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

intel CORE i5 10TH GEN | intel CORE i9 10TH GEN | intel CORE i7 10TH GEN

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)

CE FC CMI TECHNOLOGY CFM TECHNOLOGY

EN62368-1 EN50121-3-2 MIL-STD 810G -40~70°C
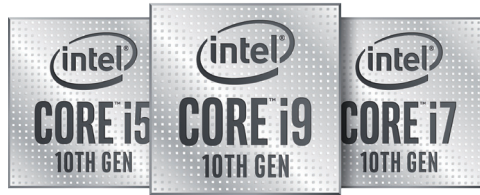
10-CORE & 80W
Workstation Grade Processor Support!

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 128 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.

multi-tasking compute-intensive application

CPU	
10th Gen i9-10900E	**31%**
9th Gen i7-9700	

Transfer rate

| Memory	
DDR4 2933 MHz	**10%**
DDR4 2666 MHz	

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 110 mm x 237 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.
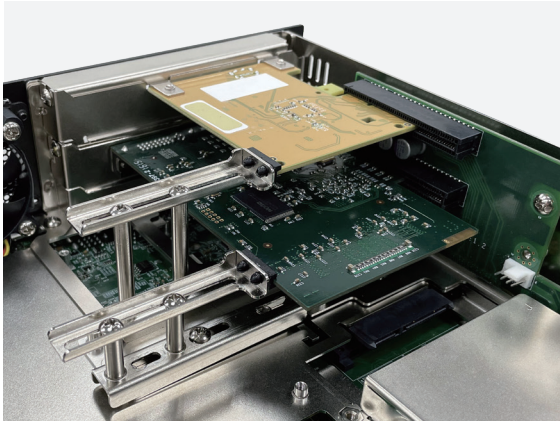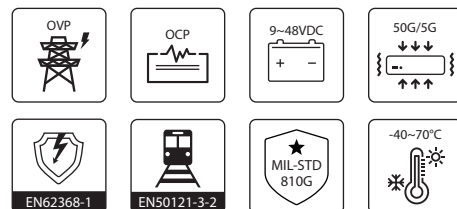
Adjustable
PCIe Card Retainer

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 No. I773359

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.

OVP

OCP

9~48VDC

50G/5G

EN62368-1

EN50121-3-2

MIL-STD 810G

-40~70°C

Specifications

System

Processor	Intel® Xeon® Series Processor (80W / 35W): ▪ Intel® Xeon® W-1270E 8 Cores Up to 4.8 GHz, TDP 80W ▪ Intel® Xeon® W-1250E 6 Cores Up to 4.7 GHz, TDP 80W ▪ Intel® Xeon® W-1290TE 10 Cores Up to 4.5 GHz, TDP 35W ▪ Intel® Xeon® W-1270TE 8 Cores Up to 4.4 GHz, TDP 35W ▪ Intel® Xeon® W-1250TE 6 Cores Up to 3.8 GHz, TDP 35W Intel® Core® Series Processor (65W / 35W): ▪ Intel® Core™ i9-10900E 10 Cores Up to 4.7 GHz, TDP 65W ▪ Intel® Core™ i7-10700E 8 Cores Up to 4.5 GHz, TDP 65W ▪ Intel® Core™ i5-10500E 6 Cores Up to 4.2 GHz, TDP 65W ▪ Intel® Core™ i3-10100E 4 Cores Up to 3.8 GHz, TDP 65W ▪ Intel® Core™ i9-10900TE 10 Cores Up to 4.5 GHz, TDP 35W ▪ Intel® Core™ i7-10700TE 8 Cores Up to 4.5 GHz, TDP 35W ▪ Intel® Core™ i5-10500TE 6 Cores Up to 3.7 GHz, TDP 35W ▪ Intel® Core™ i3-10100TE 4 Cores Up to 3.6 GHz, TDP 35W
Chipset	▪ Intel® W480E Chipset

Memory	▪ 2x DDR4 2933/2666/2400 SO-DIMM Socket
	  * Xeon / i9 / i7 Processor Supports Up to 2933MHz
	  * i5 / i3 Processor Supports Up to 2666 MHz
	▪ Supports Un-buffered and Non-ECC Type Up to 64GB

