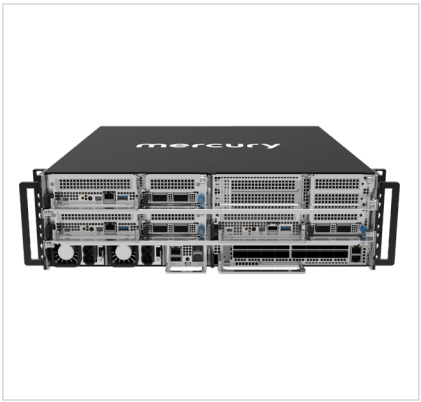
mercury

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 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 meet 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[3]

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 enables airgapping 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

- 1200 W @ 120 VAC
- 2400 W @ 240 VAC
- Dual redundant capability
- PSU compliant with MIL-STD-461G, CE102

Chassis Accessories

1U rail kit for 4-post threaded racks

2U/3U rail kit for 4-post threaded racks

Environmental (Operating)

Shock:

- Half sine pulse[2]
- 30 G, 20 ms, 3 axis[2]

Vibration:

- Sinusoidal sweep and dwell
  - 4-33 Hz
- Random vibration
  - 10-2000 Hz, 4.75 Grms
  - 60 minutes per axis

Altitude:

- Up to 15,000 feet @ 40°C
- Test screen duration = 7 hours

Temperature:

- Up to 50°C at sea level[1]

Emission & Immunity:

- EN 55032:2015/A:2020 (Emission)
- EN 55035:2017/A11:2020 (Immunity)

Humidity:

- Up to 95% RH, non-condensing @ 40°C
- Test screen duration = 68 hours
- Conformal coating available

Warranty

3-year warranty

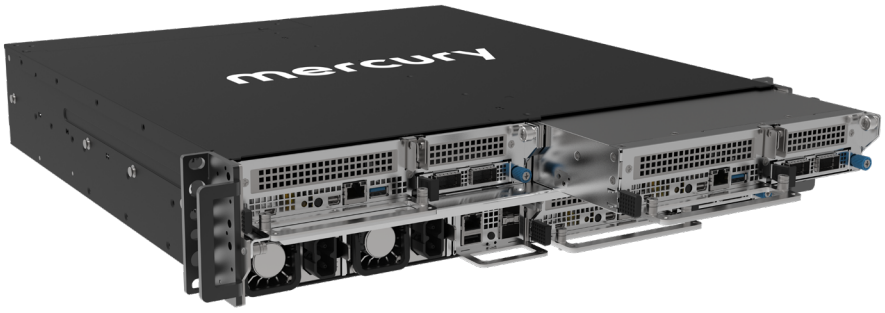
Extended warranty available

[1] 50°C for CMSX08-2H18FB w/ 8471N (300W) and H100 (350W) without throttling under simultaneous PTAT + NVQual workload.

45°C for CMSX08-1H18FA w/ 8526Y+ (300W) without throttling under PTAT workload.

[2] Validated for CMSX08-1H18FA 1U Single-Slot x86 Compute Module

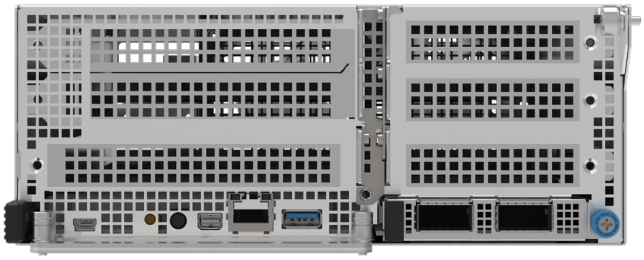
[3] Linux-based systems require 5.19 or newer kernel for display output



MODULES LIBRARY

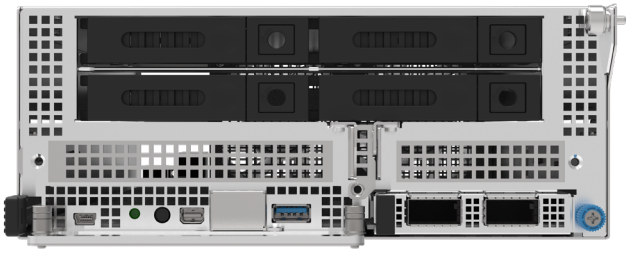
1U Single-Slot x86 Compute Module (CMSX08-1H18FA)

