DC-1300

Intel® Alder Lake-N Processor Entry Performance and Compact Rugged Embedded Computer

Overview

The DC-1300 is the entry-level option in the DIAMOND product line specially designed for basic industrial applications. It supports an Intel® Core™ i3 or N97 (Alder Lake-N) processor and maximum expansion flexibility in a compact design, providing a robust and reliable solution for space-constrained industrial automation applications.

Key Features

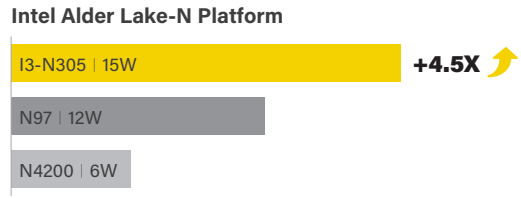
- Onboard Intel® Alder Lake-N Processor N97 and Core™ i3-N305 Processor
- 1 x DDR5 SO-DIMM Sockets, Supports up to 4800MHz 16GB Memory
- 1x M.2 Key B Type 3052/3042 Socket for 5G/GNSS Module Expansion
- 1x M.2 key B Type 2242 Socket for I/O Module Expansion
- CMI Technology for Optional I/O Module Expansions
- CFM Technology for Power Ignition Sensing Function
- Safety Standard: UL, cUL, CB, IEC, EN 62368-1

Certifications

EN 61000-6-2 · EN 61000-6-4 · MIL-STD-810H · EN 62368-1 · c UL us LISTED · CB

4.5X Performance

The Intel® Core™ i3-N305 processor (Alder Lake-N) option boasts 4.5 times the computing performance of the previous generation model, and features a DDR5 memory slot and multiple storage options (2.5" HDD/SSD, Half-Slim SSD, M.2 SSD, etc.) to flexibly meet various application needs.



Compact Design for Flexible Installation

The compact size of only 185 x 131 x 56.5 mm is suitable for space-constrained installs and it supports various installation methods, including wall mount, side mount and DIN-Rail.

Complete Wireless Solution

A full range of wireless transmission options, including GSM, GNSS and Wi-Fi, are supported through the built-in SIM card slot, M.2 Key B slot, or M.2 Key E slot (using an adapter to convert from M.2 Key B).

GNSS WIFI 5G

Rich Expandability

The new Stackable Expansion Box (SEB) adds support for more I/O, CANbus, and Fieldbus modules via the DC-1300's dual M.2 B Key slots, while CMI/CFM technology enables extra I/O (COM, DIO, display), and IGN functions.

International Certification

Industrial-grade protection supports wide temperatures (-40 to 70°C) and wide voltages (9-48 VDC), and passes the EMC standard for industrial environments (IEC 61000-6-2/61000-6-4). US military standard (MIL-STD-810H) ensure reliable operation across various application scenarios.

