MD-3000

14/13/12th Generation Intel Core Series Processors, High Performance and Scalable DIN-Rail Computer

The Most Powerful & Scalable DIN-Rail Computer

MD-3000: Dedicated to Machine Vision Excellence

Overview

CONTACT

Designed for workstations and machinery in machine vision and smart manufacturing, the Cincoze MD-3000 series is a unique DIN-Rail embedded computer with compact size, excellent performance, broad expandability, and high reliability.

- Small and powerful: The body is only 150 mm high but supports a desktop-grade Intel® Core™ CPU. This easily copes with high-speed image processing and AI applications.

- Small and expandable: Includes multiple native high-speed and industrial I/O and M.2 expansion slots. Supports up to a six-slot Scalable Expansion Deck (SED), allowing flexible installation of Scalable Expansion Modules (SEMs) for additional I/O, storage, and wireless transmission functions.

- Small and reliable: Consistent rugged design that passes multiple industrial standards (vibration resistant, shock resistant, EMC, safety, etc.) to ensure long-term stable operation in harsh environments. This makes it the best computing platform for machine vision applications at smart manufacturing sites.

Key Features

- Intel® 14/13/12th Gen Raptor Lake-S Refresh / Raptor Lake-S / Alder Lake-S Core™ i9/i7/i5/i3 Processor
- Scalable Design with Optional Scalable Expansion Deck for I/O Modules Expansion
- Compact Size with DIN-Rail Mount Support
- Supports Dual PCIex4 NVMe SSD with RAID Function

Certifications

EN 61000-6-2 EN 61000-6-4 EN 62368-1

Excellent Computing Performance

Supports 14th/13th/12th generation Intel® Core™ CPUs (35–65W), up to 96GB of 5600MHz DDR5 memory, and up to 2 NVMe SSDs. Delivers the performance required for machine vision tasks, such as vision-guided robotics, inspection, measurement, and visualization.

14 / 13 / 12th Gen

Intel Core Series

24 Cores · 32 Threads · 65W

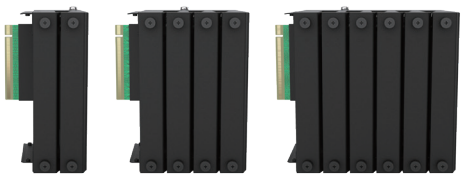
Key Heat Dissipation Technology

Two thermal designs ensure sustained performance: the patented Dynamic Thermal Mechanism design, ensuring tight fit between the CPU heatsink and top cover, an external fan provides dust-free cooling, and the patented Smart OTP monitors fan status and system/CPU temperature.
(Patent No. I893729, I870277)

Comprehensive Expansion Options

2-, 4-, and 6-slot SEDs support various SEMs for I/O, PoE, M.2 expansion, 2.5" storage, and more. enabling wireless transmission and expanding storage capacity to meet diverse application needs.

Scalable Expansion Module (SEMs)



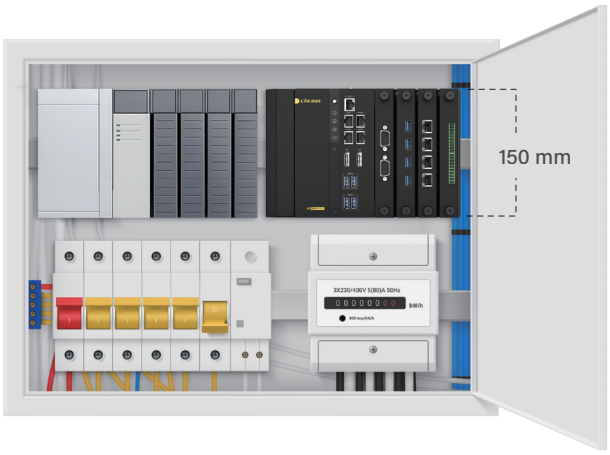
Scalable Expansion Deck (SEDs)

Easy to Configure & Plug and Play

Cincoze's SEM modules are flexible and hot-swappable. They feature Guiding Rail Alignment design for easier and faster installation.

Thoughtful Installation Design

With a compact 150 mm high design, DIN-rail mounting, and all operation interfaces and maintenance areas accessible from the front, it is ideal for cabinet or enclosure installations.