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	▪ 2x DisplayPort Connector (4096 x 2304 @ 60Hz, According to CPU Specifications) * Verified maximum resolution: 3840x2160.
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
	  - GbE1: Intel® I219
	  - 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 ▪ 4 x 5Gbps USB 3.2 Gen1, Type A ▪ 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) ▪ 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 * Supports maximum dimensions of add-on card (H x L) : 110 x 237 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 ▪ 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
Reset Button	▪ 1 x Reset 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 ▪ Cableless Design ▪ Jumper-less Design ▪ Unibody Design

Reliability & Protection

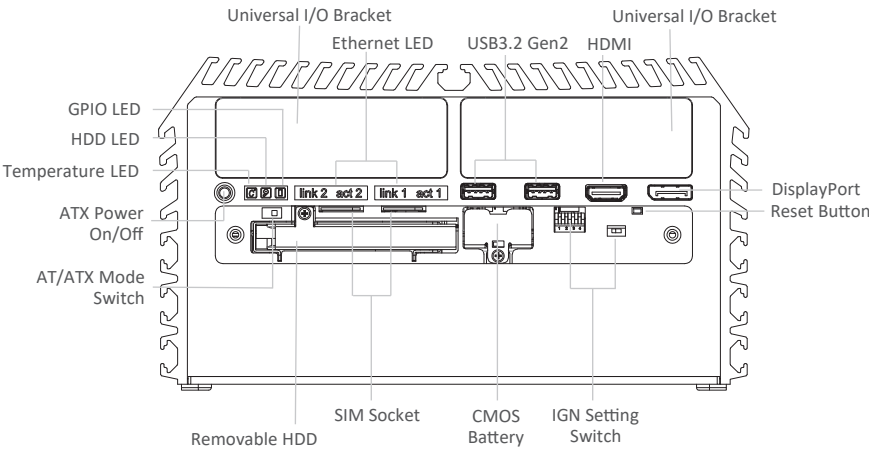| Reverse Power Input Protection	▪ Yes
Over Voltage Protection	▪ Protection Range: 51~58V ▪ Protection Type: shut down operating voltage, re-power on at the preset level to recover
Over Current Protection	▪ 15A
Surge Protection	▪ 2 kV
CMOS Battery Backup	▪ SuperCap Integrated for CMOS Battery Maintenance-free Operation
MTBF	▪ 371,393 Hours - Database: Telcordia SR-332 Issue 3, Method 1, Case 3

Operating System

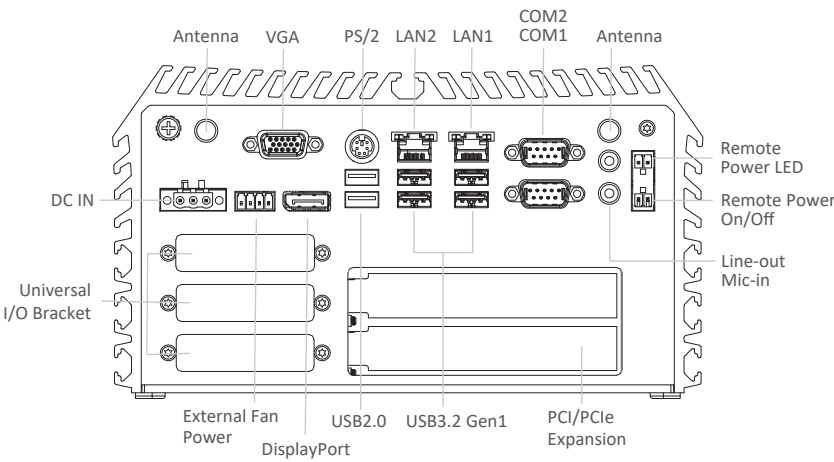| Windows	▪ Windows® 10
Linux	▪ Supports by project

Environment

Operating Temperature	▪ 35W TDP Processor: -40°C to 70°C ▪ 58W – 65W TDP Processor: -40~50°C (With External Fan Kit) ▪ 80W TDP Processor: -40~40°C (With External Fan Kit) * 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
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, UKCA, FCC, ICES-003 Class A, EN50121-3-2 (Railway)
Safety	▪ IEC/EN 62368-1