EMS EN 61000-6-2
EMI EN 61000-6-4
MIL-STD-810H
-40 – 70°C
-40 – 158°F
9 - 48VDC

Specifications

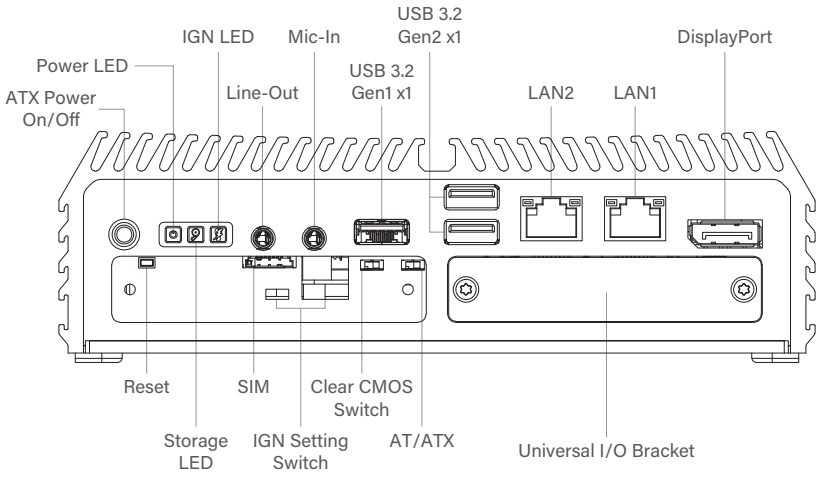
Model Name	DC-1300
System	
Processor	▪ Onboard Intel® Alder Lake-N Series Processor: - Intel® Core™ i3-N305 8 Cores Up to 3.80 GHz, TDP 15W - Intel® Processor N97 4 Cores Up to 3.60 GHz, TDP 12W
Memory	▪ 1x DDR5 4800 MHz SO-DIMM Socket, Supports Un-buffered and non-ECC Type, Up to 16GB
BIOS	▪ AMI
Graphics	
Graphics Engine	▪ Integrated Intel® UHD Graphics
Maximum Display Output	▪ Supports Two Independent Display (Onboard 1x DisplayPort + Optional CMI 1x Display)
DP	▪ 1x DisplayPort Connector (4096 x 2304 @60Hz) * Verified maximum resolution: 3840 x 2160 @ 60Hz
Audio	
Audio Codec	▪ Realtek® ALC888, High Definition Audio
Line-out	▪ 1x Line-out, Phone Jack 3.5mm
Mic-in	▪ 1x Mic-in, Phone Jack 3.5mm
I/O	
LAN	▪ 2x 2.5GbE LAN, RJ45 - GbE1: Intel® I225 - GbE2: Intel® I225
USB	▪ 2 x USB 3.2 Gen2x1 (10Gbps), Type A ▪ 1 x USB 3.2 Gen1x1 (5Gbps), Type A ▪ 1 x USB 2.0 (480Mbps), Type A
COM	▪ 2x RS-232/422/485 with Auto Flow Control (Support 5V/12V), DB9
Storage / Expansion	
2.5” Storage	▪ 1x 2.5" SATA HDD/SSD or 1x Half-Slim SSD (SATA 3.0)
M.2 Key B Socket	▪ 1x M.2 Key B Type 3042/3052 Socket (PCIe Gen 3x1/ USB3.2 Gen2 x1 / SATA), Support 5G/Storage/GNSS/Add-on Card Expansion ▪ 1x M.2 Key B Type 2242 (PCIe Gen 3x1 / USB2.0), Support Storage/GNSS/Add-on Card Expansion
SIM Socket	▪ 1x Front Accessible Dual Nano SIM Socket
CMI (Combined Multiple I/O) Interface	▪ 1x CMI Interface for optional Display or I/O Module Expansion ▪ 1x CMI Interface for optional I/O Module Expansion
CFM (Control Function Module) Interface	▪ 1x CFM Interface for optional IGN Module Expansion
Other Function	
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, IGN LED
Antenna Holes	▪ 2x Antenna Holes

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
Max. Power Consumption	▪ i3-N305 CPU: 49.4W ▪ N97 CPU: 35.9W - Test conducted with CPU, 1x RAM, and 1x storage - 100% load during burn-in testing
Inrush Current (Peak)	▪ i3-N305 CPU: 4.572 A@12V ▪ N97 CPU: 4.475 A@12V
Remote Power LED	▪ 1x Remote Power LED, 2-pin Terminal Block
Physical	
Dimension(W x D x H)	▪ 185 x 131 x 56.5 mm
Weight Information	▪ 1.5 Kg
Mechanical Construction	▪ Extruded Aluminum with Heavy Duty Metal
Mounting	▪ Wall / Side / DIN-RAIL / VESA Mount
Physical Design	▪ Fanless Design ▪ Cableless Design ▪ Jumper-less Design ▪ Unibody 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
MTBF	▪ 520,224 Hours - Database: Telcordia SR-332 Issue 3, Method 1, Case 3
Operating System	
Windows	▪ Windows®11, Windows®10
Linux	▪ Ubuntu Desktop 22.04 LTS
Environment	
Operating Temperature	▪ 12W TDP Processor: -40°C to 70°C (-40°F to 158°F) ▪ 15W TDP Processor: -40°C to 60°C (-40°F to 140°F) * PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling) * With extended temperature peripherals and 1.2 m/s ambient airflow * 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	▪ 12W TDP Processor: 95% RH @ 70˚C (Non-condensing) ▪ 15W TDP Processor: 95% RH @ 60˚C (Non-condensing)
Shock	▪ MIL-STD-810H
Vibration	▪ MIL-STD-810H
EMC	▪ CE, UKCA, FCC, ICES-003 Class A