- 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



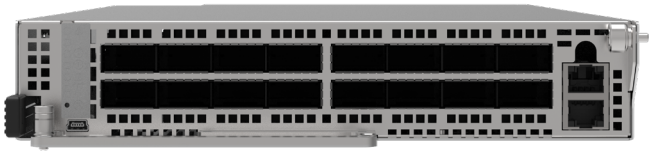
2U Double-Slot x86 Peripheral Module (CMSX08-2H18FB)

- 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, (1) FHFL Double Width x16
- Additional expansion: Options available
- Typical weight (no cards): 9.0 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



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

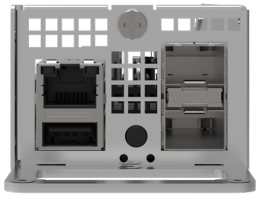
- Based on Mellanox SN2100 open Ethernet switch
- Ethernet ports: (16) splitable 100 GbE SFP28 40/100 GbE ports
- Other ports: RJ45 serial port, RJ45 Ethernet management port
- Throughput: Non-blocking bidirectional 3.2 Tb/s
- Latency: 300 ns for 100 GbE, consistent latency
- Layer 2/3 features: 10/25/40/50/56/100 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, OSFPv2, BFD (BGP, OSFP, Static Routes), DHCPv4/v6 relay router port, int VLAN, NULL interface for routing
- OS options:
  - Cumulus Linux (CMS100-1H18FA)
  - ONIE (CMS100-1H18FB)
- Typical weight: 7.2 lbs
- NRFND - Not Recommended for New Designs

MODULES LIBRARY (CONT.)

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

Based on Mellanox SN2010 open Ethernet switch

- Ethernet ports: (18) 10/25 GbE SFP+, (4) splitable 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:
  - Cumulus Linux (CMS100-1H18FA)
  - ONIE (CMS100-1H18FB)
- Typical weight: 7.2 lbs
- NRFND - Not Recommended for New Designs



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
- Power Supply (CMS000-AC)
- Typical weight: 2.9 lb

