

# DS-1301

10th Generation Intel® Xeon/Core™ Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 1x PCI/PCIe Expansion Slot



## High Performance, Highly Expandable

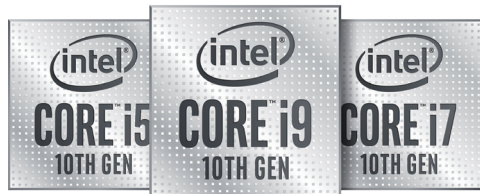


### Overview

The DS-1301 is a powerful embedded computer and brings unrivalled performance. It has versatile functionalities and rich industrial I/O. And most importantly, it has one 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-1301 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
- 1x PCI/PCIe expansion slot
- 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**

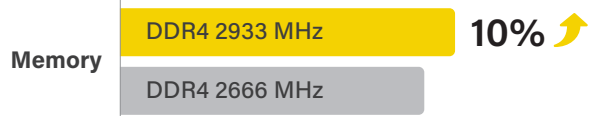
The DS-1300 series's 10th-gen CPU brings to 31% better integer multi-tasking for compute-intensive application performance than 9th-gen CPUs\*. DDR4 2933 MHz memory further increases speed by 10%\*\*.

\* 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.

multi-tasking compute-intensive application



Transfer rate

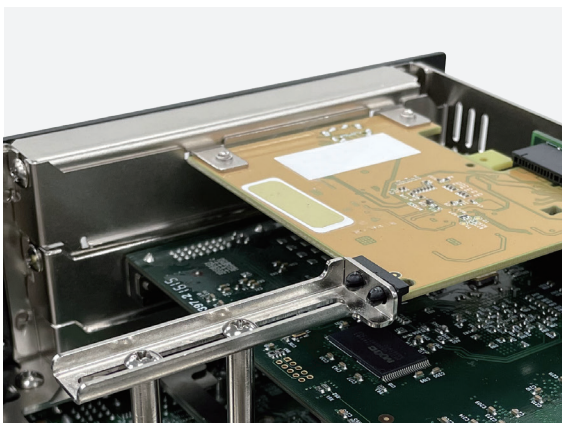


**Industrial I/O and  
Modular Expansion**

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-1301 can accommodate one PCI/PCIe add-on card up to 110 mm x 237 mm. Flexible PCI/PCIe expansion allows the addition of I/O, GPU, image capture, data acquisition, and motion control cards for specific applications.