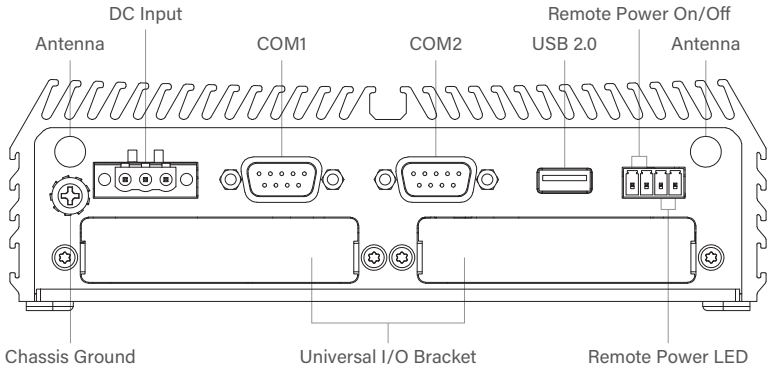
EMI	▪ CISPR 32 Conducted & Radiated: Class A ▪ EN/BS EN 55032 Conducted & Radiated: Class A ▪ EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A ▪ EN/BS EN61000-3-3 Voltage fluctuations & flicker ▪ FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A
EMS	▪ EN/IEC 61000-4-2 ESD: Contact: 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 (**Compliant with the standard when utilizing shielded ethernet cable.) ▪ 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

