# DS-1302

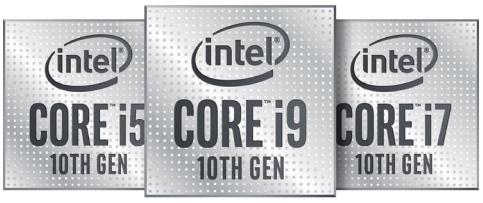
10th Generation Intel® Xeon/Core™ Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 2 PCI/PCIe Expansion Slot


## High Performance, Highly Expandable

## Overview

The DS-1302 is a powerful embedded computer and brings unrivalled performance. It has versatile functionalities and rich industrial I/O. And most importantly, it has dual PCI/PCIe expansion capability. Equipped with Cincoze's CMI, CFM, MEC modular expansion, customization for additional I/O or other functionality to fulfill different applications couldn't be easier. The DS-1302 meets the requirements of industrial environments and is certified with industry standards. It delivers ultimate and reliable performance for factory automation, industrial automation and rolling stock applications.

- 10-core 10th-gen Intel® Xeon® and Core™ i9/i7/i5/i3 CPU (max 80 W TDP)
- 2x GbE LAN and optional 2x 10GbE LAN
- 2x 2.5" SATA storage, 3x mSATA sockets, 1x M.2 key M for NVMe SSD
- 2x PCI/PCIe expansion slots
- 3x full-size Mini PCIe sockets, 2x SIM card slots
- Optional CMI modules for I/O expansion
- Optional CFM modules for ignition sensing & PoE
- Wide operating temperature -40°C to 70°C
- MIL-STD-810G military standard and EN50155 (EN 50121-3-2 only)




**10-CORE & 80W**

**Workstation Grade Processor Support!**

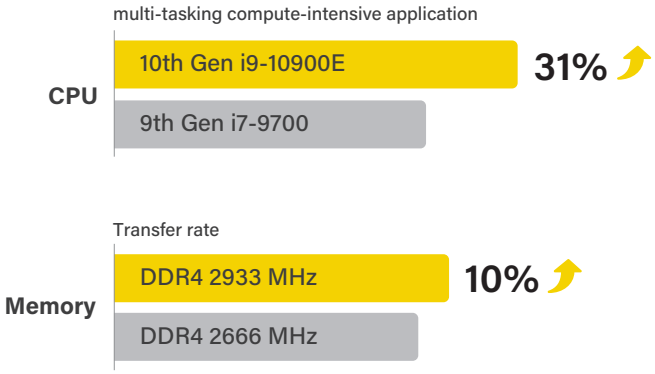
## 10-Core, Up To 80 W CPU

The DS-1300 series, powered by a workstation-grade 10th-gen Intel® Xeon® or Core™ i9/i7/i5/i3 CPU with up to 10-core architecture, provides superior processing performance. The DS-1300 supports Xeon® CPU up to 80 W TDP. It incorporates DDR4 2933/2666 MHz memory up to 64 GB, delivering unparalleled performance in a rugged, fanless system.

## More Powerful & Faster Multiplies Productivity

The DS-1300 series's 10th-gen CPU brings to 31% better integer multi-tasking for compute-intensive application performance than 9th-gen CPUs*. DDR4 2933 MHz memory further increases speed by 10%**. The processing platform delivers the performance required to consolidate multiple workloads for intelligent devices and applications.

* 31% increase for 10th-gen i9-10900E 65W vs 9th-gen i7-9700 65W CPU
** 10% increase for 2933 MHz of DS-1300 vs 2666 MHz of DS-1200.



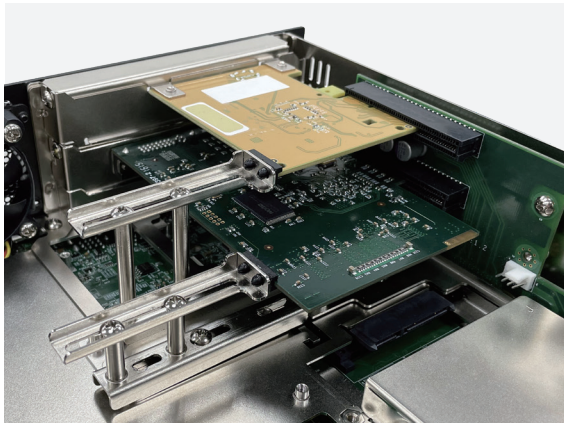


## Industrial I/O and Modular Expansion

The DS-1300 series offers a vast array of industrial-focused I/O including up to 2x GbE LAN, 6x USB 3.2, and 2x USB 2.0, 2x RS232/422/485, 2x 2.5" SATA, 3x mSATA, 1x M.2 key M for NVMe SSD, 2x SIM card slots, 3x full-size Mini-PCIe and triple independent displays (DisplayPort, HDMI, VGA). It also features modular expansion through Cincoze's CMI/CFM modules, adding additional I/O or other functionality such as high-speed 10GbE LAN, PoE, and ignition sensing.