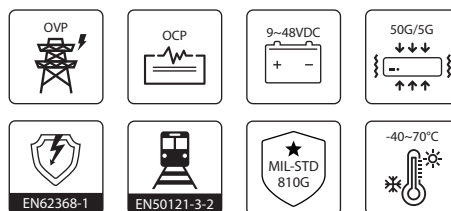
## Adjustable PCIe Card Retainer

The PCI/PCIe expansion slot includes an adjustable card retainer that firmly secures the PCI/PCIe add-on card. 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	<p>Intel® Xeon® Series Processor ( 80W / 35W ):</p> <ul style="list-style-type: none"> <li>• Intel® Xeon® W-1270E 8 Cores Up to 4.8 GHz, TDP 80W</li> <li>• Intel® Xeon® W-1250E 6 Cores Up to 4.7 GHz, TDP 80W</li> <li>• Intel® Xeon® W-1290TE 10 Cores Up to 4.5 GHz, TDP 35W</li> <li>• Intel® Xeon® W-1270TE 8 Cores Up to 4.4 GHz, TDP 35W</li> <li>• Intel® Xeon® W-1250TE 6 Cores Up to 3.8 GHz, TDP 35W</li> </ul> <p>Intel® Core® Series Processor ( 65W / 35W ):</p> <ul style="list-style-type: none"> <li>• Intel® Core™ i9-10900E 10 Cores Up to 4.7 GHz, TDP 65W</li> <li>• Intel® Core™ i7-10700E 8 Cores Up to 4.5 GHz, TDP 65W</li> <li>• Intel® Core™ i5-10500E 6 Cores Up to 4.2 GHz, TDP 65W</li> <li>• Intel® Core™ i3-10100E 4 Cores Up to 3.8 GHz, TDP 65W</li> <li>• Intel® Core™ i9-10900TE 10 Cores Up to 4.5 GHz, TDP 35W</li> <li>• Intel® Core™ i7-10700TE 8 Cores Up to 4.5 GHz, TDP 35W</li> <li>• Intel® Core™ i5-10500TE 6 Cores Up to 3.7 GHz, TDP 35W</li> <li>• Intel® Core™ i3-10100TE 4 Cores Up to 3.6 GHz, TDP 35W</li> </ul> <p>Intel® Pentium® Series Processor ( 58W / 35W ):</p> <ul style="list-style-type: none"> <li>• Intel® Pentium® G6400E 2 Cores Up to 3.8 GHz, TDP 58W</li> <li>• Intel® Pentium® G6400TE 2 Cores Up to 3.2 GHz, TDP 35W</li> </ul> <p>Intel® Celeron® Series Processor ( 58W / 35W ):</p> <ul style="list-style-type: none"> <li>• Intel® Celeron® G5900E 2 Cores Up to 3.2 GHz, TDP 58W</li> <li>• Intel® Celeron® G5900TE 2 Cores Up to 3.0 GHz, TDP 35W</li> </ul>
Chipset	<ul style="list-style-type: none"> <li>• Intel® W480E Chipset</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• 2x DDR4 SO-DIMM Socket, Support Up to 64GB ( Un-buffered and non-ECC)</li> <li>• Xeon / i9 / i7 Processor Supports Up to 2933MHz</li> <li>• i5 / i3 Processor Supports Up to 2666 MHz</li> <li>• Pentium / Celeron Processor Supports Up to 2400MHz</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>• AMI BIOS</li> </ul>

### Graphics

Graphics Engine	<ul style="list-style-type: none"> <li>• Integrated Intel® UHD-630 Graphics</li> </ul>
Maximum Display Output	<ul style="list-style-type: none"> <li>• Supports Triple Independent Display</li> </ul>
HDMI	<ul style="list-style-type: none"> <li>• 1 x HDMI Connector (4096 x 2160@30Hz)</li> </ul>
DP	<ul style="list-style-type: none"> <li>• 2 x DisplayPort Connector (4096 x 2340@60Hz)</li> </ul>
VGA	<ul style="list-style-type: none"> <li>• 1 x VGA Connector (1920 x 1200 @60Hz)</li> </ul>

### Audio

Audio Codec	<ul style="list-style-type: none"> <li>• Realtek® ALC888, High Definition Audio</li> </ul>
Line-out	<ul style="list-style-type: none"> <li>• 1 x Line-out, Phone Jack 3.5mm</li> </ul>
Mic-in	<ul style="list-style-type: none"> <li>• 1 x Mic-in, Phone Jack 3.5mm</li> </ul>

### I/O

LAN	<ul style="list-style-type: none"> <li>• 2 x GbE LAN, RJ45</li> <li>- GbE1: Intel® I219</li> <li>- GbE2: Intel® I210</li> </ul>
COM	<ul style="list-style-type: none"> <li>• 2 x RS-232/422/485 with Auto Flow Control ( Supports 5V / 12V ), DB9</li> </ul>
USB	<ul style="list-style-type: none"> <li>• 2 x 10Gbps USB 3.2 Gen2, Type A</li> <li>• 4 x 5Gbps USB 3.2 Gen1, Type A</li> <li>• 2 x 480Mbps USB 2.0, Type A</li> </ul>
PS/2	<ul style="list-style-type: none"> <li>• 1 x PS/2, 6 Pin Mini-DIN Female Connector</li> </ul>

