

# DS-1102

7/6th Generation Intel Core Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 2x PCI/PCIe Expansion Slot



## Overview

 CONTACT

Cincoze DS-1100 Series is a high-performance fanless embedded computer powered by 7/6th generation Intel® Core™ platform supporting a wide range of desktop CPUs (socket-type, LGA1151), and accommodates two DDR4 sockets up to 64 GB which allows DS-1100 Series to fulfill all kinds of high-end computing requirements. DS-1100 Series provides powerful functionalities such as rich I/Os, Power over Serial, Electrical Isolated Serial Ports, Optical Isolated Digital I/O, multiple LAN, Power over Ethernet, M12 connectors, RAID 0/1, Power Ignition Sensing and Instant Reboot. Thanks to Cincoze's CMI & CFM Technology, it allows you to configure DS-1100 Series according to your specific needs with ready-to-use modules.

DS-1100 Series also supports maximum 2 PCI/PCIe expansion slots with different combination of interfaces for expanding all kinds of application add-on cards. DS-1100 Series is truly a rugged computing system with features of wide operating temperature (-40°C to 70°C), wide range DC power input (from 9V to 48V), high tolerance of shock and vibration, high-standard industrial protections and the integrated SuperCap for battery maintenance-free operation. DS-1100 Series is suitable to deploy in a harsh environment and for critical applications, and it is totally maintenance-free.

### Key Features

- Supports 7/6th-Gen Intel® Core™ i3 / i5 / i7 Socket-type CPU (LGA1151)
- 2x DDR4 SO-DIMM Socket, 2,133 / 2,400 MHz, Supports Up to 64 GB
- Triple Independent Display (1x DVI-I, 2x DP)
- 2x 2.5" SATA HDD/SSD bay (Gen3), Supports RAID 0/1
- 2x PCI/PCIe Slots with Different Combination of Interfaces
- 2x CMI Interfaces with 6 Types of Optional Modules for I/O Expansion
- 1x CFM Interface for Adding Optional Power Ignition Sensing (IGN) Module
- Supports 3x Full-size Mini-PCIe Slot for Wireless & I/O Expansion
- Wide Operating Temperature (-40°C to 70°C)
- EN50121-3-2 Certified/ LVD EN62368-1
- E-Mark (E13, No.10R-0514229) Certified

### Certifications



## High Performance

- Supports Intel® 7/6th Generation Processors (65W/35W)
- Performance Enhanced by Intel® 14 nm Technology
- Intel® HD Graphics Supports Triple Independent Display Resolution Up to 4K

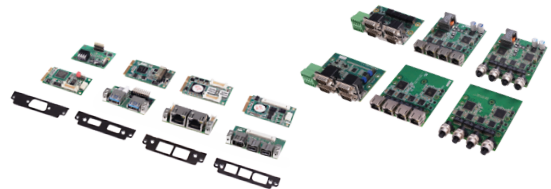


## Powerful Functionalities

- Rich I/Os
- Power over Serial
- Electrical Isolated Serial Port
- Optical Isolated Digital I/O
- Power Ignition Sensing
- Multiple LAN
- Power over Ethernet
- RAID 0/1
- Instant Reboot
- M12 Connectors

## Fully Modular and Expandable

- CMI (Combined Multiple I/O) Technology for I/O Expansion
- CFM (Control Function Module) Technology for Adding Power Ignition Sensing Function
- Mini-PCIe Modules and Dedicated I/O Brackets Are Available