## PCI/PCIe
## Add-on Cards

DS-1302 can accommodate dual PCI/PCIe add-on cards up to 111 mm x 235 mm (combined max 110 W). Flexible PCI/PCIe expansion allows the addition of I/O, GPU, image capture, data acquisition, and motion control cards for specific applications.



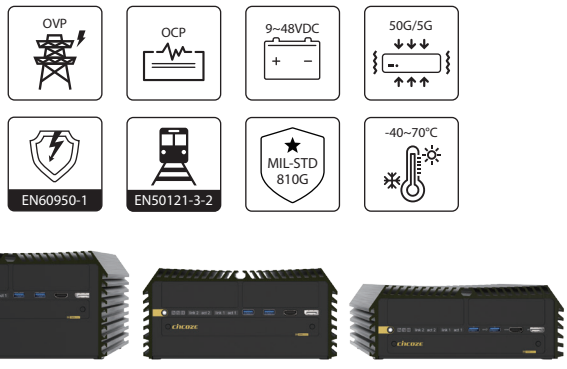
## Adjustable
## PCIe Card Retainer

The PCI/PCIe expansion slots include two adjustable card retainers that firmly secure the PCI/PCIe add-on cards. The retainer is a cool feature that provides the extra protection needed to prevent add-on cards from shaking loose in high-vibration environments like rolling stock.

PATENT PENDING

## Rugged Reliability
## Against Rigorous Environments

The DS-1300 series's fanless and cableless industrial-grade design can withstand rigorous environments. Its unique thermal design supports an extended operating temperature range from -40°C to 70°C. It has also passed stringent industry standards, including MIL-STD-810G military standard and EN50155 (EN 50121-3-2 only) for rolling stock environments.



# Specifications

## System

| | |
|---|---|
| Processor | Intel® Xeon® Series Processor ( 80W / 35W ):<br>▪ Intel® Xeon® W-1270E 8 Cores Up to 4.8 GHz, TDP 80W<br>▪ Intel® Xeon® W-1250E 6 Cores Up to 4.7 GHz, TDP 80W<br>▪ Intel® Xeon® W-1290TE 10 Cores Up to 4.5 GHz, TDP 35W<br>▪ Intel® Xeon® W-1270TE 8 Cores Up to 4.4 GHz, TDP 35W<br>▪ Intel® Xeon® W-1250TE 6 Cores Up to 3.8 GHz, TDP 35W<br>Intel® Core® Series Processor ( 65W / 35W ):<br>▪ Intel® Core™ i9-10900E 10 Cores Up to 4.7 GHz, TDP 65W<br>▪ Intel® Core™ i7-10700E 8 Cores Up to 4.5 GHz, TDP 65W<br>▪ Intel® Core™ i5-10500E 6 Cores Up to 4.2 GHz, TDP 65W<br>▪ Intel® Core™ i3-10100E 4 Cores Up to 3.8 GHz, TDP 65W<br>▪ Intel® Core™ i9-10900TE 10 Cores Up to 4.5 GHz, TDP 35W<br>▪ Intel® Core™ i7-10700TE 8 Cores Up to 4.5 GHz, TDP 35W<br>▪ Intel® Core™ i5-10500TE 6 Cores Up to 3.7 GHz, TDP 35W<br>▪ Intel® Core™ i3-10100TE 4 Cores Up to 3.6 GHz, TDP 35W<br>Intel® Pentium® Series Processor ( 58W / 35W ):<br>▪ Intel® Pentium® G6400E 2 Cores Up to 3.8 GHz, TDP 58W<br>▪ Intel® Pentium® G6400TE 2 Cores Up to 3.2 GHz, TDP 35W<br>▪ Intel® Celeron® Series Processor ( 58W / 35W ):<br>▪ Intel® Celeron® G5900E 2 Cores Up to 3.2 GHz, TDP 58W<br>▪ Intel® Celeron® G5900TE 2 Cores Up to 3.0 GHz, TDP 35W |
| Chipset | ▪ Intel® W480E Chipset |
| Memory | ▪ 2x DDR4 SO-DIMM Socket, Support Up to 64GB ( Un-buffered and non-ECC)<br>▪ Xeon / i9 / i7 Processor Supports Up to 2933MHz<br>▪ i5 / i3 Processor Supports Up to 2666 MHz<br>▪ Pentium / Celeron Processor Supports Up to 2400MHz |
| BIOS | ▪ AMI BIOS |