-40 – 65°C
-40 – 149°F

9 - 48VDC

EMS

EN 61000-6-2

EMI

EN 61000-6-4

Robust and Reliable

Supports wide temperature (-40°C to 65°C) and voltage (9–48 VDC) ranges, and complies with industrial EMC standards (EN 61000-6-2/4), ensuring reliable and stable operation in harsh environments.

Specifications

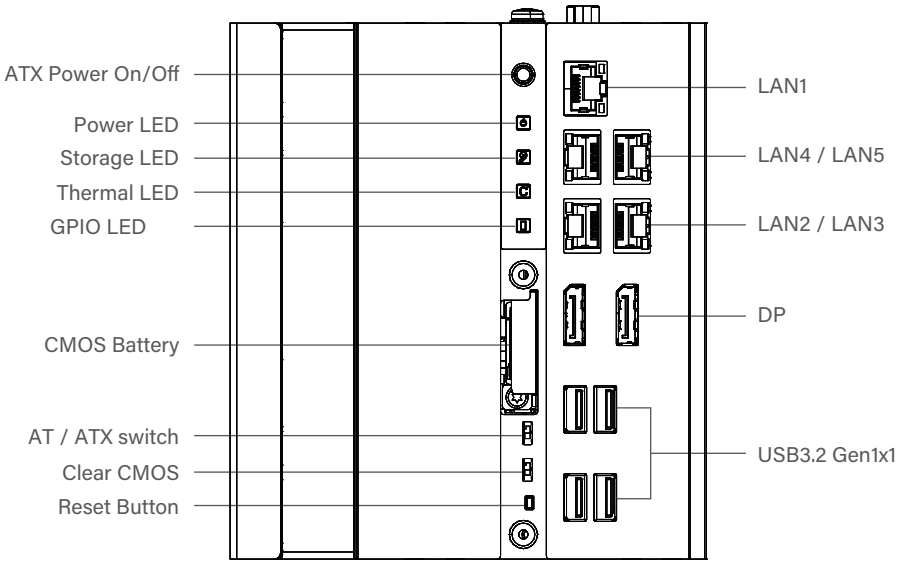
Model Name	MD-3000
System	
Processor	▪ 14th Generation Intel® Raptor Lake-S Refresh Series CPU: - Intel® Core™ i9-14900 24 Cores Up to 5.8 GHz, TDP 65W - Intel® Core™ i7-14700 20 Cores Up to 5.4 GHz, TDP 65W - Intel® Core™ i5-14500 14 Cores Up to 5.0 GHz, TDP 65W - Intel® Core™ i5-14400 10 Cores Up to 4.7 GHz, TDP 65W - Intel® Core™ i3-14100 4 Cores Up to 4.7 GHz, TDP 60W - Intel® Core™ i9-14901E 8 Cores Up to 5.6 GHz, TDP 65W - Intel® Core™ i7-14701E 8 Cores Up to 5.4 GHz, TDP 65W - Intel® Core™ i5-14501E 6 Cores Up to 5.2 GHz, TDP 65W - Intel® Core™ i5-14401E 6 Cores Up to 4.7 GHz, TDP 65W - Intel® Core™ i9-14900T 24 Cores Up to 5.5 GHz, TDP 35W - Intel® Core™ i7-14700T 20 Cores Up to 5.2 GHz, TDP 35W - Intel® Core™ i5-14500T 14 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i5-14400T 10 Cores Up to 4.5 GHz, TDP 35W - Intel® Core™ i3-14100T 4 Cores Up to 4.4 GHz, TDP 35W - Intel® Core™ i9-14901TE 8 Cores Up to 5.5 GHz, TDP 45W - Intel® Core™ i7-14701TE 8 Cores Up to 5.2 GHz, TDP 45W - Intel® Core™ i5-14501TE 6 Cores Up to 5.1 GHz, TDP 45W - Intel® Core™ i5-14401TE 6 Cores Up to 4.5 GHz, TDP 45W - Intel® Processor 300 2 Cores Up to 3.9 GHz, TDP 46W - Intel® Processor 300T 2 Cores Up to 3.4 GHz, TDP 35W ▪ 13th Generation Intel® Raptor Lake-S Series CPU: - Intel® Core™ i9-13900E 24 Cores Up to 5.2 GHz, TDP 65W - Intel® Core™ i7-13700E 16 Cores Up to 5.1 GHz, TDP 65W - Intel® Core™ i5-13500E 14 Cores Up to 4.6 GHz, TDP 65W - Intel® Core™ i5-13400E 10 Cores Up to 4.6 GHz, TDP 65W - Intel® Core™ i3-13100E 4 Cores Up to 4.4 GHz, TDP 65W - Intel® Core™ i9-13900TE 24 Cores Up to 5.0 GHz, TDP 35W - Intel® Core™ i7-13700TE 16 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i5-13500TE 14 Cores Up to 4.5 GHz, TDP 35W - Intel® Core™ i3-13100TE 4 Cores Up to 4.1 GHz, TDP 35W ▪ 12th Generation Intel® Alder Lake-S Series CPU: - Intel® Core™ i9-12900E 16 Cores Up to 5 GHz, TDP 65W - Intel® Core™ i7-12700E 12 Cores Up to 4.8 GHz, TDP 65W - Intel® Core™ i5-12500E 6 Cores Up to 4.5 GHz, TDP 65W - Intel® Core™ i3-12100E 4 Cores Up to 4.2 GHz, TDP 60W - Intel® Core™ i9-12900TE 16 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i7-12700TE 12 Cores Up to 4.7 GHz, TDP 35W - Intel® Core™ i5-12500TE 6 Cores Up to 4.3 GHz, TDP 35W - Intel® Core™ i3-12100TE 4 Cores Up to 4.0 GHz, TDP 35W - Intel® Pentium® G7400E 2 Cores Up to 3.6 GHz, TDP 46W - Intel® Pentium® G7400TE 2 Cores Up to 3.0 GHz, TDP 35W - Intel® Celeron® G6900E 2 Cores Up to 3.0 GHz, TDP 46W - Intel® Celeron® G6900TE 2 Cores Up to 2.4 GHz, TDP 35W
Chipset	▪ Intel R680E Chipset
Memory	▪ 2x DDR5 SO-DIMM sockets, support Un-buffered and ECC Type memory, up to 96GB - Core™ i9/i7: Support 5600/4800 MHz with Single Rank memory and 5200/4800 MHz with Dual Rank memory. - Core™ i5/i3/Pentium®/Celeron®/Intel® Processor: Support 4800 MHz.
BIOS	▪ AMI BIOS
Graphics	
Graphics Engine	▪ Integrated Intel® UHD Graphics 770: Core™ i9/i7/i5 ▪ Integrated Intel® UHD Graphics 730: Core™ i3 ▪ Integrated Intel® UHD Graphics 710: Pentium®/Celeron®/Intel® Processor
Maximum Display Output	▪ Supports Dual Independent Display
Display Port	▪ 2x DisplayPort Connector: 4096 x 2304 @ 60Hz * Verified maximum DP resolution: 3840x2160 @ 60Hz