## Specifications

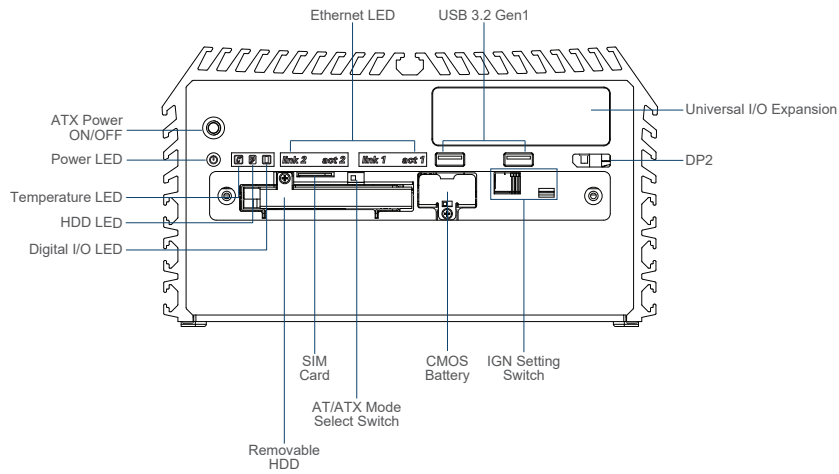
Model Name	DS-1101
<b>System</b>	
Processor	<ul style="list-style-type: none"> <li>• 7th Generation Intel® CPU (Kaby Lake-S)                             <ul style="list-style-type: none"> <li>- Intel® Core™ i7-7700T Processor (8M Cache, up to 3.8 GHz, 35W TDP)</li> <li>- Intel® Core™ i5-7500T Processor (6M Cache, up to 3.30 GHz, 35W TDP)</li> <li>- Intel® Core™ i3-7101TE Processor (3M Cache, 3.40 GHz, 35W TDP)</li> </ul> </li> <li>- Intel® Celeron® G3930TE Processor (2M Cache, 2.70 GHz, 35W TDP)</li> <li>- Intel® Core™ i7-7700 Processor (8M Cache, up to 4.20 GHz, 65W TDP)</li> <li>- Intel® Core™ i5-7500 Processor (6M Cache, up to 3.80 GHz, 65W TDP)</li> <li>- Intel® Celeron® G3930E Processor (2M Cache, 2.90 GHz, 54W TDP)</li> <li>• 6th Generation Intel® CPU (Skylake-S)                             <ul style="list-style-type: none"> <li>- Intel® Core™ i7-6700TE Processor (8M Cache, up to 3.40 GHz, 35W TDP)</li> <li>- Intel® Core™ i5-6500TE Processor (6M Cache, up to 3.30 GHz, 35W TDP)</li> <li>- Intel® Core™ i3-6100TE Processor (4M Cache, 2.70 GHz, 35W TDP)</li> <li>- Intel® Pentium® Processor G4400TE (3M Cache, 2.40 GHz, 35W TDP)</li> <li>- Intel® Celeron® Processor G3900TE (2M Cache, 2.30 GHz, 35W TDP)</li> <li>- Intel® Core™ i7-6700 Processor (8M Cache, up to 4.00 GHz, 65W TDP)</li> <li>- Intel® Core™ i5-6500 Processor (6M Cache, up to 3.60 GHz, 65W TDP)</li> <li>- Intel® Core™ i3-6100 Processor (3M Cache, 3.70 GHz, 51W TDP)</li> <li>- Intel® Pentium® Processor G4400 (3M Cache, 3.30 GHz, 54W TDP)</li> <li>- Intel® Celeron® Processor G3900 (2M Cache, 2.80 GHz, 51W TDP)</li> </ul> </li> </ul>
Chipset	<ul style="list-style-type: none"> <li>• Intel® Q170</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>• AMI 16Mbit SPI BIOS</li> </ul>
Memory	<ul style="list-style-type: none"> <li>• 2x DDR4 2133/2400 MHz SO-DIMM Sockets</li> <li>* Core I 7th Generation / Celeron Processor Supports Up to 2400MHz</li> <li>* Core I 6th Generation / Pentium / Celeron Processor Supports Up to 2133MHz</li> <li>• Supports Un-buffered and Non-ECC Type Up to 64 GB</li> </ul>
<b>Graphics</b>	
Graphics Engine	<ul style="list-style-type: none"> <li>• Intel® HD Graphics supports triple independent display (1x DVI-I, 2x DisplayPort)</li> </ul>
<b>Audio</b>	
Audio Codec	<ul style="list-style-type: none"> <li>• Realtek® ALC888-GR</li> <li>• High Definition Audio</li> </ul>
<b>I/O</b>	
Connector	<ul style="list-style-type: none"> <li>• 1x DVI-I Connector, Resolution 1920 x 1080</li> </ul>
DisplayPort	<ul style="list-style-type: none"> <li>• 2x DisplayPort Connector (4096 x 2304 @ 60Hz, According to CPU Specifications)</li> <li>* Verified maximum resolution: 3840x2160</li> </ul>
LAN	<ul style="list-style-type: none"> <li>• 2x GbE LAN (Support WoL, Teaming, Jumbo Frame and PXE), RJ45</li> <li>- GbE1: Intel I219-LM</li> <li>- GbE2: Intel I210</li> </ul>
Flow Control	<ul style="list-style-type: none"> <li>• 2x RS-232/422/485 with Auto Flow Control Support 5V/12V, DB9</li> </ul>
USB	<ul style="list-style-type: none"> <li>• 6x USB 3.2 Gen1, Type-A</li> <li>• 2x USB 2.0, Type-A</li> </ul>
Mic-in	<ul style="list-style-type: none"> <li>• 1x Line-out &amp; 1x Mic-in, Phone Jack 3.5mm</li> </ul>
Power On/Off Switch Button	<ul style="list-style-type: none"> <li>• 1x ATX Power On/Off Switch</li> </ul>
Mode Switch	<ul style="list-style-type: none"> <li>• 1x AT/ATX Mode Switch</li> </ul>
CMOS Switch	<ul style="list-style-type: none"> <li>• 1x Clear CMOS Switch</li> </ul>
Remote Power On/Off Connector	<ul style="list-style-type: none"> <li>• 1x Remote Power On/Off Connector, 2-Pin Terminal Block</li> </ul>