## Graphics

| | |
|---|---|
| Graphics Engine | ▪ Integrated Intel® UHD-630 Graphics |
| Maximum Display Output | ▪ Supports Triple Independent Display |
| HDMI | ▪ 1 x HDMI Connector (4096 x 2160@30Hz) |
| DP | ▪ 2 x DisplayPort Connector (4096 x 2340@60Hz) |
| VGA | ▪ 1 x VGA Connector (1920 x 1200 @60Hz) |

## Audio

| | |
|---|---|
| Audio Codec | ▪ Realtek® ALC888, High Definition Audio |
| Line-out | ▪ 1 x Line-out, Phone Jack 3.5mm |
| Mic-in | ▪ 1 x Mic-in, Phone Jack 3.5mm |

## I/O

| | |
|---|---|
| LAN | ▪ 2 x GbE LAN, RJ45<br>- GbE1: Intel® I219<br>- GbE2: Intel® I210 |
| COM | ▪ 2 x RS-232/422/485 with Auto Flow Control ( Supports 5V / 12V ), DB9 |
| USB | ▪ 2 x 10Gbps USB 3.2 Gen2, Type A<br>▪ 4 x 5Gbps USB 3.2 Gen1, Type A<br>▪ 2 x 480Mbps USB 2.0, Type A |
| PS/2 | ▪ 1 x PS/2, 6 Pin Mini-DIN Female Connector |

## Storage

| | |
|---|---|
| SSD/HDD | ▪ 1x 2.5" Front Accessible SATA HDD/SSD Bay ( SATA 3.0 )<br>▪ 1x 2.5" Internal SATA HDD/SSD Bay ( SATA 3.0 ) |
| mSATA | ▪ 3x mSATA Socket ( SATA 3.0, shared by Mini-PCIe socket ) |
| M.2 SSD | ▪ 1x M.2 Key M Type 2280 Socket, Support PCIe x4 NVMe SSD or SATA SSD ( SATA 3.0 ) |
| RAID | ▪ Support RAID 0/1/5/10 |

## Expansion

| | |
|---|---|
| PCI Express | ▪ 2 x PCI/PCIe Expansion Slot with Optional Riser Card<br>* Supports maximum dimensions of add-on card (H x L): 111.15 x 235 mm |
| Mini PCI Express | ▪ 3 x Full-size Mini-PCIe Socket |
| SIM Socket | ▪ 2 x SIM Socket |
| CMI (Combined Multiple I/O) Interface | ▪ 2 x High Speed CMI Interface for optional CMI Module Expansion<br>▪ 2 x Low Speed CMI Interface for optional CMI Module Expansion |
| CFM (Control Function Module) Interface | ▪ 1 x CFM IGN Interface for optional CFM-IGN Module Expansion |

## Other Function

| | |
|---|---|
| External FAN Connector | ▪ 1 x External FAN Connector, 4-pin Terminal Block (Support Smart Fan by BIOS) |
| Power Ignition Sensing | ▪ Support Power Ignition Sensing Function with Delay Time Management and Selectable 12V/24V (With Optional CFM Module) |
| Clear CMOS Switch | ▪ 1 x Clear CMOS Switch |
| Rest Button | ▪ 1 x Rest Button |
| Instant Reboot | ▪ Support 0.2sec Instant Reboot Technology |
| Watchdog Timer | ▪ Software Programmable Supports 256 Levels System Reset |

## Power

| | |
|---|---|
| Power Button | ▪ 1 x ATX Power On/Off Button |
| Power Mode Switch | ▪ 1 x AT/ATX Mode Switch |
| Power Input | ▪ 9 - 48VDC, 3-pin Terminal Block |
| Remote Power On/Off | ▪ 1 x Remote Power On/Off, 2-pin Terminal Block |
| Remote Power LED | ▪ 1 x Remote Power LED, 2-pin Terminal Block |
| Total Power Budget | ▪ 180W |

