cincoze™

GM-1000

Rugged Embedded GPU Computer

Key Benefits

- **High Performance** with 9th/8th Gen Intel® Xeon® and Core™ processors supporting up to 8 cores
- **GPU Acceleration** through MXM 3.1 Type A/B expansion for compatible NVIDIA® and AMD® modules
- **Flexible Connectivity** with expandable LAN, USB, serial and digital I/O interfaces
- **Rugged Reliability** supporting 5 Grms vibration and 50 Grms shock tolerance
- **Compact Design** with a 260 × 200 × 85 mm chassis and multiple mounting options



Overview

The GM-1000 is a rugged embedded GPU computer designed for demanding machine vision, image processing and artificial intelligence applications. Supporting 9th/8th Gen Intel® Xeon® and Core™ processors with up to eight cores, the system combines high-performance computing with MXM 3.1 GPU expansion. Its compact aluminium chassis, flexible I/O connectivity and advanced thermal design provide reliable operation across demanding industrial environments, while multiple mounting options and wide-range DC power input support versatile deployment.

Certifications

CMI TECHNOLOGY CFM TECHNOLOGY MEC TECHNOLOGY





TRIED, TESTED & **TRUSTED**

Specifications

Model Name	GM-1000
System	
Processor	• 9th Generation Intel® Coffee Lake-R CPU: - Intel® Xeon® E-2278GE 8 Cores Up to 4.7 GHz, TDP 80W - Intel® Xeon® E-2278GEL 8 Cores Up to 3.9 GHz, TDP 35W - Intel® Core™ i7-9700E 8 Cores Up to 4.4 GHz, TDP 65W - Intel® Core™ i5-9500E 6 Cores Up to 4.2 GHz, TDP 65W - Intel® Core™ i3-9100E 4 Cores Up to 3.7 GHz, TDP 65W - Intel® Core™ i7-9700TE 8 Cores Up to 3.8 GHz, TDP 35W - Intel® Core™ i5-9500TE 6 Cores Up to 3.6 GHz, TDP 35W - Intel® Core™ i3-9100TE 4 Cores Up to 3.2 GHz, TDP 35W • 8th Generation Intel® Coffee Lake CPU: - Intel® Xeon® E-2176G 6 Cores up to 4.7 GHz, TDP 80W - Intel® Xeon® E-2124G 4 Cores up to 4.5 GHz, TDP 71W - Intel® Core™ i7-8700 6 Cores up to 4.6 GHz, TDP 65W - Intel® Core™ i5-8500 6 Cores, up to 4.1 GHz, TDP 65W - Intel® Core™ i3-8100 4 Cores 3.6 GHz, TDP 65W - Intel® Core™ i7-8700T 6 Cores up to 4.0 GHz, TDP 35W - Intel® Core™ i5-8500T 6 Cores up to 3.5 GHz, TDP 35W - Intel® Core™ i3-8100T 4 Cores 3.1 GHz, TDP 35W - Intel® Pentium® G5400 2 Cores 3.7 GHz, TDP 58W - Intel® Pentium® G5400T 2 Cores 3.1 GHz, TDP 35W - Intel® Celeron® G4900 2 Cores 3.1 GHz, TDP 54W - Intel® Celeron® G4900T 2 Cores 2.9 GHz, TDP 35W
Chipset	• Intel® C246
BIOS	• AMI BIOS
Memory	• 2x DDR4-2666/2400 MHz SO-DIMM Sockets • Support up to 64 GB (Un-buffered and non-ECC type) * Xeon/i7/i5: Up to DDR4 2666MHz * i3/Pentium/Celeron: Up to DDR4 2400 MHz
Graphics	
Graphics Engine	• Integrated Intel® UHD Graphics (Xeon/i7/i5/i3: UHD 630; Pentium/Celeron: UHD 610) • Supports Triple Independent Display (DVI-I/DisplayPort/HDMI®)
Audio	
Audio Codec	• Realtek® ALC888, High Definition Audio
I/O	
Connector	• 1x DVI-I Connector (VGA: 1920 x1080 @ 60 Hz; DVI-D: 1920 x1200 @ 60 Hz)
DisplayPort	• 1x DisplayPort Connector (4096 x 2304 @ 60Hz, According to CPU Specifications) * Verified maximum resolution: 3840x2160.
HDMI®	• 1x HDMI® Connector (4096 x 2160 @ 30Hz)
LAN	• 2x GbE LAN Ports (Supports WoL, Teaming, Jumbo Frame & PXE), RJ45 - GbE1: Intel® I219-LM - GbE2: Intel® I210
Flow Control	• 4x RS-232/422/485 Ports with Auto Flow Control (Support 5V/12V), DB9
USB	• 4x 10Gbps USB3.2 Gen2 Ports, Type-A • 4x 5Gbps USB3.2 Gen1 Ports, Type-A
Mic-in	• 1x Line-out & 1x Mic-in, Phone Jack 3.5mm
Power On/Off Switch Button	• 1x ATX Power On/Off Button
Reset Button	• 1x Reset Button
Mode Switch	• 1x AT/ATX Mode Switch