Terminal Block	<ul style="list-style-type: none"> <li>• 1x Remote Reset Connector, 2-Pin Terminal Block</li> <li>• 1x External FAN Connector, 4-Pin Terminal Block</li> </ul>
<b>Storage</b>	
SSD / HDD	<ul style="list-style-type: none"> <li>• 2x 2.5" SATA HDD/SSD Bay, Support RAID 0/1 (Gen3)</li> </ul>
mSATA	<ul style="list-style-type: none"> <li>• 3x mSATA (shared by Mini-PCIe socket) (Gen3)</li> </ul>
<b>Power Requirement</b>	
Power Type	<ul style="list-style-type: none"> <li>• AT / ATX</li> </ul>
Power Supply Voltage	<ul style="list-style-type: none"> <li>• 9~48VDC</li> </ul>
Terminal	<ul style="list-style-type: none"> <li>• One 3-Pin Terminal Block Connector</li> </ul>
Power Adapter	<ul style="list-style-type: none"> <li>• Power Adapter AC/DC 24V/5A 120W or 24V/9.2A 220W (Optional)</li> </ul>
<b>Expansion</b>	
CFM (Control Function Module) Interface	<ul style="list-style-type: none"> <li>• Supports CFM (Control Function Module) Technology</li> <li>- CFM IGN Module</li> </ul>
CMI (Combined Multiple I/O) Interface	<ul style="list-style-type: none"> <li>• Supports CMI (Combined Multiple I/O) Technology</li> <li>- 4x RJ45 GbE LAN Module</li> <li>- 4x M12 GbE LAN Module</li> <li>- 4x RJ45 GbE PoE+ Module</li> <li>- 4x M12 GbE PoE+ Module</li> <li>- 4x RS-232/422/485 + 8x Optical Isolated DIO Module</li> <li>- 4x Isolated RS-232/422/485 + 8x Optical Isolated DIO Module</li> </ul>
PCI/PCIe Expansion	<ul style="list-style-type: none"> <li>• 2x PCI/PCIe Expansion slots</li> <li>Optional Riser Card: <ul style="list-style-type: none"> <li>• 1x PCIe16+1x PCIe1</li> <li>• 2x PCIe8</li> <li>• 1x PCIe16+1x PCIe1</li> <li>• 2x PCI</li> </ul> </li> <li>Support maximum dimension of add-on card (H x L) : 110 x 237 mm</li> </ul>
Mini-PCIe	<ul style="list-style-type: none"> <li>• 3x Full-size Mini-PCIe Sockets</li> </ul>
SIM-Socket	<ul style="list-style-type: none"> <li>• 1x SIM Socket</li> </ul>
<b>Other Function</b>	
Instant Reboot	<ul style="list-style-type: none"> <li>• Support Instant Reboot Technology (0.2 sec)</li> </ul>
CMOS	<ul style="list-style-type: none"> <li>• SuperCap Integrated for CMOS Battery Maintenance-free Operation</li> </ul>
WatchDog Timer	<ul style="list-style-type: none"> <li>• Software Programmable Supports 256 Levels System Reset</li> </ul>
Power Ignition Sensing	<ul style="list-style-type: none"> <li>• Power Ignition Sensing (IGN) Function (with Optional CFM module) 12V/24V Selectable</li> </ul>
<b>Physical</b>	
Dimension ( W x D x H )	<ul style="list-style-type: none"> <li>• 227 x 261 x 128 mm</li> </ul>
Weight	<ul style="list-style-type: none"> <li>• 5.7 kg</li> </ul>
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 Mounting</li> </ul>
Physical Design	<ul style="list-style-type: none"> <li>• Unibody Design</li> <li>• Fanless Design</li> <li>• Jumper-less Design</li> </ul>
<b>Protection</b>	
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>