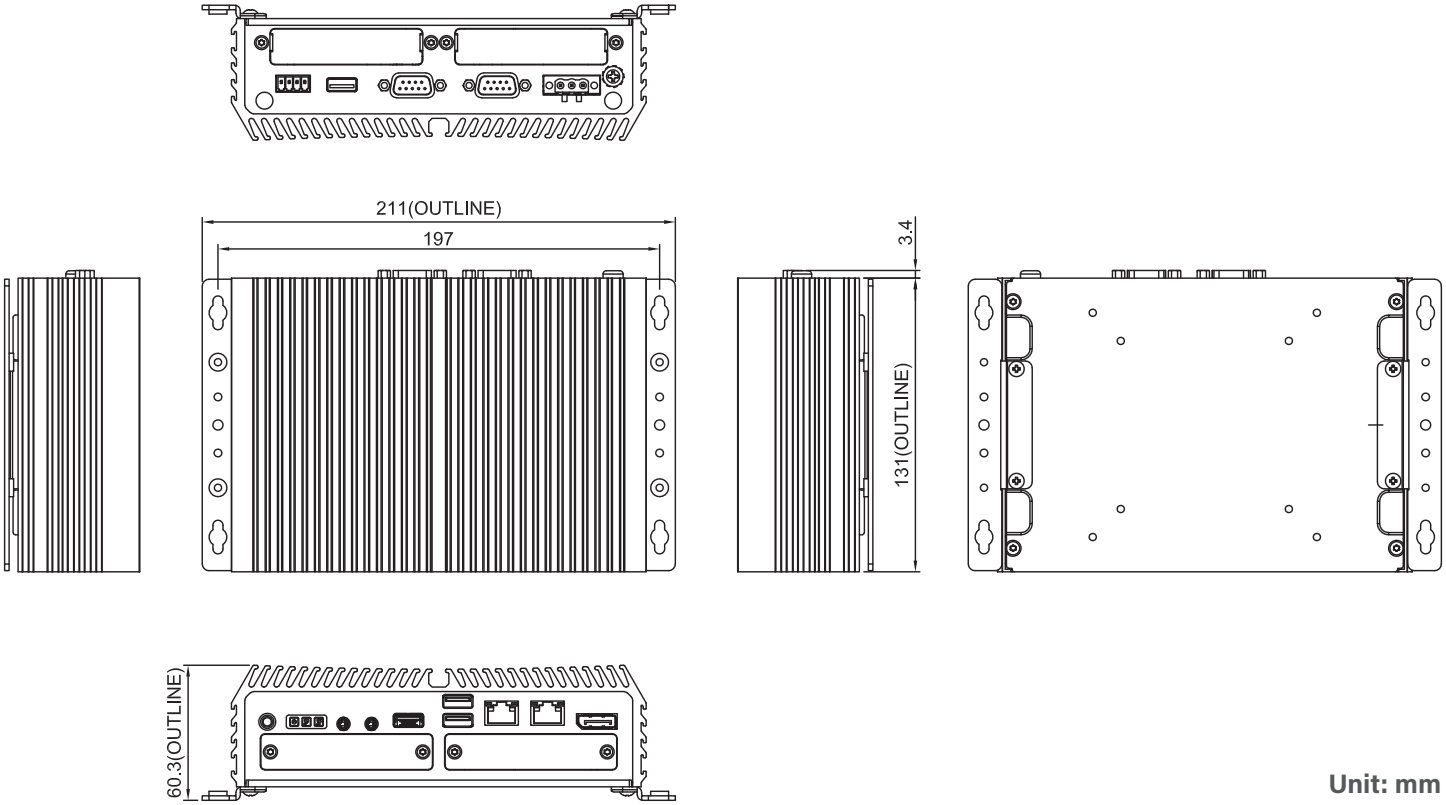
Front I/O



Rear I/O



Dimensions



Unit: mm

Ordering Information

Available Models

Model No.	Description
DC-1300-i3-R10	Intel® Core™ i3-N305 Entry Performance and Compact Rugged Embedded Computer
DC-1300-N97-R10	Intel® Processor N97 Entry Performance and Compact Rugged Embedded Computer

Package Checklist

▪ DC-1300 Embedded Computer x1	▪ Power Terminal Block Connector x1
▪ CPU Thermal Pad x1	▪ Remote Power On/Off + Remote Power LED Connector x1
▪ Screw Pack x1	▪ M.2 Key B Type 3052 to 3042 Adapter Bracket x1
▪ Wall Mounting Kit x1	

Optional Stackable Expansion Box

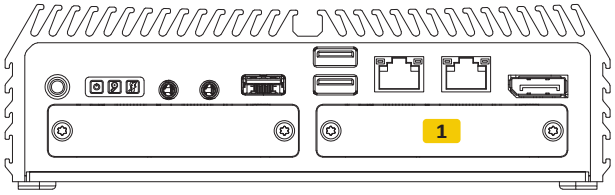
Model No.	Description
SEB-DC01-R10	Stackable Expansion Box with 4x Expansion Area for DC Series

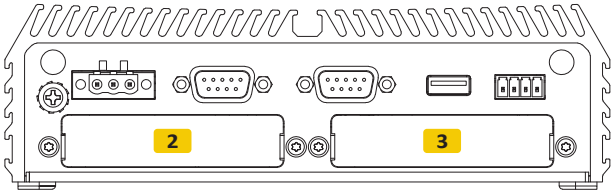
Optional Modules and Accessories

Model No.	Description
CMI-VGA01	CMI Module with 1x VGA Port
CMI-DVI01	CMI Module with 1x DVI-D Connector
CMI-HD02	CMI Module with 1x HDMI Port
CMI-DP03-R10	CMI Module with 1x DisplayPort
CMI-COM03	CMI Module with 2x RS232/422/485 Ports (Support 5V/12V), 2x DB9 Connector
CMI-DIO03	CMI Module with 8x DIO (4in 4out) Ports, 1x 10 Pin Terminal Block
CMI-FAN01-R10	CMI Module with 1x 4-pin Fan Connector
CFM-IGN02	CFM Module with Power Ignition Sensing Function, Select 12V/24V
MEC-LAN-2002i	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(-40°C~+85°C), 2x RJ45 Connector
MEC-LAN-2002i-S	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(0°C~+70°C), 2x RJ45 Connector
MEC-USB-2002	M.2 2242/2260/2280 (B+M key) 2-port USB 3.2 board(0°C~+70°C), 2x USB Type A Connector
MEC-USB-2002C	M.2 2242/2260/2280 (B+M key) 2-port USB 3.2 board(0°C~+70°C), 2x USB Type C Connector
MEC-COM-2012	M.2 2242/2260/2280 (B+M key) 2-port RS-232 serial board (-40°C~+85°C), 2x DB9 Connector
MEC-COM-2032i	M.2 2242/2260/2280 (B+M key) 2-port RS-232/422/485 isolated serial board (-40°C~+85°C), 2x DB9 Connector
MEC-CAN-2812i	M.2 2242/2260/2280 (B+M key) dual isolated CAN bus 2.0B board (-40°C~+85°C), 2x DB9 Connector
MEC-CAN-2814i	M.2 2242/2260/2280 (B+M key) quad isolated CAN bus 2.0B board (-40°C~+85°C), 4x DB9 Connector