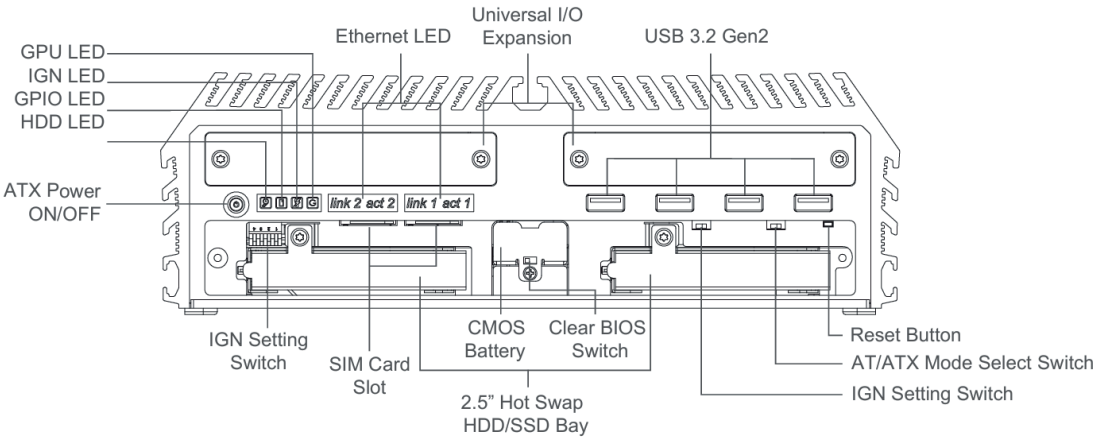
CMOS Switch	• 1x Clear CMOS Switch
Remote Power On/Off Connector	• 1x Remote Power On/Off Connector, 2-Pin Terminal Block
Terminal Block	• 2x External Fan Connectors, 4-pin Terminal Block (Supports Smart Fan by BIOS)
Storage	
SSD / HDD	• 2x SATA III (6Gbps) Front Accessible 2.5" HDD/SSD Trays (up to 15mm in Height)
mSATA	• 3x mSATA Sockets (Shared by Mini-PCIe Socket)
RAID	• Supports S/W RAID 0, 1, 5 & 10
NVMe SSD	• 1x PCIe x4 M.2 Key M 2280 Socket, Supports NVMe SSD
Expansion	
CMI (Combined Multiple I/O) Interface	• CMI (Combine Multiple I/O) Interface 1x High Speed CMI Interface for I/O Expansion - CMI-10GLAN01 : 2x 10G Intel® X550 RJ45 LAN - CMI-LAN01 : 4x 1G Intel® I210 RJ45 LAN - CMI-M12LAN01 : 4x 1G Intel® I210 M12 LAN 1x Low Speed CMI Interface - CMI-COM01 : 2x RS232/422/485, Support 5V/12V - CMI-DIO01 : 16x DIO (8 in, 8 out)
CFM (Control Function Module) Interface	• 1x CFM IGN Interface - CFM-IGN01: Ignition Sensing Function
MXM GPU Module Expansion	• 1x MXM Carrier Board Interface for MXM GPU Module Expansion
M.2 Key E Socket	• 1x M.2 Key E Type 2230 Socket, Support Wireless/Intel CNVi Module Expansion
Mini-PCIe Sockets	• 3x Full-size Mini-PCIe Sockets
SIM Sockets	• 2x SIM Sockets
Antenna Holes	• 2x Antenna Holes
Other Function	
Instant Reboot	• Support 0.2 sec. Instant Reboot Technology
CMOS Battery	• SuperCap Integrated for CMOS Battery Maintenance-free Operation
WatchDog Timer	• Software Programmable Supports 256 Levels System Reset
Power Requirement	
Power Type	• AT / ATX
Total Power Budget	• 360W
Power Supply Voltage	• 9~48VDC, Single Power Source
Connector Type	• 2x 3-pin Terminal Block, Each Terminal Block Current Limitation is 15A
Power input voltage	• Power input voltage from 9V to 23V must use dual power connectors, power input voltage from 24V to 48V can use single power connector
Power Adaptor	• Optional AC/DC 24V Power Adapter, 220W
Physical	
Dimension (W x D x H)	• 260 x 200 x 85 mm
Weight	• 4.6kg
Construction	• Extruded Aluminum with Heavy Duty Metal
Mounting	• Wall Mount/VESA Mount/DIN Rail/Side Mount