**Storage**

SSD/HDD	<ul style="list-style-type: none"> <li>• 1x 2.5" Front Accessible SATA HDD/SSD Bay ( SATA 3.0 )</li> <li>• 1x 2.5" Internal SATA HDD/SSD Bay ( SATA 3.0 )</li> </ul>
mSATA	<ul style="list-style-type: none"> <li>• 3x mSATA Socket ( SATA 3.0, shared by Mini-PCIe socket )</li> </ul>
M.2 SSD	<ul style="list-style-type: none"> <li>• 1x M.2 Key M Type 2280 Socket, Support PCIe x4 NVMe SSD or SATA SSD ( SATA 3.0 )</li> </ul>
RAID	<ul style="list-style-type: none"> <li>• Support RAID 0/1/5/10</li> </ul>

**Expansion**

PCI Express	<ul style="list-style-type: none"> <li>• 1 x PCI/PCIe Expansion Slot with Optional Riser Card</li> <li>* Supports maximum dimensions of add-on card (H x L) : 110 x 237 mm</li> </ul>
Mini PCI Express	<ul style="list-style-type: none"> <li>• 3 x Full-size Mini-PCIe Socket</li> </ul>
SIM Socket	<ul style="list-style-type: none"> <li>• 2 x SIM Socket</li> </ul>
CMI (Combined Multiple I/O) Interface	<ul style="list-style-type: none"> <li>• 2 x High Speed CMI Interface for optional CMI Module Expansion</li> <li>• 2 x Low Speed CMI Interface for optional CMI Module Expansion</li> </ul>
CFM (Control Function Module) Interface	<ul style="list-style-type: none"> <li>• 1 x CFM IGN Interface for optional CFM-IGN Module Expansion</li> </ul>

**Other Function**

External FAN Connector	<ul style="list-style-type: none"> <li>• 1 x External FAN Connector, 4-pin Terminal Block (Support Smart Fan by BIOS)</li> </ul>
Power Ignition Sensing	<ul style="list-style-type: none"> <li>• Support Power Ignition Sensing Function with Delay Time Management and Selectable 12V/24V (With Optional CFM Module)</li> </ul>
Clear CMOS Switch	<ul style="list-style-type: none"> <li>• 1 x Clear CMOS Switch</li> </ul>
Rest Button	<ul style="list-style-type: none"> <li>• 1 x Rest Button</li> </ul>
Instant Reboot	<ul style="list-style-type: none"> <li>• Support 0.2sec Instant Reboot Technology</li> </ul>
Watchdog Timer	<ul style="list-style-type: none"> <li>• Software Programmable Supports 256 Levels System Reset</li> </ul>

**Power**

Power Button	<ul style="list-style-type: none"> <li>• 1 x ATX Power On/Off Button</li> </ul>
Power Mode Switch	<ul style="list-style-type: none"> <li>• 1 x AT/ATX Mode Switch</li> </ul>
Power Input	<ul style="list-style-type: none"> <li>• 9 - 48VDC, 3-pin Terminal Block</li> </ul>
Remote Power On/Off	<ul style="list-style-type: none"> <li>• 1 x Remote Power On/Off, 2-pin Terminal Block</li> </ul>
Remote Power LED	<ul style="list-style-type: none"> <li>• 1 x Remote Power LED, 2-pin Terminal Block</li> </ul>
Total Power Budget	<ul style="list-style-type: none"> <li>• 180W</li> </ul>

**Physical**

Dimension ( W x D x H )	<ul style="list-style-type: none"> <li>• 227 x 261 x 108 mm</li> </ul>
Weight Information	<ul style="list-style-type: none"> <li>• 5.04 KG</li> </ul>
Mechanical Construction	<ul style="list-style-type: none"> <li>• Extruded Aluminum with Heavy Duty Metal</li> </ul>
Mounting	<ul style="list-style-type: none"> <li>• Wall Mount</li> </ul>
Physical Design	<ul style="list-style-type: none"> <li>• Fanless Design</li> <li>• Cableless Design</li> <li>• Jumper-less Design</li> <li>• Unibody Design</li> </ul>