UB1103	Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion
UB1106-R10	Universal Bracket with 1x DP Cutout for CMI-DP Expansion
UB1107	Universal Bracket with 1x DVI Cutout for CMI-DVI Expansion
UB1108	Universal Bracket with 1x HDMI Cutout for CMI-HDMI Expansion
UB1111	Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion
UB1115	Universal Bracket with 1x 10 Pin Terminal Block Cutout for CMI-DIO Expansion
UB1116	Universal Bracket with 1x VGA Cutout for CMI-VGA Expansion
UB1129	Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Rear Bezel)
UB1131-R10	Universal Bracket with 2x Antenna Cutout
UB1133-R10	Universal Bracket with 2x USB Type C Cutout for MEC-USB Expansion
UB1134-R10	Universal Bracket with 2x USB Type A Cutout for MEC-USB (M.2 interface) Expansion
UB1135-R10	Universal Bracket with 1x 4-Pin Terminal Block Cutout for CMI-FAN Expansion
UB1911-R10	Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Front Bezel)
FAN-EX105-R10	External Fan with 4pin Terminal Block Plug and Mounting Bracket, Support Smart Fan
AC-BE01-R10	M.2 Key B Type 2242 to M.2 Key E Type 2230 Adapter Card
SIDE03	Side Mount Kit for DC Series, with KMRH-K175 for DIN-Rail Mount
DIN01	DIN-RAIL Mount Kit, KMRH-K175
VESA-DC	DC series VESA Mount Kit
GST60A12-CIN1	Adapter AC/DC 12V 5A 60W with 3pin Terminal Block Plug and Tubes, Level VI
GST120A24-CIN	Adapter AC/DC 24V 5A 120W with 3pin Terminal Block Plug and Tubes, Level VI