Physical Design	• Unibody Chassis • Fanless Design • Jumper-less Design • Cable-less Design
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	• 30A
Operating System	
Windows	• Windows® 10
Linux	• Supports by Project
Environment	
Operating Temperature	• CPU 35W, Operating Temp. -40°C - 70°C (-40°F to 158°F) • CPU 65W with FAN module, Operating Temp. -40°C - 60°C (-40°F to 140°F) • CPU 80W with FAN module, Operating Temp. -40°C - 55°C (-40°F to 131°F) * PassMark BurnInTest: 100% CPU, 2D Graphics (without thermal throttling) * For GM-1000 + MXM GPU Module operating temperature, please refer to the last page – Operating Temperature Matrix Table for more information * With 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% RH @ 70˚C (Non-condensing)
Shock	• Operating, 50 Grms, Half-sine 11 ms Duration * w/ SSD, according to IEC60068-2-27
Vibration	• Operating, 5 Grms, 5-500 Hz, 3 Axes * w/ SSD, according to IEC60068-2-64
MTBF	• 331,596 Hours, Database: Telcordia SR-332 Issue 3, Method 1, Case 3
EMC	• CE, UKCA, FCC, ICES-003 Class A • EN 50155 (EN 50121-3-2 Only) • E-mark
EMI	• CISPR 32 Conducted & Radiated: Class A • EN/BS EN 50121-3-2 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: 6 kV; Air: 8 kV • EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 20 V/m • EN/IEC 61000-4-4 EFT (with optional PPM module): AC Power: 2 kV; DC Power: 1 kV; Signal: 2 kV • EN/IEC 61000-4-5 Surges: AC Power: 2 kV • EN/IEC 61000-4-6 CS: 10V • EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m • EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 0.5 cycles at 50 Hz
Safety	• LVD IEC/EN 62368-1

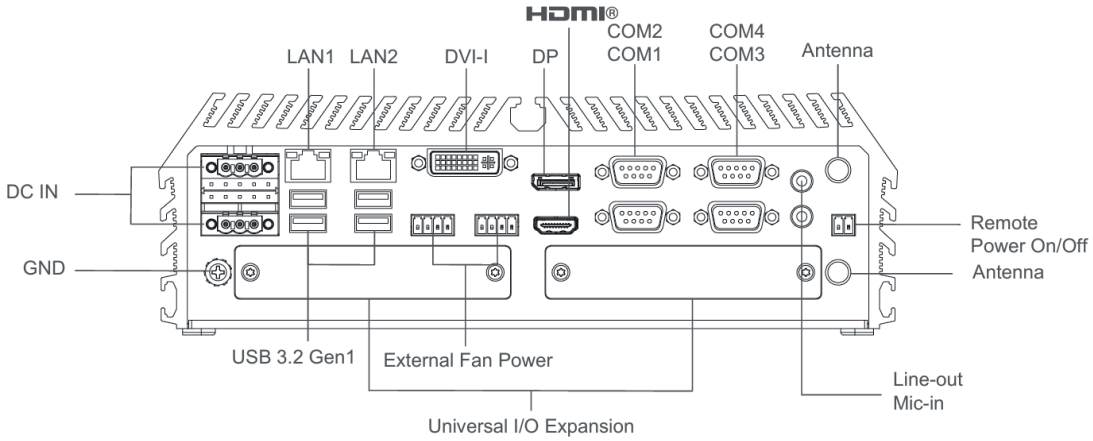
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External Layout