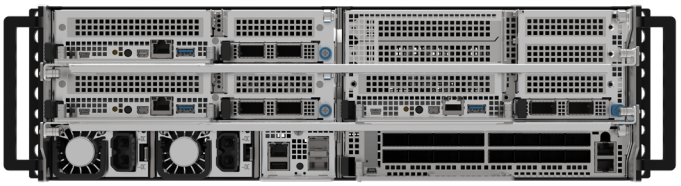
CHASSIS LIBRARY

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

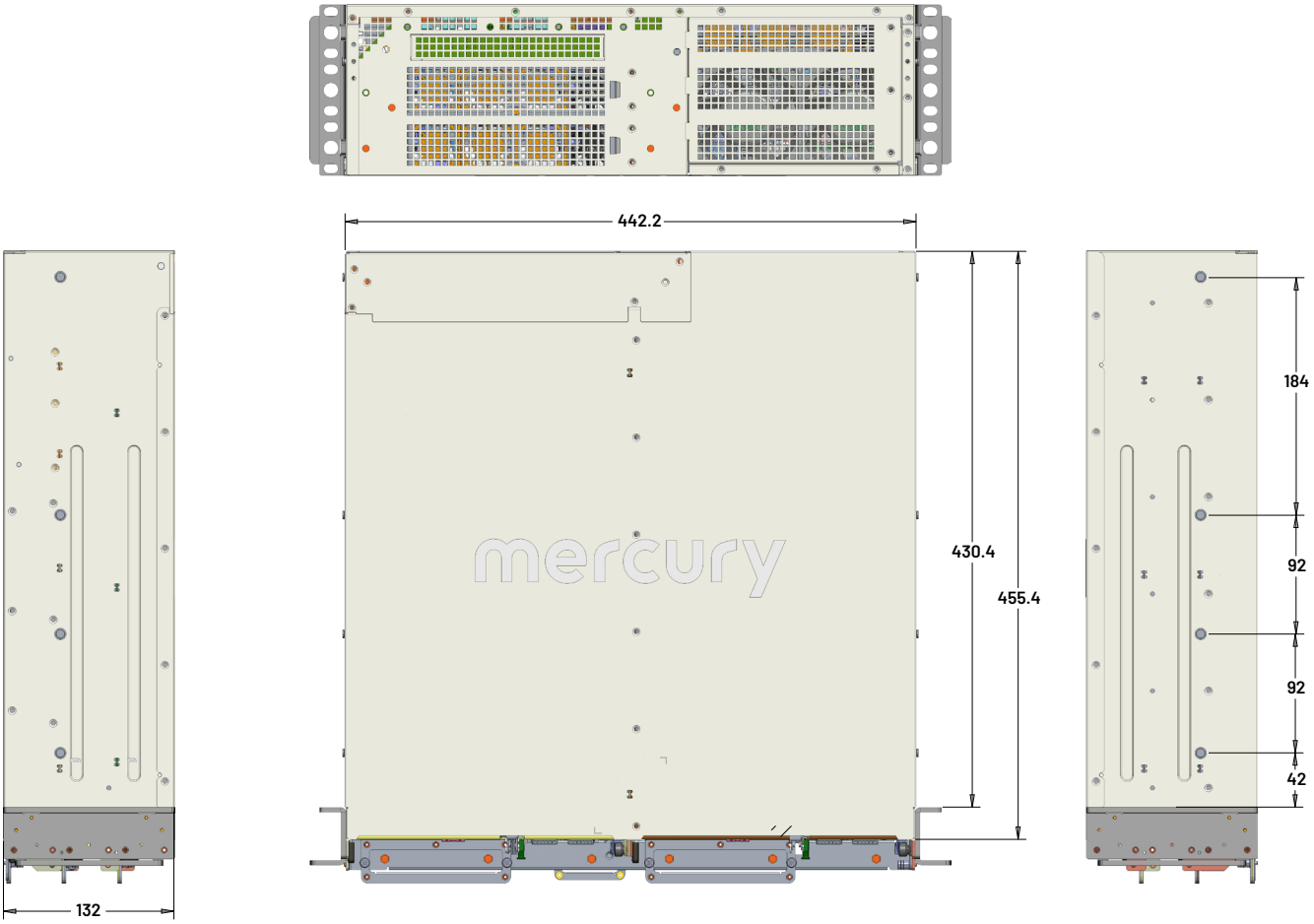
2U 3-Slot Front I/O Chassis (CMS000-2U18FA)

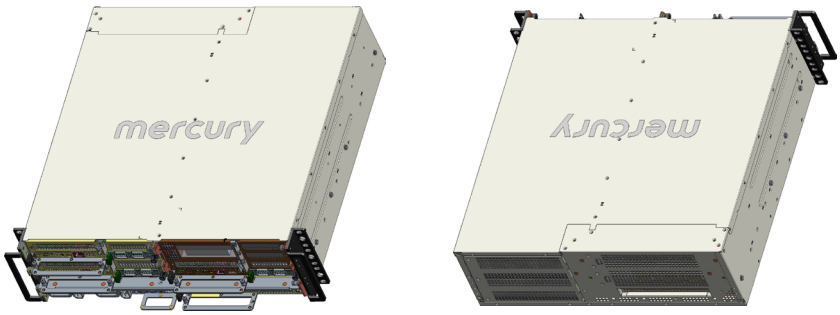
- Accepts both CMS and openEDGE modules
- Configuration options:
  - (3) Single-slot modules, (2) Power supplies, (1) Rackmount controller
  - (1) Double-slot module, (1) Single-slot module, (2) Power supplies, (1) Rackmount controller
- Max node density: 1.5 nodes per RU
- Typical weight (empty): 14.8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


442.2
430.4
455.4
184
92
92
42
132
120.2
463



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

CMS X08 - 1H 18 x x

Config Field
Various configurations (A, B, C, etc.)

I/O Direction
F: Front I/O; R: I/O

Depth
18: 18 inches

Height
1, 2, 3, etc. rack units

Width
U: Full; H: Half

Generation
X08: Intel 4th / 5th Gen Xeon Scalable Processor modules
000: No generation (chassis)

Product Line
Common Module System (CMS)

RELATED INSIGHTS
White Paper: Building an Agile Future: How Defense Edge Networks stand to benefit from the Open Compute Project

A member of the OPEN COMMUNITY®

Partnering with intel Xeon Gold; intel partner Titanium IoT Solutions; NVIDIA PREFERRED PARTNER

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

Learn more
Visit: mrcy.com/cms-x08
Contact: servers@mrcy.com