**Reliability & Protection**

Reverse Power Input Protection	<ul style="list-style-type: none"> <li>• Yes</li> </ul>
Over Voltage Protection	<ul style="list-style-type: none"> <li>• Protection Range: 51~58V</li> <li>• Protection Type: shut down operating voltage, re-power on at the preset level to recover</li> </ul>
Over Current Protection	<ul style="list-style-type: none"> <li>• 15A</li> </ul>
Surge Protection	<ul style="list-style-type: none"> <li>• 3.84 kV (impedance 12 ohm 1.2/50us waveform)</li> </ul>
CMOS Battery Backup	<ul style="list-style-type: none"> <li>• SuperCap Integrated for CMOS Battery Maintenance-free Operation</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 371,393 Hours</li> <li>- Database: Telcordia SR-332 Issue 3, Method 1, Case 3</li> </ul>

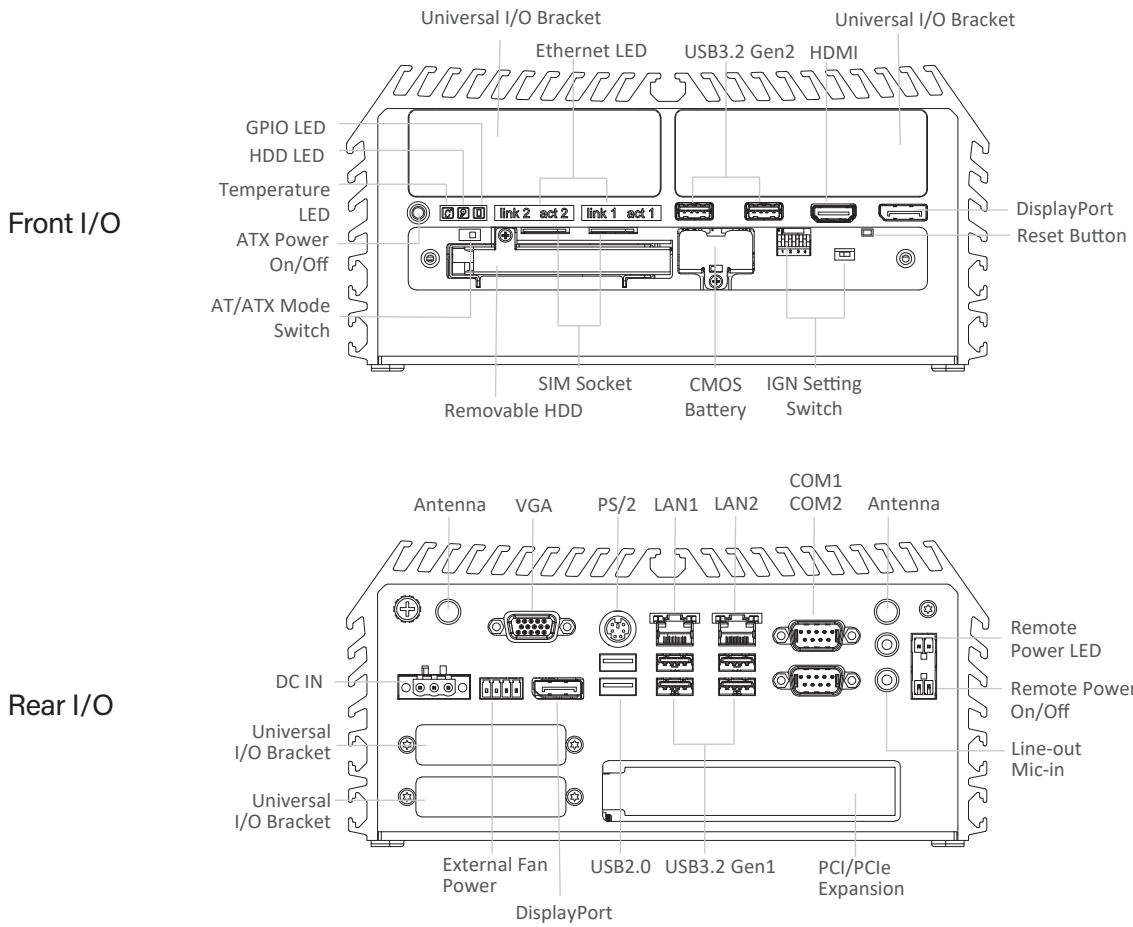
**Operating System**

Windows	<ul style="list-style-type: none"> <li>• Windows® 10</li> </ul>
Linux	<ul style="list-style-type: none"> <li>• Supports by project</li> </ul>