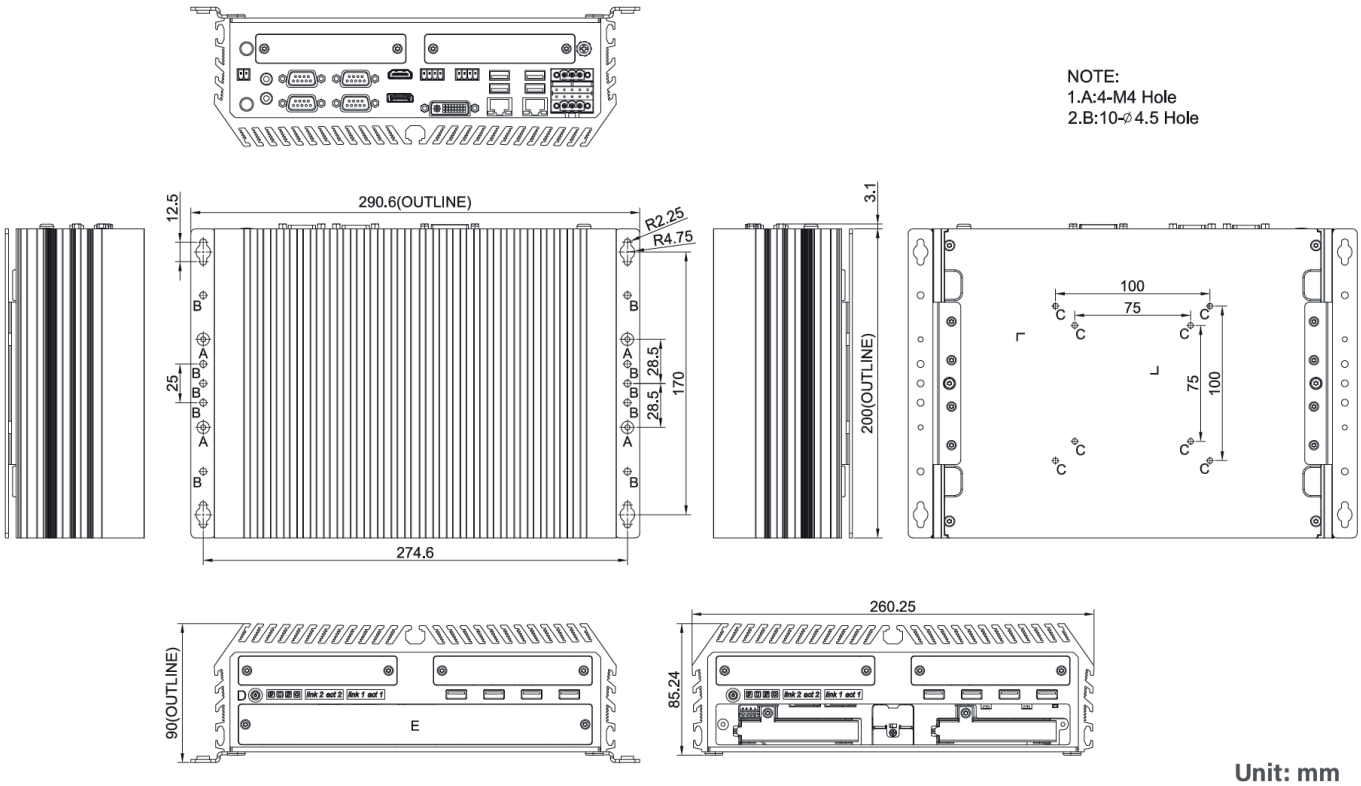
Front I/O



Rear I/O



Dimensions



Ordering Information

Available Models

Model No.	Description
GM-1000-R10	9th/8th Gen Intel® Xeon®/Core™ Embedded GPU Computer, Supports 1x MXM 3.1 GPU Expansion Socket