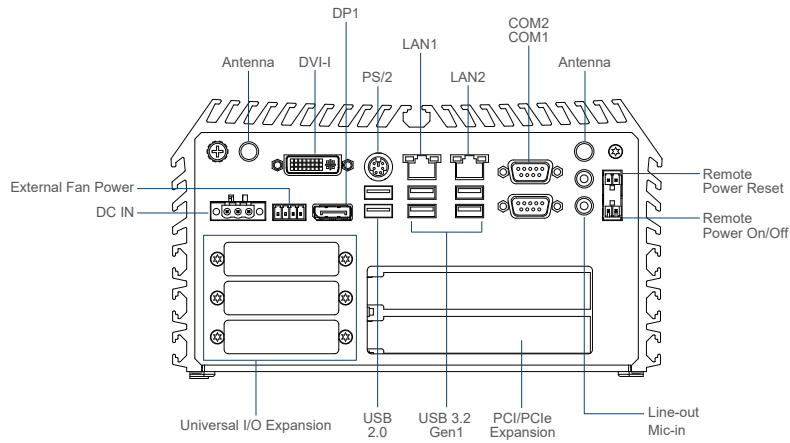
<b>Operating System</b>	
Windows	<ul style="list-style-type: none"> <li>• 7th Generation Intel® CPU (Kaby Lake-S): Windows® 10</li> <li>• 6th Generation Intel® CPU (Skylake-S): Windows® 10/ 8.1/ 7</li> </ul>
Linux	<ul style="list-style-type: none"> <li>• Supports by project</li> </ul>
<b>Environment</b>	
Operating Temperature	<ul style="list-style-type: none"> <li>• 7th Generation Intel® CPU (Kaby Lake-S)                             <ul style="list-style-type: none"> <li>- 35W TDP CPU: -40°C to 50°C</li> <li>- 51W~65W TDP CPU: -40°C to 45°C</li> </ul> </li> <li>• 6th Generation Intel® CPU (Skylake-S)                             <ul style="list-style-type: none"> <li>- 35W TDP CPU: -40°C to 70°C</li> <li>- 51~65W TDP CPU: -40°C to 50°C</li> </ul> </li> </ul> (With extended temperature peripherals; Ambient with air flow; According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
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>• 70°C @ 95% RH (Non-condensing)</li> </ul>
EMC	<ul style="list-style-type: none"> <li>• CE, UKCA, FCC, ICES-003 Class A</li> <li>• EN 50155 (EN 50121-3-2 Only)</li> <li>• E-mark</li> </ul>
EMI	<ul style="list-style-type: none"> <li>• CISPR 32 Conducted &amp; Radiated: Class A</li> <li>• EN/BS EN 50121-3-2 Conducted &amp; Radiated: Class A</li> <li>• EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A</li> <li>• EN/BS EN61000-3-3 Voltage fluctuations &amp; flicker</li> <li>• FCC 47 CFR Part 15B, ICES-003 Conducted &amp; Radiated: Class A</li> </ul>
EMS	<ul style="list-style-type: none"> <li>• EN/IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV</li> <li>• EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 20 V/m</li> <li>• EN/IEC 61000-4-4 EFT: AC Power: 2 kV; Signal: 2 kV</li> <li>• EN/IEC 61000-4-5 Surges: AC Power: 2 kV</li> <li>• EN/IEC 61000-4-6 CS: 10V</li> <li>• EN/IEC 61000-4-8 PFMF: 50 Hz, 1A/m</li> <li>• EN/IEC 61000-4-11 Voltage Dips &amp; Voltage Interruptions: 0.5 cycles at 50 Hz</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Safety: LVD IEC/EN 62368-1</li> </ul>