External Layout

Front I/O

GPIO LED
HDD LED
Temperature LED
ATX Power On/Off
AT/ATX Mode Switch

Universal I/O Bracket
Ethernet LED
USB3.2 Gen2
HDMI
Universal I/O Bracket

DisplayPort
Reset Button

Removable HDD
SIM Socket
CMOS Battery
IGN Setting Switch

Rear I/O

Antenna
VGA
PS/2
LAN2
LAN1
COM2 COM1
Antenna

DC IN

Universal I/O Bracket

Remote Power LED
Remote Power On/Off
Line-out Mic-in

External Fan Power
DisplayPort
USB2.0
USB3.2 Gen1
PCI/PCIe Expansion

Dimensions

259(OUTLINE)

≈1.9

261(OUTLINE)

243

10.5
⌀4.5
⌀3.5
⌀4.5
⌀8

90
180
230

227

132.8(OUTLINE)

128

Unit: mm

Ordering Information

Available Models

Model No.	Description
DS-1302-R10	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
- Wall Mount Kit x1
- Screw Pack x1
- Remote Function Terminal Block Connector x 2
- Power Terminal Block Connector x1
- Fan Terminal Block Connector x 1

Optional I/O Modules
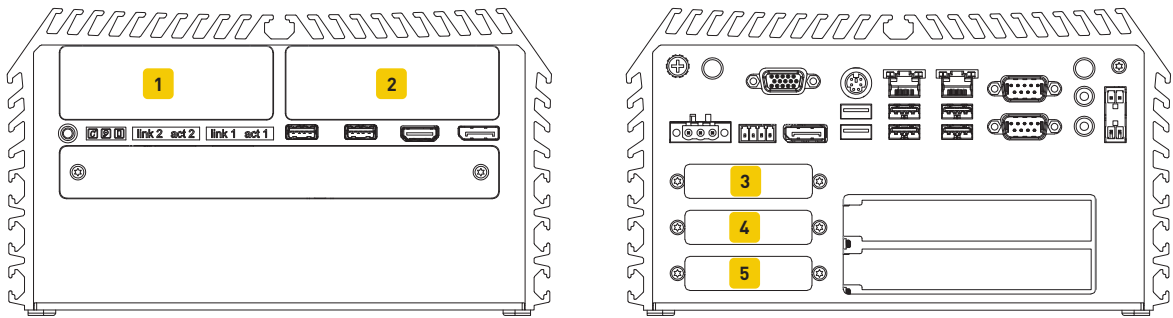
Model No.	Description	1	2	3	4	5
CMI-LAN01-R12/ UB1012	CMI Module with 4x Intel I210 GbE LAN, RJ45 Port / 1x Universal Bracket with 4x RJ45 Cutout	V	V	--	--	--
CMI-M12LAN01-R12 /UB1010	CMI Module with M12 Connector, 4x Intel GbE LAN / 1x Universal Bracket with 4x M12 Cutout	V	V	--	--	--
CMI-10GLAN03-R10/UB1028	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	--	--	--
CMI-XM12LAN01-R10/UB1030-R10	CMI Module with M12 X-Coded Connector, 4x Intel I210 GbE LAN Ports / Universal Bracket with 4x M12 X-Coded 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-M102-30 /UB0314	Mini-PCIe Module with 2x USB 3.2 Gen1 Ports, 1x30 cm cable, 1x Universal Bracket with 2x USB Cutout	--	--	--	V	V
MEC-LAN-M102-30/UB0311	Mini-PCIe 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-E8E8-R10	Riser Card with 2 x PCIex8 Slots
RC-E16E1-01	Riser Card with 1x PCIex16 and 1x PCIex1 Slots (PCIe x16 Slot Supports Dual Deck Add-on Card)
RC-E16PI-01	Riser Card with 1x PCIex16 and 1x PCI Slots (PCIe x16 Slot Supports Single Deck Add-on Card)
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
FAN-UB100	Exhaling fan with 4pin Connector, Universal Bracket
FAN-UB101	Inhaling fan with 4pin Connector, Universal Bracket
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