Package Checklist

• GM-1000 GPU Computer x 1	• Remote Power On/Off Terminal Block Connector x 1
• CPU Heat Sink and Thermal Pad x 1	• Fan Terminal Block Connector x 2
• Screw Pack x 1	• DVI-I to VGA Adaptor
• Power Terminal Block Connector x 2	• Wall Mount Kit x1

Optional MXM GPU Module & Accessories

Model No.	Description
MXM-AD5000-R10	NVIDIA Embedded RTX AD5000 MXM Type B, 16G, 80W Kit with Heatsink and Thermal Pad
MXM-AD3500-R10	NVIDIA Embedded RTX AD3500 MXM Type B, 12G, 80W Kit with Heatsink and Thermal Pad
MXM-AD2000-R10	NVIDIA Embedded RTX AD2000 MXM Type A, 8G, 60W Kit with Heatsink and Thermal Pad
MXM-A4500-R10	NVIDIA Embedded RTX A4500 MXM Type B, 16G, 80W Kit with Heatsink and Thermal Pad
MXM-A2000-R10	NVIDIA Embedded RTX A2000 MXM Type A, 8G, 60W Kit with Heatsink and Thermal Pad
MXM-A1000-R10	NVIDIA Embedded RTX A1000 MXM Type A, 4G, 60W Kit with Heatsink and Thermal Pad
MXM-A500-R10	NVIDIA Embedded RTX A500 MXM Type A, 4G, 40W Kit with Heatsink and Thermal Pad
MXM-T1000-R10	NVIDIA Quadro Embedded T1000 MXM Kit with Heatsink and Thermal Pad
MXM-HSKA-01	MXM Type A Heatsink Kit for MXM-A500
MXM-HSKA-02	MXM Type A Heatsink Kit for MXM-A1000, MXM-A2000, and MXM-AD2000
MXM-HSKA-03	MXM Type A Heatsink Kit for MXM-T1000
MXM-HSKB-01	MXM Type B Heatsink Kit for MXM-A4500
MXM-HSKB-03	MXM Type B Heatsink Kit for MXM-AD3500 & MXM-AD5000

Optional Modules & Accessories

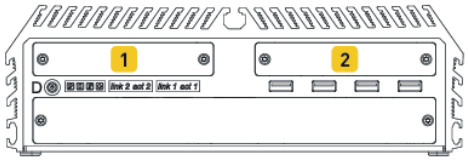
Model No.	Description
CB-DP01-R10	Carrier Board Module with 1x MXM 3.1 Interface and 4x DisplayPort Output / 1x Universal Bracket with 4x DP Cutout
CB-DP02-R10	Carrier board with one MXM 3.1 interface and no DisplayPort output. (Compatible with GM-1000 standard universal bracket)
CB-DP04-R10/UB1329	Carrier Board with 1x MXM 3.1 Interface and 4x DisplayPort Output / 1x Universal Bracket with 4xDP Cutout
CB-DP05-R10/UB1336-R10	Carrier Board with 1x MXM 3.1 Interface and 3x DisplayPort Output / 1x Universal Bracket with 3xDP Cutout
CMI-LAN01-R12/UB1312	CMI Module with 4x Intel® I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series
CMI-2P5GLAN01-R10/UB1312	CMI Module with 4x Intel 2.5GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series
CMI-10GLAN01-R10/UB1328	CMI Module with 2x Intel® X550 10GbE LAN, RJ45 Port / 1x Universal Bracket with 2x RJ45 Cutout for GM Series