**External Layout**

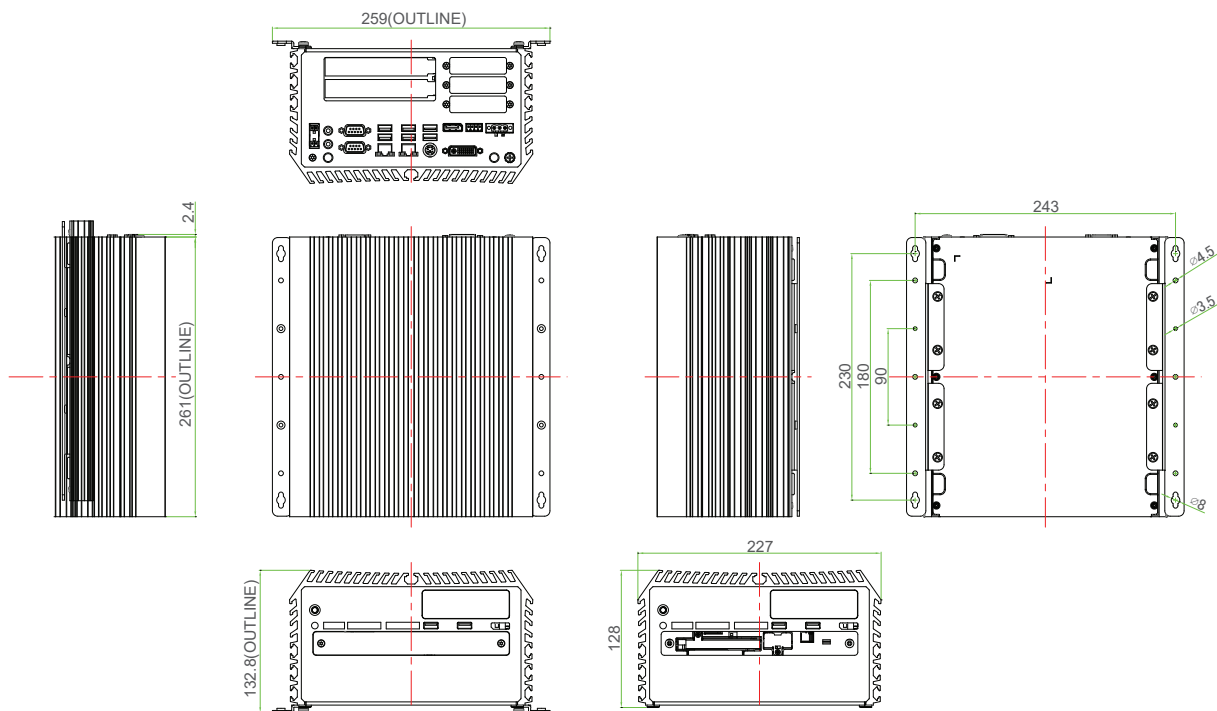
Front I/O



Rear I/O



**Dimensions**



Unit: mm

## Ordering Information

### Available Models

Model No.	Description
DS-1102-R20	7/6th Generation Intel Core Series Processors, High Performance, Expandable and Modular Rugged Embedded Computer with 2x PCI/PCIe Expansion Slot

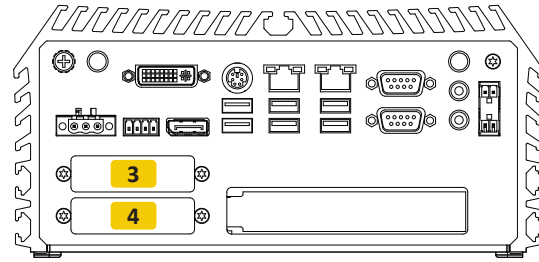
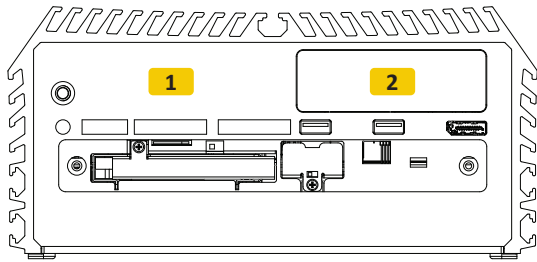
### Package Checklist








• DS-1102 Embedded System x 1	• Power Terminal Block Connector x 1
• Heat Sink Pack x 1	• Remote Power On/Off Terminal Block Connector x 2
• Screw Pack x 1	• Fan Terminal Block Connector x 1
• Wall Mounting Kit x 1	• DVI-I to VGA Adaptor

