

# Rugged Compact Embedded Computer Family with Intel® Atom CPU x6000 Family

## General Description

The CEC20 Family is a low power, highly integrated, flexible and rugged computer. The solution can be used for any computer application where a most reliable solution is needed. The solution is available in various versions, built in a compact aluminum housing for DIN-Rail or flange mount, in a rugged IP67 MIL case with D38999 connectors, as 19" rack solution, or as open frame with a cooling plate. The Swiss designed solution integrates standard connectors for easy connection or lockable headers, depending on chassis choice. Therefore, the CEC20 Family can be used for any x86 application (Industry, Railways, Maritime, Defense) where a complete but still expandable and flexible solution is needed.

## CEC20 Family Highlights

The CEC2x comes with onboard NVMe mass storage and supports various other types of mass storage. The onboard m.2 Key-B slot can be used for multiple expansion options.

The board is equipped with a high density expansion connector with PCIe, USB, I2C, ... interfaces. This allows to expand the CEC20 Family with our standard I/O board or semi-custom designed I/O board, according the customer needs with minimal development effort. The CEC2x supports standard SO-DIMM DDR4 and has the possibility to support IBECC (In Band ECC). Particular precautions have been taken that the entire system EMC is within the CE and FCC limits and that standards like EN50155, IEC 60945 or MIL-STD-810 can be met.

### Key features are:

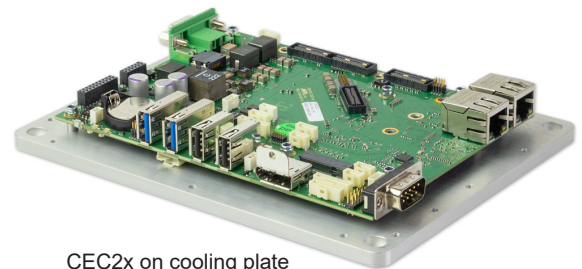
- DDR4 RAM up to 32GB (support of IBECC)
- 1 & 2.5 Gbit Ethernet ports
- Fanless operation
- Longterm availability (until 2035 with selected CPUs)
- Expansion port for standard or customized IO board
- Intel Atom Processor x6000 Family
- Low power consumption 4.5 -12W (TPD CPU)
- On board NVMe Flash (120GB)
- USB3.1, isolated serial ports...



CEC2x in standard housing



CEC2x in MIL enclosure



CEC2x on cooling plate



All MPL products are 100% engineered & manufactured in Switzerland (since 1985).

The CEC20 Family is available for different Industries and is the perfect solution for industrial environments, railway applications, MIL/COTS applications, or whenever a rugged long-term available computer is needed.



RAIL-CEC2x used in rugged Railway Applications



OPEN-CEC2x for integration in existing housings



CEC2x for use in Maritime Environments



MIL-CEC2x for use in Military Environments

## Technical Features

	CEC24	Others TBA
Processor	Intel Atom x6425E	
# of cores / threads	4 / 4	
Clock speed	up to 3 GHz	
L2 Cache	1.5 MB	
Passmark	4153	
TPD CPU	12 Watt	

### Board Key Data

Embedded Controller	Voltage and CPU temperature Supervisor, Smart battery support
Memory	Up to 32GB SO-DIMM 260 DDR4, IB ECC
BIOS	MPL engineered BIOS (AMI), customizable
Watchdog Timer	Configurable granularity 1-255 sec. or 1-255 min.
Indicator LEDs	Power, LAN LED (Speed /Activity), User / Activity LED (m.2, onboard NVMe)
TPM 2.0	FIPS 140-2 level 2, EAL4+ optional
Remote OOB	Intel OOB Remote Management

### Mass Storage

On-board Flash	120GB NVMe, on-board soldered Flash (optional up to 1TB)
M.2 Key B	PCIe Gen3 x2 (1970 MB/s)