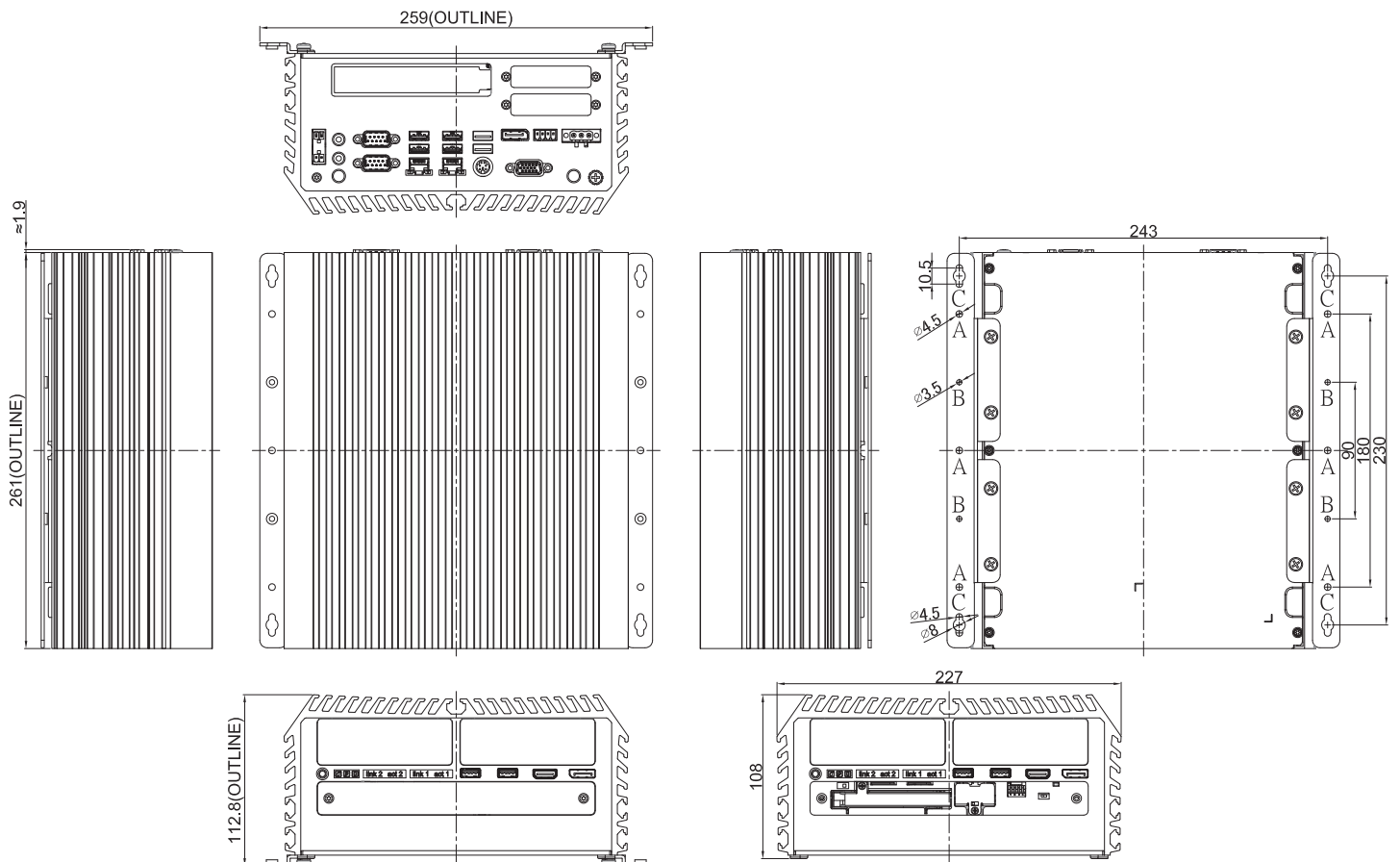
**Environment**

Operating Temperature	<ul style="list-style-type: none"> <li>• 35W TDP Processor: -40°C to 70°C</li> <li>• 58W – 65W TDP Processor: -40~50°C (With External Fan Kit)</li> <li>• 80W TDP Processor: -40~40°C (With External Fan Kit)</li> </ul> <p>* PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling)                      * With extended temperature peripherals; Ambient with air flow                      * According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14</p>
Storage Temperature	<ul style="list-style-type: none"> <li>• -40°C to 85°C</li> </ul>
Relative Humidity	<ul style="list-style-type: none"> <li>• 95%RH @ 70°C (non-Condensing)</li> </ul>
Shock	<ul style="list-style-type: none"> <li>• MIL-STD-810G</li> </ul>
Vibration	<ul style="list-style-type: none"> <li>• MIL-STD-810G</li> </ul>
EMC	<ul style="list-style-type: none"> <li>• CE, FCC, ICES-003 Class A, EN50121-3-2 (Railway)</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• IEC/EN 62368-1</li> </ul>