## Physical

| | |
|---|---|
| Dimension ( W x D x H ) | ▪ 227 x 261 x 128 mm |
| Weight Information | ▪ 5.4 KG |
| Mechanical Construction | ▪ Extruded Aluminum with Heavy Duty Metal |
| Mounting | ▪ Wall Mount |
| Physical Design | ▪ Fanless Design<br>▪ Cableless Design<br>▪ Jumper-less Design<br>▪ Unibody Design |

## Reliability & Protection

| | |
|---|---|
| Reverse Power Input Protection | ▪ Yes |
| Over Voltage Protection | ▪ Protection Range: 51~58V<br>▪ Protection Type: shut down operating voltage, re-power on at the preset level to recover |
| Over Current Protection | ▪ 15A |
| Surge Protection | ▪ 3.84 kV (impedance 12 ohm 1.2/50us waveform) |
| CMOS Battery Backup | ▪ SuperCap Integrated for CMOS Battery Maintenance-free Operation |
| MTBF | ▪ 371,393 Hours<br>- Database: Telcordia SR-332 Issue 3, Method 1, Case 3 |

## Operating System

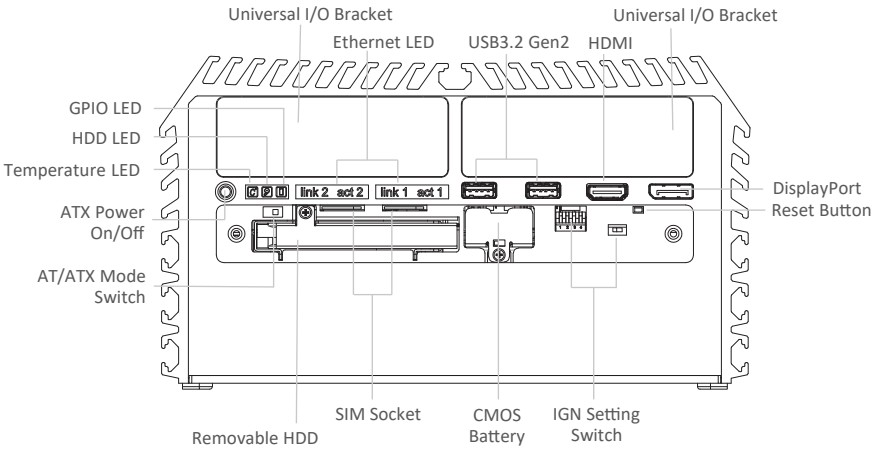
| | |
|---|---|
| Windows | ▪ Windows® 10 |
| Linux | ▪ Supports by project |

## Environment

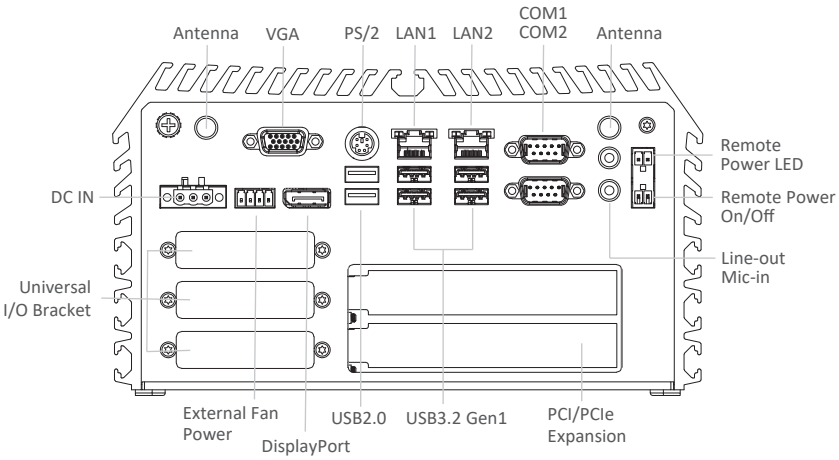
| | |
|---|---|
| Operating Temperature | ▪ 35W TDP Processor: -40°C to 70°C<br>▪ 58W – 65W TDP Processor: -40~50°C (With External Fan Kit)<br>▪ 80W TDP Processor: -40~40°C (With External Fan Kit)<br><br>* PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling)<br>* With extended temperature peripherals; Ambient with air flow<br>* According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14 |
| Storage Temperature | ▪ -40°C to 85°C |
| Relative Humidity | ▪ 95%RH @ 70°C (non-Condensing) |
| Shock | ▪ MIL-STD-810G |
| Vibration | ▪ MIL-STD-810G |
| EMC | ▪ CE, FCC, ICES-003 Class A, EN50121-3-2 (Railway) |
| Safety | ▪ IEC/EN 62368-1 |