### Interfaces

Graphics Interfaces	Display Port (DP++) up to 2560x1600 (DP), ESD protected Up to 3 displays, graphic interface for MPL specific extension (DVI, eDP/LVDS panel, VGA)
USB	2 x USB 3.1 ports, 2 x USB 2.0 ports, additional ones on board
LAN	1 x 2.5GbE port (Intel) on RJ45, ESD protected connectors, WoL (Wake on LAN) 1 x 1GbE port (Marvel) on RJ45 (OOB capable)
Serial Ports	1 x full modem RS232 port, ESD protected external DB9 connector 1 x RS232/485 optional
HDAudio	Intel HDAudio signals, available on a 1 mm header, sound card (HDSOUND-1) is available

### Expansions

Media Port	2 x optional display interfaces
Expansion Port	4x PCIe Gen3 and 2x USB 2.0, ideal for customized expansions (mPCIe, SATA, LAN, IO, CAN, Serial,...)
m.2	Key-B (USB/ PCIe / Dual SIM)
On-board on header	SD card, SPI and I2C, HDAudio, Serial, USB, FAN, SIM, Reset button, Power-LED

### Power

Input Voltage	8 - 36 VDC input range, ESD and EMC protected power input, ignition / power button Over voltage protection, reverse polarity and load dump protection Ignition input specifically for vehicles
Power consumption	4.5 - ~20W typical (all operational)

### Environment

Storage Temperature	-45°C up to +85°C (-49°F to +185°F)
Operating Temperature	-20°C to +70°C, with full CPU, 3D video and memory usage, fanless
Extended Temperature	-40°C to +85°C, fanless, final test in climate chamber with test protocol (optional)
Relative Humidity	5% to 95% non condensing, optional coating available

### Standard Compliance

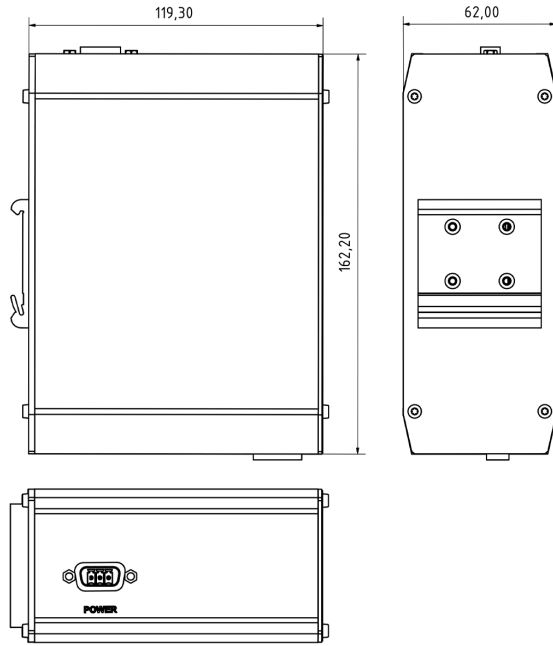
The CEC20 Family is designed to meet or exceed the most common standards. Particular references are:

EMC	EN 55022, EN 55024, EN 61000, MIL-STD-461E
Shock & Vibration	EN 60068
Environmental & Safety	EN 50155, MIL-STD-810G, EN 60601, EN 60950
Approval List	CE, IEC 60945, IACS E10

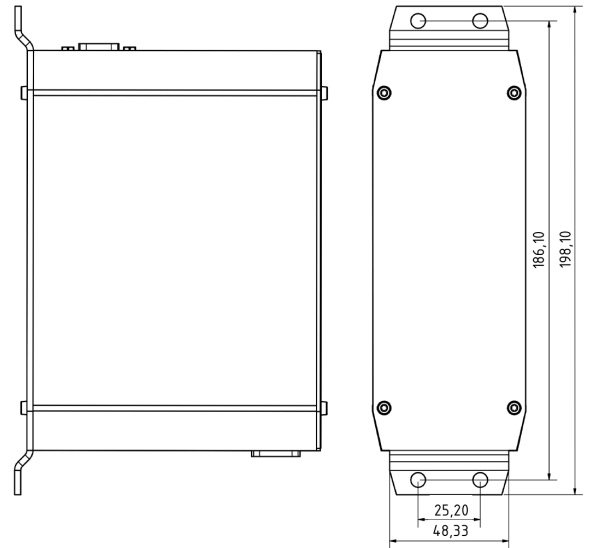
Specifications are subject to change without notice