I/O	
LAN	▪ 5x GbE LAN, RJ45 - GbE1: Intel® I219 - GbE2~5: Intel® I210
COM	▪ 1x RS-232/422/485 with Auto Flow Control (Supports 5V/12V), DB9
USB	▪ 4x USB 3.2 Gen1x1(5Gpbs), Type A
Storage / Expansion	
M.2 Key M Socket	▪ 1x M.2 Key M Type 2280 Socket (PCIe Gen3 x4), Support Storage / Add-on Card Expansion ▪ 1x M.2 Key M Type 2280 Socket (PCIe Gen3 x4 / SATA 3.0), Support Storage / Add-on Card Expansion
Expansion Deck	▪ 1x PCIex16 interface for Optional Scalable Expansion Deck
Other Function	
RAID	▪ Supports RAID 0/1/5/10
External FAN Connector	▪ 1x External FAN Connector (Support Smart Fan by BIOS)
Clear CMOS Switch	▪ 1x Clear CMOS Switch
Reset Button	▪ 1x Reset Button
Watchdog Timer	▪ Software Programmable, Supports 256 Levels System Reset
Status LED Indicator	▪ Power LED ▪ Storage LED ▪ Thermal LED ▪ GPIO LED
Power	
Power Button	▪ 1x ATX Power On/Off Button
Power Mode Switch	▪ 1x AT/ATX Mode Switch
Power Input	▪ 9 - 48VDC, 3-pin Terminal Block
Remote Power On/Off	▪ 1x Remote Power On/Off, 2-pin Terminal Block
Remote Power LED	▪ 1x Remote Power LED, 2-pin Terminal Block
Max Power Consumption	▪ 35W CPU: 195.2W ▪ 65W CPU: 279.4W - Test conducted with CPU, 1x RAM, and 1x storage - 100% load during burn-in testing
Inrush Current (Peak)	▪ 35W CPU: 9.0A@24V ▪ 65W CPU: 9.026A@24V
Physical	
Dimension (W x D x H)	▪ 135.5 x 132 x 152.2 mm
Weight Information	▪ 3.03 kg
Mechanical Construction	▪ Extruded Aluminum with Heavy Duty Metal
Mounting	▪ Wall / DIN-RAIL Mount
Physical Design	▪ Cableess Design ▪ Jumper-less Design
Reliability & Protection	
Reverse Power Input Protection	▪ Yes
Over Voltage Protection	▪ Protection Range: 51~58V ▪ Protection Type: shut down operating voltage, re-power on at the preset level to recover
Over Current Protection	▪ 15A