Optional Module Configuration for DC-1300

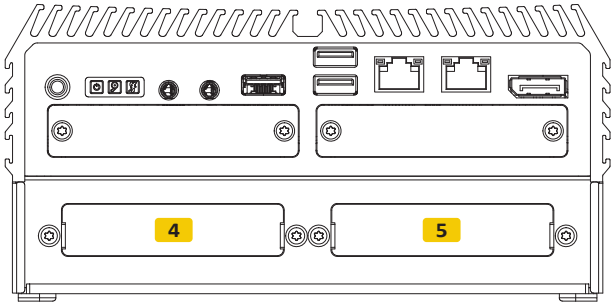


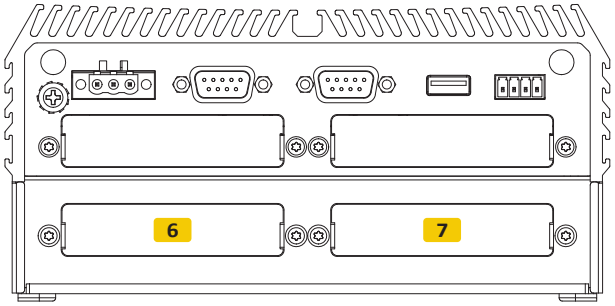


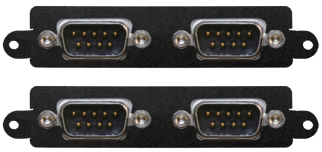
Model No.	Description	1	2	3
MEC-LAN-2002i/UB1911-R10 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(-40°C~+85°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Front Bezel)	V	-	-
MEC-LAN-2002i-S/UB1911-R10 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(0°C~+70°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Front Bezel)	V	-	-
MEC-LAN-2002i/UB1129 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(-40°C~+85°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Rear Bezel) * Only compatible with Half-Slim and M.2 SSDs when MEC-LAN is installed at the Rear Bezel.	-	-	V
MEC-LAN-2002i-S/UB1129 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(0°C~+70°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion (DC Series Rear Bezel) * Only compatible with Half-Slim and M.2 SSDs when MEC-LAN is installed at the Rear Bezel.	-	-	V
CMI-VGA01/UB1116 	CMI Module with 1x VGA Port / Universal Bracket with 1x VGA Cutout for CMI-VGA Expansion	-	-	V
CMI-DVI01/UB1107 	CMI Module with 1x DVI-D Connector / Universal Bracket with 1x DVI Cutout for CMI-DVI Expansion	-	-	V
CMI-HD02/UB1108 	CMI Module with 1x HDMI Port / Universal Bracket with 1x HDMI Cutout for CMI-HDMI Expansion	-	-	V
CMI-DP03-R10/UB1106-R10 	CMI Module with 1x DisplayPort / Universal Bracket with 1x DP Cutout for CMI-DP Expansion	-	-	V
CMI-COM03/UB1103 	CMI Module with 2x RS232/422/485 Ports (Support 5V/12V), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion	-	V	V
CMI-DIO03/UB1115 	CMI Module with 8x DIO (4in 4out) Ports, 1x 10 Pin Terminal Block / Universal Bracket with 1x 10 Pin Terminal Block Cutout for CMI-DIO Expansion	-	V	V
CMI-FAN01-R10/UB1135-R10 	CMI Module with 1x 4-pin Fan Connector / Universal Bracket with 1x 4-Pin Terminal Block Cutout for CMI-FAN Expansion	-	V	-
UB1131-R10 	Universal Bracket with 2x Antenna Cutout	-	V	V

V : Compatible

Optional Module Configuration for Stackable Expansion Box





Model No.	Description	4	5	6	7
MEC-LAN-2002i/UB1111 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(-40°C~+85°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion	V	V	V	V
MEC-LAN-2002i-S/UB1111 	M.2 2242/2260/2280 (B+M key) 2-port 10/100/1000 isolated Ethernet board(0°C~+70°C), 2x RJ45 Connector / Universal Bracket with 2x RJ45 Cutout for MEC-LAN Expansion	V	V	V	V
MEC-USB-2002/UB1134-R10 	M.2 2242/2260/2280 (B+M key) 2-port USB 3.2 board(0°C~+70°C), 2x USB Type A Connector / Universal Bracket with 2x USB Type A Cutout for MEC-USB (M.2 interface) Expansion * Only compatible with Half-Slim and M.2 SSDs when MEC-USB is installed.	V	V	V	V
MEC-USB-2002C/UB1133-R10 	M.2 2242/2260/2280 (B+M key) 2-port USB 3.2 board(0°C~+70°C), 2x USB Type C Connector / Universal Bracket with 2x USB Type C Cutout for MEC-USB Expansion * Only compatible with Half-Slim and M.2 SSDs when MEC-USB is installed.	V	V	V	V
MEC-COM-2012/UB1103 	M.2 2242/2260/2280 (B+M key) 2-port RS-232 serial board (-40°C~+85°C), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion	V	V	V	V
MEC-COM-2032i/UB1103 	M.2 2242/2260/2280 (B+M key) 2-port RS-232/422/485 isolated serial board (-40°C~+85°C), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion	V	V	V	V
MEC-CAN-2812i/UB1103 	M.2 2242/2260/2280 (B+M key) dual isolated CAN bus 2.0B board (-40°C~+85°C), 2x DB9 Connector / Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion	V	V	V	V
MEC-CAN-2814i/UB1103 	M.2 2242/2260/2280 (B+M key) quad isolated CAN bus 2.0B board (-40°C~+85°C), 4x DB9 Connector / Universal Bracket with 2x DB9 Cutout for CMI-COM, MEC-COM & MEC-CAN Expansion	V		V	
UB1131-R10 	Universal Bracket with 2x Antenna Cutout	V	V	V	V

V : Compatible