## External Layout

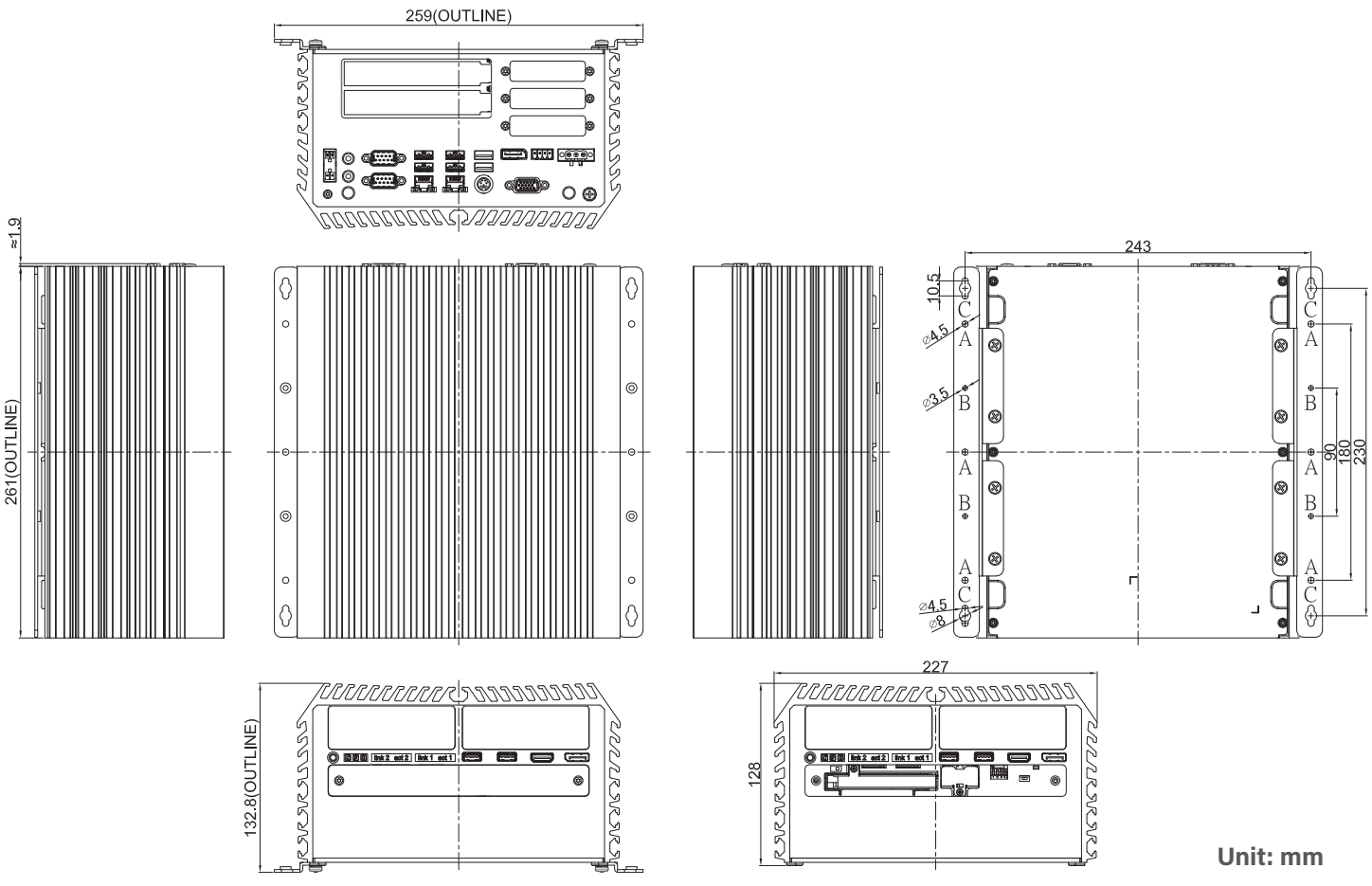
Front I/O




Rear I/O




## Dimensions




Unit: mm

# Ordering Information

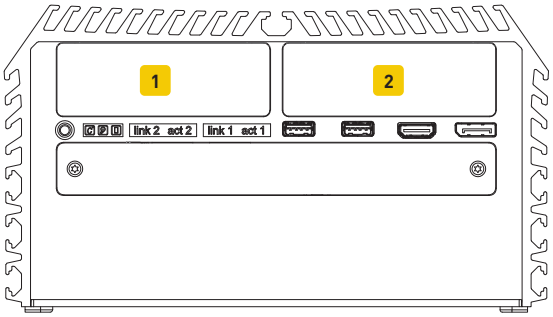
## Available Models

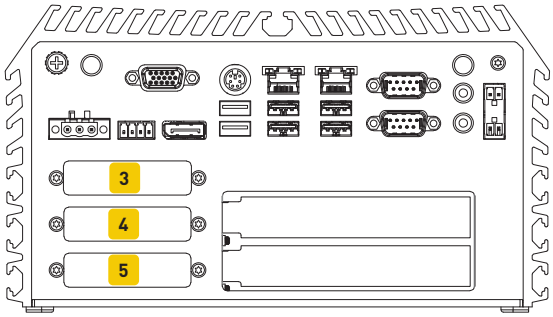
| Model No. | Description |
|---|---|
| DS-1302 | 10th Generation Intel Xeon/Core Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 2 PCI/PCIe Expansion Slot |

## Package Checklist

- DS-1302 Embedded System x1
- Heatsink Pack x1
- Utility DVD Driver x1
- Screw Pack x1
- Wall Mount Kit x1
- Power Terminal Block Connector x1
- Remote Function Terminal Block Connector x 2
- Fan Terminal Block Connector x 1

## Optional I/O Modules




| Model No. | Description | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| CMI-LAN01-R12/ UB1012  | CMI Module with 4x Intel I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout | V | V | -- | -- | -- |
| CMI-M12LAN01-R12 /UB1010  | CMI Module with M12 Connector, 4x Intel GbE LAN / 1x Universal Bracket with 4x M12 Cutout | V | V | -- | -- | -- |
| CMI-10GLAN03-R10/UB1028  | CMI Module with 2x Intel X550 10GbE LAN, RJ45 Port / 1x Universal Bracket with 2x RJ45 Cutout | V | -- | -- | -- | -- |
| CMI-COM02/UB1004  | CMI Module with 4x RS232/422/485 Ports (Support 5V/12V) / 1x Universal Bracket with 4x DB9 Cutout | V | V | -- | -- | -- |
| CMI-ICOM01/UB1004  | CMI Module with 4x Isolated RS232 Ports (Support 5V/12V) / 1x Universal Bracket with 4x DB9 Cutout | V | V | -- | -- | -- |