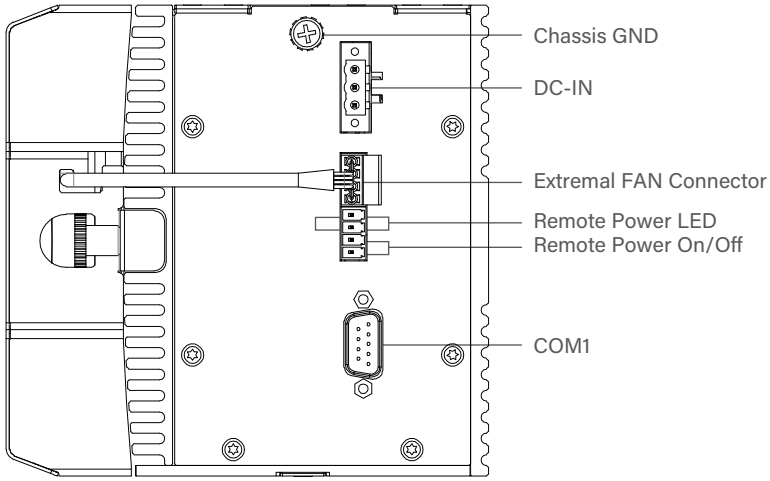
CMOS Battery Backup	▪ SuperCap Integrated for CMOS Battery Maintenance-free Operation
MTBF	▪ 356,683 Hours - Database: Telcordia SR-332 Issue3, Method 1, Case 3
Operating System	
Windows	▪ Windows® 10, Windows® 11
Linux	▪ Ubuntu 22.04
Environment	
Operating Temperature	▪ 35W TDP Processor: -40°C to 65°C (-40 °F to 149°F) ▪ 45W TDP Processor: -40°C to 55°C (-40°F to 131°F) ▪ 65W TDP Processor: -40°C to 45°C (-40°F to 113°F) * PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling) * With external fan, extended temperature peripherals; Ambient with air flow * According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14
Storage Temperature	▪ -40°C to 85°C (-40 °F to 185°F)
Relative Humidity	▪ 95%@65°C
Shock	▪ Operating, 30 Grms, Half-sine 11 ms Duration (w/ External Fan & SSD, according to IEC60068-2-27)
Vibration	▪ Random Vibration: Operating, 3 Grms, 5-500 Hz, 3 Axes (w/SSD, according to IEC60068-2-64) ▪ Sinusoidal Vibration: Operating, 1 Grms, 10-500 Hz, 3 Axes (w/ External Fan & SSD, according to IEC60068-2-6)
EMC	▪ CE, UKCA, FCC, ICES-003 Class A
EMI	▪ CISPR 32 Conducted & Radiated: Class A ▪ EN/BS EN 55032 Conducted & Radiated: Class A ▪ EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A ▪ EN/BS EN61000-3-3 Voltage fluctuations & flicker ▪ FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A
EMS	▪ EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV ▪ EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 10 V/m ▪ EN/IEC 61000-4-4 EFT: AC Power: 2 kV; DC Power: 1 kV; Signal: 1 kV ▪ EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV ▪ EN/IEC 61000-4-6 CS: 10V ▪ EN/IEC 61000-4-8 PFMF: 50 Hz, 30A/m ▪ EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 1 cycles at 60 Hz
Industrial Environment	▪ EMC - EN/BS/IEC 61000-6-4: 2019 Class A - EN/BS/IEC 61000-6-2: 2019
Safety	▪ UL, cUL, CB, IEC, EN 62368-1

