Compact Embedded Computer - CEC20 Family

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.

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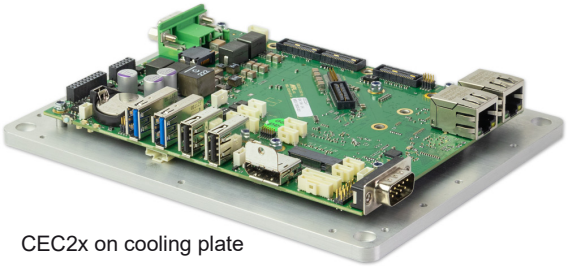

CEC2x on cooling plate

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.

CEC2x in
standard housing

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 MIL enclosure

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

The CEC20 Family is 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.

CEC2x in standard housing with built-in FIME IO expansion

CEC2x for use in maritime environments

OPEN-CEC2x for integration in existing housings

MIL-CEC2x for use in military environments

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Compact Embedded Computer - CEC20 Family

Technical Features

Board Key Data

Processor	Intel Atom x6425E **(CEC24)**
# of cores/threads	4 / 4
Clock speed	up to 3 GHz
L2 Cache	1.5 MB
Passmark	4153
TPD CPU	12 Watt
Embedded Controller	Voltage and CPU temperature Supervisor,Smart battery support
Memory	Up to 32GB SO-DIMM 260 DDR4-3200, IBECC
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 4096x2160 (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, IEC / EN 62368
Approval List	CE, IEC 60945, IACS E10

Specifications are subject to change without notice

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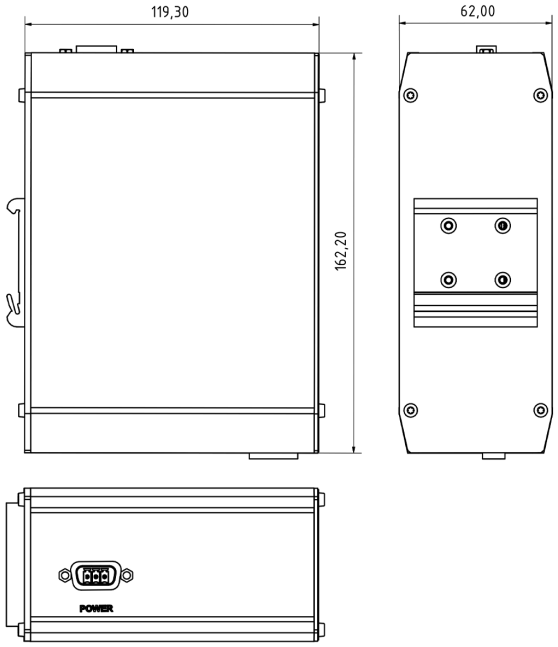
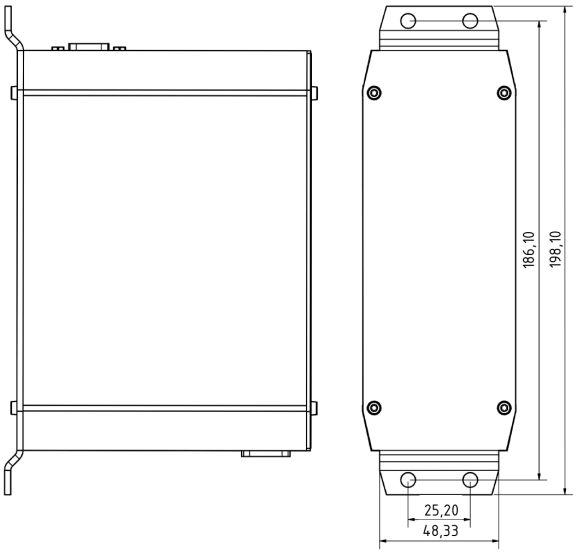
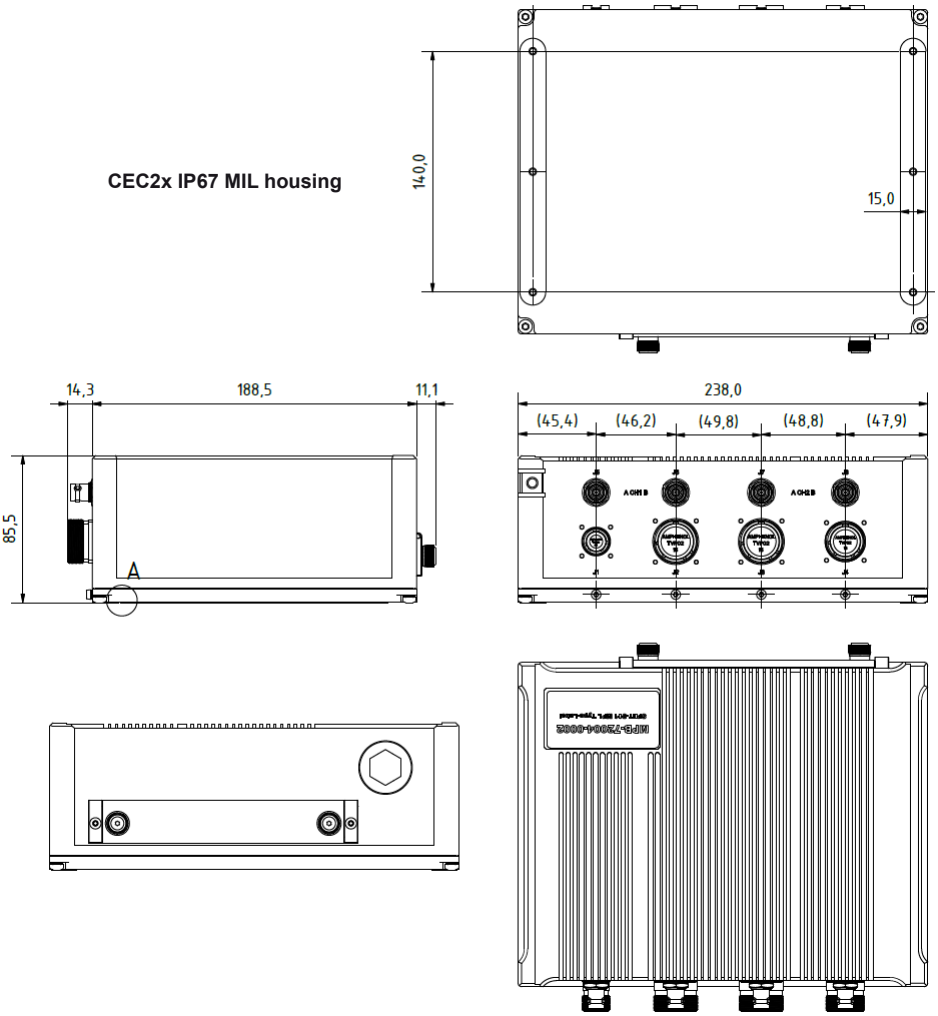
CEC2x DIN-Rail mount



