

Swiss Made Rugged Embedded Computer Family with Intel® Atom™ E3800 Processor

General Description

The CEC10 product Family is a high performance, low power, and highly integrated rugged Embedded Computer. The solution is available in various chassis, a compact aluminum housing with DIN-Rail or flange mount, a rugged MIL IP67 case, or an open frame solution with a cooling plate. The unique chassis solution allows to operate the CEC10 products in a moderate and also in a harsh environment without the need of fan or ventilation holes, up to -40°C to +85°C. The design integrates standard connectors for easy connection or lockable headers, depending on housing choice. Therefore, the CEC10 Family boards can be used for any x86 application where a complete but still expandable solution is needed.

CEC10 Family Highlights

The CEC10 Family housings offer sufficient space for a 2.5 inch HDD/SSD or other expansion requirements. With the integrated PCI-Express Mini Card slot, the new CEC10 can easy be expanded with any mPCIe module. The product comes with a unique board interface which offers 2 x PCIe, 2 x HSIC, 2 x UART, SATA, SDIO, LPC, and I2C. This allows a maximum on customization for any I/O Boards and allows to extend the system with additional interfaces. For example; GPIOs, additional serial ports, Gigabit fiber ports, CAN, additional miniPCIe slots, or even PCI/104-Express port. 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.

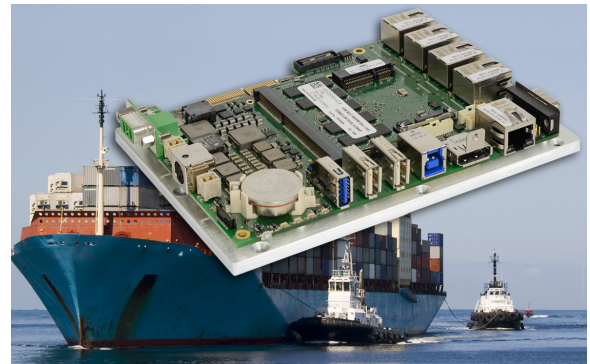
Key features are:

- DDR3 ECC RAM up to 8GB
- 5 Gbit Ethernet ports on RJ45, M12, or fiber
- Fanless operation
- Long term availability*
- Customizable IO board

The CEC10 Family has been designed to withstand any harsh environments and extreme temperature conditions. The special rugged design, combined with the best industrial-grade components, offer high reliability and long-term performance.

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

The **CEC10 Family** is available for different Industries and is the perfect embedded computer solution for industrial environments, railway applications, MIL/ COTS applications, or whenever a rugged long-term available computer is needed.



OPEN-CEC10 for integration in existing housings



RAIL-CEC10 for rugged Railway Applications



MIL-CEC10 for use in Military Environments

Technical Features

Board Key Data			
	CEC11	CEC12	CEC14
Processor	Intel Atom E3815	Intel Atom E3825	Intel Atom E3845
# of cores / threads	1 / 1	2 / 2	4 / 4
Clock speed	1.46GHz	1.33 GHz	1.91GHz
L2 Cache	521KB	1MB	2MB
Passmark (all cores)	356	560	1340
Chipset	System-on-chip (SoC) , 64-bit, Intel AES-NI, Intel VTx		
Memory	Up to 8GB DDR3L ECC memory on one 204-pin socket		
BIOS	On-board soldered 8MB Flash, MPL engineered BIOS (SecureCore by Phoenix), customizable		
Watchdog Timer	Configurable granularity 1-255 sec. or 1-255 min.		
Indicator LEDs	Power, 4 x LAN, 1 user programmable LEDs		
TPM	Optional: Trusted Platform Support		
Mass Storage			
on-board Flash	32GB eMMC on-board soldered Flash (optional up to 64GB)		
mSATA	1 x mSATA full size card socket, shared with mPCIe		
SATA	1 x SATA 2.0 ports, all ESD protected (optional)		
Interfaces			
Graphics Interfaces	Display Port (DP) up to 2560x1600 (DP), ESD protected (DVI over adapter) Dual display capable, VGA, DP, or 24-bit LVDS interface (optional)		
USB	1 x USB 3.0 ports, 2 x USB 2.0 ports		
LAN	5 x GbE ports (Intel i210) on RJ45 , ESD protected connectors, 2 x WoL (Wake on LAN) 3 x GbE ports (Intel i210) on M12 or fiber (optional)		
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			
mPCIe	1 x mPCIe full size card socket, shared with mSATA		
MPL Bus	2 x PCIe x1 / SDIO / SPI / 2x UART / LPC / SATA / 2 x HSIC ideal for customized expansions		
Power			
Input Voltage	8 - 36 VDC input range, ESD and EMC protected power input, Reset / Power button Over voltage protection, reverse polarity protection, and load dump protection Ignition input specifically for vehicles (available on a 4-pin Mini-DIN connector)		
Power consumption (all operational)	CEC11 6W typical, 10W max	CEC12 7W typical, 11W max	CEC14 9W typical, 14W max
Environment			
Storage Temperature	-45°C up to +85°C (-49°F to +185°F)		
Operating Temperature	-20°C to +60°C (-4°F to +140°F), with full CPU, 3D video and memory usage, fanless -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 CEC10 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		

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	175 x 182mm	min. 66mm	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

MPLAG is an ISO9001 certified company

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