External Layout

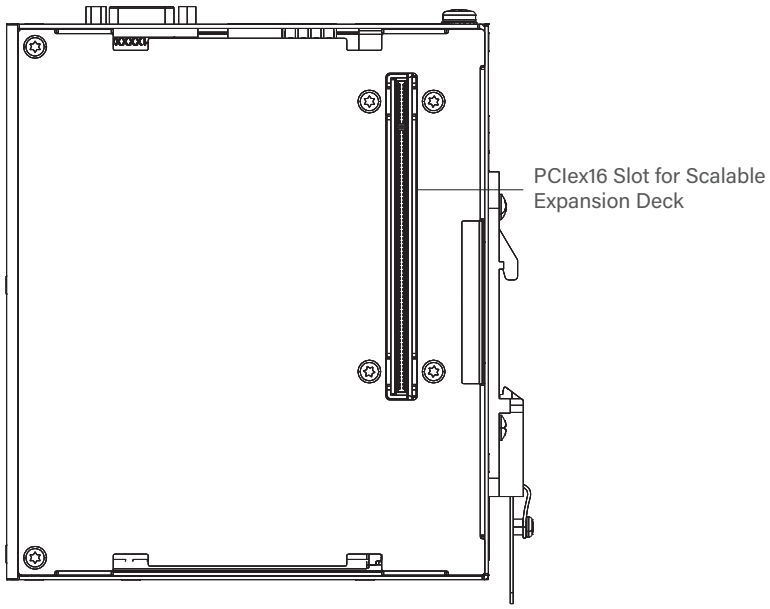
Front I/O



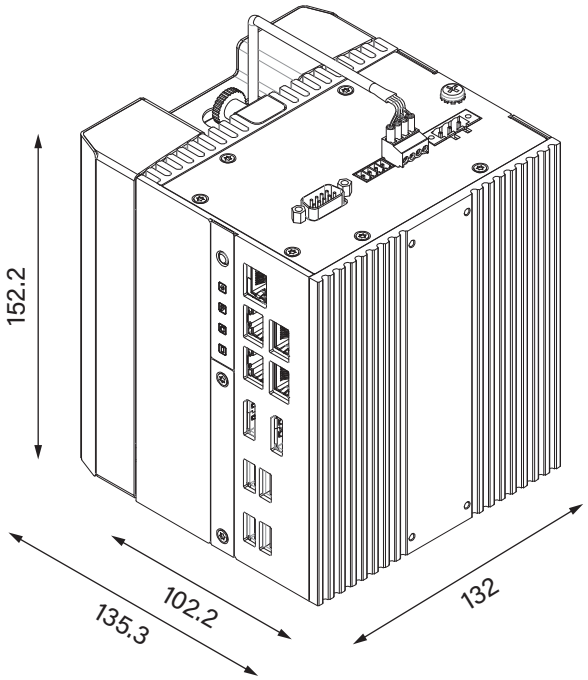
Top I/O



R-Side I/O



Dimensions



Unit: mm

Ordering Information

Available Models

Model No.	Description
MD-3000-R10	14/13/12th Generation Intel Core Series Processors, High Performance and Scalable DIN-Rail Computer

Package Checklist

- MD-3000 DIN-Rail Computer x1
- CPU Heatsink Kit x1
- Screw Pack x1
- Power Terminal Block Connector x1
- Remote Function Terminal Block Connector x 1

Optional Scalable Expansion Deck

Model No.	Description
SED-201-R10	2-Slot Scalable Expansion Deck, Supports up to 2 I/O Modules
SED-401-R10	4-Slot Scalable Expansion Deck, Supports up to 4 I/O Modules
SED-402-R10	4-Slot Scalable Expansion Deck, Supports up to 2 I/O Modules and 2 Storage Modules
SED-601-R10	6-Slot Scalable Expansion Deck, Supports up to 4 I/O Modules and 2 Storage Modules