### Optional Modules and Accessories

Model No.	Description
CFM-IGN101	CFM Module with Power Ignition Sensing Control Function, Selectable 12V/24V (43 x 36 mm)
CFM-PoE03	CFM Module with PoE Control Function for DS series, Individual Port 25.5W
CMI-CD100/FB22	CMI Module with 4x RS-232/422/485 Serial Ports, 8x Optical Isolated DIO (4 in/4 out), 1x DS-1102 Front Bezel
CMI-ICD100/FB22	CMI Module with 4x Electrical Isolated RS-232/422/485 Serial Ports, 8x Optical Isolated DIO (4 in/4 out), 1x DS-1102 Front Bezel
CMI-LAN01-R12/UB0612	CMI Module with 4x Intel I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for DS-1100 Series
CMI-M12LAN01-R12/UB0610	CMI Module with M12 Connector, 4x Intel I210 GbE LAN / 1x Universal Bracket with 4x M12 Cutout for DS-1100 Series
CMI-XM12LAN01-R10/UB0630-R10	CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded Cutout
FAN-EX101	External Fan with 4pin Terminal Block Plug, Mounting Bracket, Support smart fan
FAN-UB100	Exhaling Fan with 4pin Connector, Universal Bracket
FAN-UB101	Inhaling Fan with 4pin Connector, Universal Bracket
MEC-LAN-M102-30/UB0311	Mini-PCIe Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout
MEC-USB-M102-30/UB0314	Mini-PCIe Module with 2x USB 3.2 Gen1 Ports, 1x 30cm cable, 1x Universal Bracket with 2x USB Cutout
MEC-COM-M212-DB9/UB0303	Mini-PCIe Module with 2x COM Ports, 1x Standard DB9 Cable, 2x Universal Bracket each with 1x DB9 Cutout
PAH-101	Power Adapter Holder for GST120A24 (200 x 78 x 46 mm)
PAH-201	Power Adapter Holder for GST220A24 (243 x 95 x 57 mm)
GST120A24-CIN	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, Level VI
GST220A24-CIN	Adapter AC/DC 24V 9.2A 220W with 3pin Terminal Block Plug 5.0mm Pitch, with TUBES, Level VI
RC-E16E1-01	Riser Card with 1x PCIe16 and 1x PCIe1 Slots (PCIe x16 Slot Supports Dual Deck Add-on Card)
RC-E8E8-R10	Riser Card with 2x PCIe8 Slots
RC-E16PI-01	Riser Card with 1x PCIe16 and 1x PCI Slots (PCIe x16 Slot Supports Single Deck Add-on Card)
RC-PIPI-01	Riser Card with 2x PCI Slots

Optional Module Configuration



Model No.	Description	1	2	3	4
<p>CMI-CD100/FB21</p> 	CMI Module with 4x RS-232/422/485 Serial Ports, 8x Optical Isolated DIO (4 in/4 out), 1x DS-1102 Front Bezel	V	-	-	-
<p>CMI-ICD100/FB21</p> 	CMI Module with 4x Electrical Isolated RS-232/422/485 Serial Ports, 8x Optical Isolated DIO (4 in/4 out), 1x DS-1102 Front Bezel	V	-	-	-
<p>CMI-LAN01-R12/UB0612</p> 	CMI Module with 4x Intel I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout for DS-1100 Series	-	V	-	-
<p>CMI-M12LAN01-R12/UB0610</p> 	CMI Module with M12 Connector, 4x Intel I210 GbE LAN / 1x Universal Bracket with 4x M12 Cutout for DS-1100 Series	-	V	-	-
<p>CMI-XM12LAN01-R10/UB0630</p> 	CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded Cutout	-	V	-	-
<p>MEC-LAN-M102-30/UB0311</p> 	Mini-PCle Module with 2x LAN Ports, 2x 30cm cable / 1x Universal Bracket with 2x RJ45 Cutout	-	-	V	V
<p>MEC-USB-M102-30/UB0314</p> 	Mini-PCle Module with 2x USB 3.2 Gen1 Ports, 1x 30cm cable, 1x Universal Bracket with 2x USB Cutout	-	-	V	V
<p>MEC-COM-M212-DB9/UB0303</p> 	Mini-PCle Module with 2x COM Ports, 1x Standard DB9 Cable, 2x Universal Bracket each with 1x DB9 Cutout	-	-	V	V

V : Compatible