| CMI-DIO02/UB1018  | CMI Module with 16DIO (8in 8out) / 1x Universal Bracket with DIO Cutout | V | V | -- | -- | -- |

| Model No. | Description | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| MEC-COM-M212-DB9 /UB0303  | Mini-PCIe Module with 2x RS-232 Ports, 1x Standard DB9 Cable / 2x Universal Bracket each with 1x DB9 Cutout | -- | -- | V | V | V |
| MEC-USB-M102-15 /UB0314  | Mini-PCIe Module with 2x USB 3.0 Ports, 1x 15cm cable / 1xUniversal Bracket with 2x USB Cutout | -- | -- | V | V | V |
| MEC-LAN-M002-30 /UB0311  | Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout | -- | -- | V | V | V |

Remark:

V : Compatible

Maximum one CMI-COM02 or CMI-ICOM01 module can be installed in this system.

## Optional Function Modules

| Model No. | Description |
|---|---|
| CFM-PoE03 | CFM Module with PoE Function, Individual Port 25.5W |
| CFM-IGN101 | CFM Module with Power Ignition Sensing Function, 12V/24V Selectable |

## Optional Riser Cards

| Model No. | Description |
|---|---|
| RC-E8E8-01 | Riser Card with 2 x PCIex8 Slots |
| RC-E16E1-01 | Riser Card with 1x PCIex16 and 1x PCIex1 Slots |
| RC-E16PI-01 | Riser Card with 1x PCIex16 and 1x PCI Slots |
| RC-PIPI-01 | Riser Card with 2x PCI Slots |

## Optional Accessories

| Model No. | Description |
|---|---|
| FAN-EX101 | External Fan with 4pin Terminal Block Plug and Mounting Bracket, Support Smart Fan |
| GST120A24-CIN | Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug and Tubes, Level VI |
| GST220A24-CIN | Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug and Tubes, Level VI |