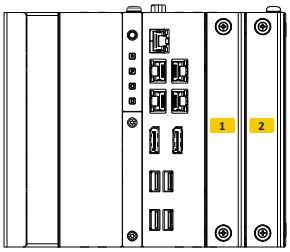
Optional Scalable Expansion Module

Model No.	Description
SEM-LAN101-R10	Scalable Expansion Module with 4x 1GbE LAN Ports, RJ45 Connector, 1 Deck
SEM-MLAN101-R10	Scalable Expansion Module with 4x 1GbE LAN Ports, M12 A-Coded Connector, 1 Deck
SEM-POE201-R10	Scalable Expansion Module with 4x 1GbE PoE Ports, RJ45 Connector, 2 Decks
SEM-MPOE201-R10	Scalable Expansion Module with 4x 1GbE PoE Ports, M12 A-Coded Connector, 2 Decks
SEM-10GLAN101-R10	Scalable Expansion Module with 2x 10GbE LAN Ports, RJ45 Connector, 1 Deck
SEM-10GPOE201-R10	Scalable Expansion Module with 2x 10GbE PoE Ports, RJ45 Connector, 2 Decks
SEM-USB101-R10	Scalable Expansion Module with 4x USB3.2 Gen1 (5Gbps), Type A, 1 Deck
SEM-COM101-R10	Scalable Expansion Module with 2x RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck
SEM-ICOM101-R10	Scalable Expansion Module with 2x Isolated RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck
SEM-DIO101-R10	Scalable Expansion Module with 16x Isolated DIO (8-in/8-out), 20-pin Terminal Block, 1 Deck
SEM-M2B101-R10	Scalable Expansion Module with 1x M.2 Key B Socket Type 2242/3052/2260/2280, 1 Deck
SEM-M2E101-R10	Scalable Expansion Module with 1x M.2 Key E Socket Type 2230, 1 Deck
SEM-SAT101-R10	Scalable Expansion Module with 1x 2.5" HDD/SSD SATA Drive Bay, 1 Deck

Optional Accessories

Model No.	Description
SDR-480-24	DIN Rail Power Supplies 480W 24V 20A PFC Function, SDR-480-24
Power Cable	1M Power Cable with 3-Pin Terminal Block Plug, Stripped and Tinned End with Tube
WALL01-R10	Wall Mount Kit for DA & MD Series

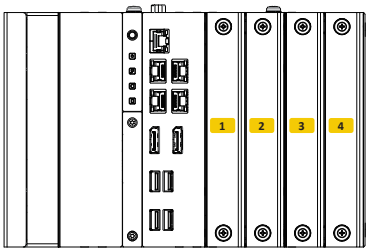
Optional Module Configuration – SED-201



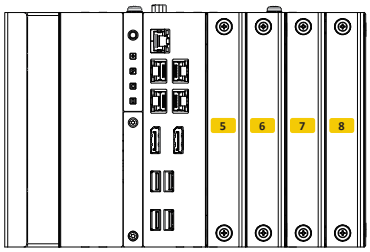
MD-3000 with SED-201

Model No.	Description	1	2
SEM-LAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, RJ45 Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V
SEM-MLAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, M12 A-Coded Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V
SEM-10GLAN101-R10 	Scalable Expansion Module with 2x 10GbE LAN Ports, RJ45 Connector, 1 Deck	V	V
SEM-POE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, RJ45 Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	
SEM-MPOE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, M12 A-Coded Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	
SEM-10GPOE201-R10 	Scalable Expansion Module with 2x 10GbE PoE Ports, RJ45 Connector, 2 Decks	V	
SEM-USB101-R10 	Scalable Expansion Module with 4x USB3.2 Gen1 (5Gbps), Type A, 1 Deck	V	V
SEM-COM101-R10 	Scalable Expansion Module with 2x RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V
SEM-ICOM101-R10 	Scalable Expansion Module with 2x Isolated RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V
SEM-DIO101-R10 	Scalable Expansion Module with 16x Isolated DIO (8-in/8-out), 20-pin Terminal Block, 1 Deck	V	V
SEM-M2B101-R10 	Scalable Expansion Module with 1x M.2 Key B Socket Type 2242/3052/2260/2280, 1 Deck	V	V
SEM-M2E101-R10 	Scalable Expansion Module with 1x M.2 Key E Socket Type 2230, 1 Deck	V	V
SEM-SAT101-R10 	Scalable Expansion Module with 1x 2.5" HDD/SSD SATA Drive Bay, 1 Deck	-	-