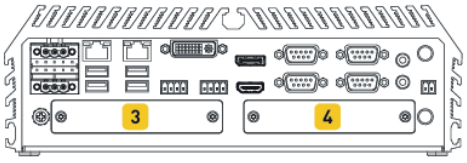
CMI-M12LAN01-R12/UB1310	CMI Module with M12 Connector, 4x Intel® GbE LAN / 1x Universal Bracket with 4x M12 Cutout for GM Series
CMI-XM12LAN01-R10/ UB1330-R10	CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded Cutout
CMI-10GXM12LAN01-R10/ UB1337-R10	CMI Module with 2x Intel 10GbE LAN, M12 X-Coded Connector / Universal Bracket with 2x M12 X-coded Cutout
CMI-CAN01-R10/UB1338-R10	CMI Module with 2x CAN FD Ports / Universal Bracket with 2x DB9 and 1× Switch Cutout for CMI-CAN Expansion
CMI-DIO01/UB1318	CMI Module with 16DIO (8in 8out) / 1xUniversal Bracket with DIO Cutout for DX & GM Series
CMI-COM01/UB1303	CMI Module with 2x RS232/422/485 (Support 5V/12V) / 1x Universal Bracket with 2x DB9 Cutout for DX & GM Series
CMI-LAN01-R12/UB1312/ CFM-PoE01	CMI Module with 4x Intel® I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series / CFM Module with PoE Control Function, Individual Port 25.5W
CMI-M12LAN01-R12/ UB1310/CFM-PoE01	CMI Module with M12 Connector, 4x Intel® GbE LAN / 1x Universal Bracket with 4x M12 Cutout for GM Series / CFM Module with PoE Control Function, Individual Port 25.5W
CFM-PoE01	PoE Control Function Module, Power Boost 50-57V
CFM-IGN01	CFM Module with Power Ignition Sensing Control Function, 12V/24V Selectable
UB0932-R10	Universal Bracket with 3x Antenna Cutout
UB1332-R10	Universal Bracket with 3x Antenna Cutout
MEC-COM-M212-TDB9/UB1303	Mini-PCIe Module with 2x RS-232 Serial Ports, 1x Thin DB9 Cable / 1x Universal Bracket with 2x DB9 Cutout for DX & GM Series
MEC-COM-M334-TDB9/ 2xUB1303	Mini-PCIe Module with 4x RS232/422/485 Serial Ports, 2x Thin DB9 Cable / 2x Universal Bracket with 2x DB9 Cutout forDX & GM Series
MEC-LAN-M102-30/UB1311	Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout for DX & GM Series
MEC-USB-M102-30/UB1314	Mini-PCIe Module with 2x USB 3.2 Gen1 Ports, 1x 30cm cable / 1x Universal Bracket with 2x USB Cutout
FAN-EX102	External Fan Kit with 2x 4pin Terminal Block Plug for GM Series, Support Smart Fan Function
SIDE-GM	GM Series side mount kit
DIN01	DIN-RAIL Mount Kit, KMRH-K175
GST220A24-CIN	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, level VI
GST360A24-CIN	Adapter AC/DC 24V 15A 360W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, level VI
RSD-200D-24	Railway Single Output DC-DC Converter 200W / DC 24V
PPM-I360-03-R10	360W Power Protection Module for GM Series

Carrier Board and MXM GPU Compatibility Matrix

	CB-DP01	CB-DP02 (compatible with standard UB)	CB-DP04/UB1329	CB-DP05/UB1336
MXM-AD5000			V	
MXM-AD3500			V	
MXM-AD2000				V
MXM-A500		V		
MXM-A1000	V			
MXM-A2000	V			
MXM-A4500			V	
MXM-T1000	V			