**External Layout**



**Dimensions**



Unit: mm

## Ordering Information

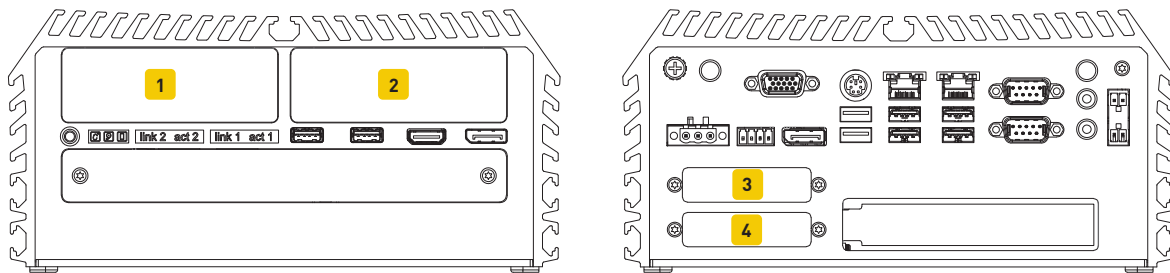
### Available Models







Model No.	Description
DS-1301	10th Generation Intel Xeon/Core Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 1x PCI/PCIe Expansion Slot

### Package Checklist




• DS-1301 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
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
MEC-COM-M212-DB9 /UB0303 	Mini-PCle Module with 2x RS-232 Ports, 1x Standard DB9 Cable / 2x Universal Bracket each with 1x DB9 Cutout	--	--	V	V
MEC-USB-M102-15 /UB0314 	Mini-PCle Module with 2x USB 3.0 Ports, 1x 15cm cable / 1x Universal Bracket with 2x USB Cutout	--	--	V	V
MEC-LAN-M002-30 /UB0311 	Mini-PCle Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout	--	--	V	V

Remark:

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

V : Compatible

### 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-E16-01	Riser Card with 1 x PCIe x 16 Slot
RC-PI-01	Riser Card with 1 x PCI Slot

### 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