Optional Module Configuration – SED-401 / SED-402



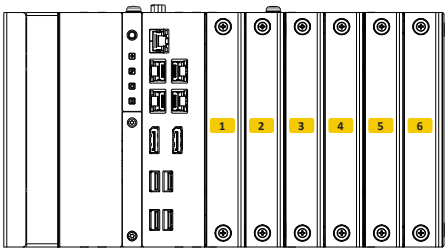
MD-3000 with SED-401



MD-3000 with SED-402

Model No.	Description	1	2	3	4	5	6	7	8
SEM-LAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, RJ45 Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V	V	V	V	V	-	-
SEM-MLAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, M12 A-Coded Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V	V	V	V	V	-	-
SEM-10GLAN101-R10 	Scalable Expansion Module with 2x 10GbE LAN Ports, RJ45 Connector, 1 Deck	V	V	V	V	V	V	-	-
SEM-POE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, RJ45 Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V		V		V		-	-
SEM-MPOE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, M12 A-Coded Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V		V		V		-	-
SEM-10GPOE201-R10 	Scalable Expansion Module with 2x 10GbE PoE Ports, RJ45 Connector, 2 Decks	V		V		V		-	-
SEM-USB101-R10 	Scalable Expansion Module with 4x USB3.2 Gen1 (5Gbps), Type A, 1 Deck	V	V	V	V	V	V	-	-
SEM-COM101-R10 	Scalable Expansion Module with 2x RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V	V	V	V	V	-	-
SEM-ICOM101-R10 	Scalable Expansion Module with 2x Isolated RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V	V	V	V	V	-	-
SEM-DIO101-R10 	Scalable Expansion Module with 16x Isolated DIO (8-in/8-out), 20-pin Terminal Block, 1 Deck	V	V	V	V	V	V	-	-
SEM-M2B101-R10 	Scalable Expansion Module with 1x M.2 Key B Socket Type 2242/3052/2260/2280, 1 Deck	V	V	V	V	V	V	-	-
SEM-M2E101-R10 	Scalable Expansion Module with 1x M.2 Key E Socket Type 2230, 1 Deck	V	V	V	V	V	V	-	-
SEM-SAT101-R10 	Scalable Expansion Module with 1x 2.5" HDD/SSD SATA Drive Bay, 1 Deck	-	-	-	-	-	-	V	V

Optional Module Configuration – SED-601



MD-3000 with SED-601

Model No.	Description	1	2	3	4	5	6
SEM-LAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, RJ45 Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V	V	V	-	-
SEM-MLAN101-R10 	Scalable Expansion Module with 4x 1GbE LAN Ports, M12 A-Coded Connector, 1 Deck * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V	V	V	V	-	-
SEM-10GLAN101-R10 	Scalable Expansion Module with 2x 10GbE LAN Ports, RJ45 Connector, 1 Deck	V	V	V	V	-	-
SEM-POE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, RJ45 Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V		V		-	-
SEM-MPOE201-R10 	Scalable Expansion Module with 4x 1GbE PoE Ports, M12 A-Coded Connector, 2 Decks * Maximum 1x 1GbE LAN or PoE module can be installed at a time.	V		V		-	-
SEM-10GPOE201-R10 	Scalable Expansion Module with 2x 10GbE PoE Ports, RJ45 Connector, 2 Decks	V		V		-	-
SEM-USB101-R10 	Scalable Expansion Module with 4x USB3.2 Gen1 (5Gbps), Type A, 1 Deck	V	V	V	V	-	-
SEM-COM101-R10 	Scalable Expansion Module with 2x RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V	V	V	-	-
SEM-ICOM101-R10 	Scalable Expansion Module with 2x Isolated RS-232/422/485, (Supports 5V/12V), DB9, 1 Deck	V	V	V	V	-	-
SEM-DIO101-R10 	Scalable Expansion Module with 16x Isolated DIO (8-in/8-out), 20-pin Terminal Block, 1 Deck	V	V	V	V	-	-
SEM-M2B101-R10 	Scalable Expansion Module with 1x M.2 Key B Socket Type 2242/3052/2260/2280, 1 Deck	V	V	V	V	-	-
SEM-M2E101-R10 	Scalable Expansion Module with 1x M.2 Key E Socket Type 2230, 1 Deck	V	V	V	V	-	-
SEM-SAT101-R10 	Scalable Expansion Module with 1x 2.5" HDD/SSD SATA Drive Bay, 1 Deck	-	-	-	-	V	V

Updated: Dec. 26, 2025