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.

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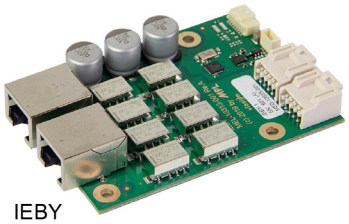
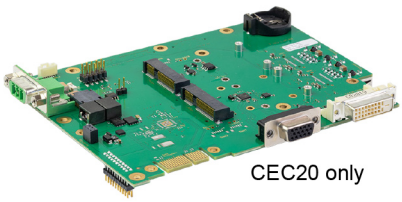
Expansion Options for the CEC20x



IEBY
LAN bypass solution



CEC20 only

FIME mPCIe expansion
DVI, VGA, 2x 2.5Gbit LAN

CEC20x
with build in FIME expansion

General Description

Although the MPL Processor boards are traditionally equipped quite well, special interfaces like sound or standard PCI slots are sometimes required in industrial applications. Therefore, we provide you with a selection of optional expansion modules to further extend the capabilities of the MPL processor boards..

Key features are

- Low power usage
- Rugged design
- Long-term availability*
- Environment temperature up to -40°C to +85°C

MPL expansions options have been designed to withstand harsh environments and extreme temperature conditions. The special rugged design, combined with the best industrial-grade components, offer high reliability and long-term performance.

MPL products are 100% designed and manufactured in Switzerland. All products are fanless, shock and vibration proof, low power, rugged, and long-term* available. The perfect solution for a system to be used in rugged environments.

** Typically 10 years or more, 20+ repair*

All MPL products are 100% designed and manufactured in Switzerland.

Special Features

- ECC DDR3 memory modules (extended temperature)
- Specific interface for vehicle operation
- On-board soldered flash
- Space for mSATA and/or SATA 2.5” disks
- mPCIe expansion bus up to 7 slots
- Extended temperature option (-40°C to +85°C)
- Coated and bonded versions
- Marine certified versions (IEC60945)
- Railway certified versions (EN50155)

CEC Options

Power Options

SM BATT	UPS 0°C - 60°C / -40°C - 75°C (smart battery)
PIPVIN	9-36V/18-72V/43-160V input
REDPI	Redundant power input

Expansion Options

FIME	mPCIe exp. 3 slots, DVI, VGA, 2x 2.5Gbit LAN
ICC	Customized interconnect board

Networking options

µMAGBES	10-port managed Gbit switch
µTX2FX	Media converter (copper to fiber)
µEPI	PoE (Power over Ethernet)
IEBY	LAN bypass solution

Various Add-on

SERIF	RS232 / isolated RS232/422/485 module
HDSound	Sound module
DUALDP-1	Second display port module
FLEXIO	DIO/AIO add-on card, up to 64 channel

MPL AG is an ISO9001 certified company

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