# Compact Embedded Computer - CEC20 Family

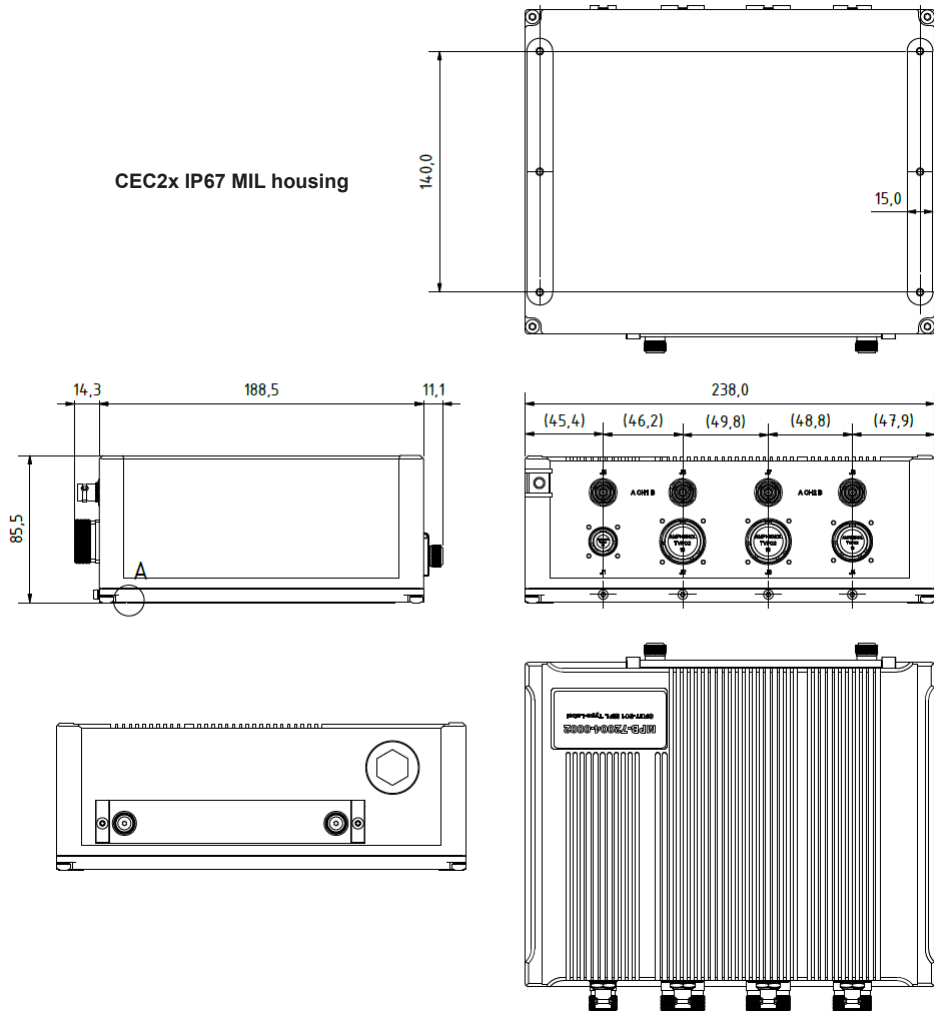
CEC2x DIN-Rail mount



CEC2x Flange mount



CEC2x IP67 MIL housing



## Packaging

Chassis version	footprint	height	weight	
DIN Rail	62 x 120mm	162.1mm	1.2 kg (2.7 lb.)	custom color or foil available
Flange	62 x 123mm	198.05mm	1.25 kg (2.8 lb.)	custom color or foil available
Open Frame	min. 102 x 153mm	min. 23mm	0.6 kg (1.32 lb.)	custom cooling plate available
IP67 MIL	238 x 188.5mm	85.5mm	2.1 kg (4.66 lb.)	custom housings and connectors available

The aluminum housings are internally chromated, externally powder coated or anodized, no ventilation holes.