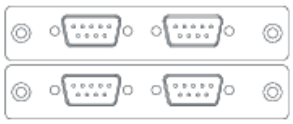
Optional Module Configuration





Model No.	Description	1	2	3	4
CB-DP01-R10/UB1329	Carrier Board Module with 1x MXM 3.1 Interface and 4x DisplayPort Outout / 1x Universal Bracket with 4x DP Cutout	V	-	-	-
CB-DP02-R10	Carrier board with one MXM 3.1 interface and no DisplayPort Output (Compatible with GM-1000 standard universal bracket)	V	-	-	-
CB-DP04-R10/UB1329	Carrier Board with 1x MXM 3.1 Interface and 4x DisplayPort Output / 1x Universal Bracket with 4xDP Cutout	V	-	-	-
CB-DP05-R10/UB1336-R10	Carrier Board with 1x MXM 3.1 Interface and 3x DisplayPort Output / 1x Universal Bracket with 3x DP Cutout	V	-	-	-
CMI-LAN01-R12/UB1312	CMI Module with 4x Intel® I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series	-	V	-	-
CMI-2P5GLAN01-R10/UB1312	CMI Module with 4x Intel 2.5GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series	-	V	-	-
CMI-10GLAN01-R10/UB1328	CMI Module with 2x Intel® X550 10GbE LAN, RJ45 Port / 1x Universal Bracket with 2x RJ45 Cutout for GM Series	-	V	-	-
CMI-M12LAN01-R12/UB1310	CMI Module with M12 Connector, 4x Intel® GbE LAN / 1x Universal Bracket with 4x M12 Cutout for GM Series	-	V	-	-
CMI-XM12LAN01-R10/UB1330-R10	CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded Cutout	-	V	-	-
CMI-10GXM12LAN01-R10/UB1337-R10	CMI Module with 2x Intel 10GbE LAN, M12 X-Coded Connector / Universal Bracket with 2x M12 X-coded Cutout	-	V	-	-
CMI-CAN01-R10/UB1338-R10	CMI Module with 2x CAN FD Ports / Universal Bracket with 2x DB9 and 1x Switch Cutout for CMI-CAN Expansion	-	V	-	-
CMI-DIO01/UB1318	CMI Module with 16DIO (8in 8out) / 1xUniversal Bracket with DIO Cutout for DX & GM Series	-	-	-	V
CMI-COM01/UB1303	CMI Module with 2x RS232/422/485 (Support 5V/12V) / 1x Universal Bracket with 2x DB9 Cutout for DX & GM Series	-	-	-	V
CMI-LAN01-R12/UB1312/CFM-PoE01	CMI Module with 4x Intel® I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for GM Series / CFM Module with PoE Control Function, Individual Port 25.5W	-	V	-	-
CMI-M12LAN01-R12/UB1310/CFM-PoE01	CMI Module with M12 Connector, 4x Intel® GbE LAN / 1x Universal Bracket with 4x M12 Cutout for GM Series / CFM Module with PoE Control Function, Individual Port 25.5W	-	V	-	-
MEC-COM-M212-TDB9/UB1303	Mini-PCIe Module with 2x RS-232 Serial Ports, 1x Thin DB9 Cable / 1x Universal Bracket with 2x DB9 Cutout for DX & GM Series	-	-	V	V

V : Compatible

MEC-COM-M334-TDB9/2xUB1303 	Mini-PCIe Module with 4x RS232/422/485 Serial Ports, 2x Thin DB9 Cable / 2x Universal Bracket with 2x DB9 Cutout forDX & GM Series	-	-	V	V
MEC-LAN-M102-30/UB1311 	Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout for DX & GM Series	-	-	V	-
MEC-USB-M102-30/UB1314 	Mini-PCIe Module with 2x USB Ports, 1x 30cm cable / 1x Universal Bracket with 2x USB Cutout for DX & GM Series	-	-	V	-
UB0932-R10 	Universal Bracket with 3x Antenna Cutout	-	-	V	V
UB1332-R10 	Universal Bracket with 3x Antenna Cutout	V	V	-	-

V : Compatible

Operating Temperature Matrix Table

MXM GPU TDP	35W CPU	65W CPU	80W CPU
60W~80W	UP to 40°C (104°F)	UP to 40°C (104°F)	UP to 40°C[1] (104°F)
50W	UP to 50°C (122°F)	UP to 45°C (113°F)	UP to 45°C (113°F)

[1] The GM-1000 with an 80W processor and MXM-A2000 supports an operating temperature of up to 35°C (95°F).

* External Fan Kit - FAN-EX102 is required for above configurations.
* PassMark BurnInTest: 100% CPU, 2D Graphics (without thermal throttling)
* Furmark: 1920x 1080, 8x MSAA (without thermal throttling)

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CAPTEC

Delivering end-to-end, like no one else.
Bring us your challenge & experience the difference.

Corporate & EMEA Headquarters
Fareham, Hampshire, UK
+44 (0) 1489 866 066
sales-emea@captec-group.com

Subsystems Engineering UK
Farnborough, Hampshire, UK
+44 (0) 1252 512 919
sales-cse@captec-group.com

Canada Headquarters
Cambridge, ON, Canada
+1 (519) 650 4000
sales-canada@captec-group.com

USA Headquarters
Buffalo, NY, USA
+1 (519) 650 4000
sales-usa@captec-group.com

captec-group.com

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