Rugged MIL/COTS SWaP-C Server Solution
conductive cooled, with Intel® Xeon™ CPU

General Description

The MXCS is a high performance, low power and highly integrated Rugged Embedded Server, built in a special designed MIL IP67 housing. This allows to operate the MXCS in any environment as no fan or air vents are implemented. The design allows to use the required MIL-38999 connectors for the projects. Therefore, the MXCS solution can be used for any server application, where a flexible rugged solution is needed.

MXCS Highlights

The MXCS housings offer space for up to 2 x 2.5" SSD and comes with internal expansion options over PCI/104-Express and mini PCI Express interfaces. The rugged server is available in a sealed IP67 MIL housing and is designed to meet various standards like MIL-STD-810G, MIL-STD-704F, MIL-STD-1275D, CE, EN50155 or IEC 60945.

Key features are:

- up to 16 cores / Intel Xeon CPU
- up to 128GB ECC DDR4
- two 10Gbit ports
- mSATA / M.2 ports
- mPCIe / PCIe ports
- up to 8x SAS/SATA with RAID configuration
- conductive cooling concept
- fanless, -20°C to +60°C
- long-term availability guarantee*

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

* Typically 10 years or more, 20+ years repairable

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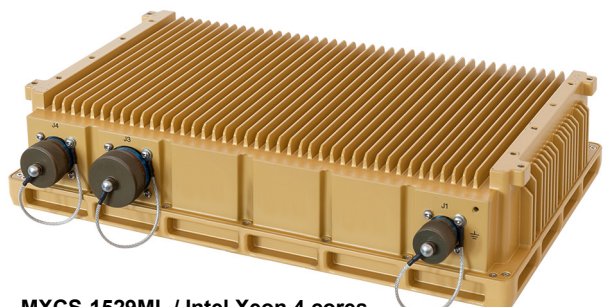
MXCS configuration samples

MXCS-1577ML / Intel Xeon 16 cores
- 4× 32GB DDR4 ECC (total **128GB**)
- 2× 2.5" SATA SSD 1T
- 2× M.2 SSD 1T
- 1× BMC (1× RJ45 / 1× VGA)
- fanless / -20°C to +60°C
- 1× RS232
- 2× USB 3.0
- 3× LAN Gbit
- 1× GPGPU
- 19 - 110 VDC input

MXCS-1548ML / Intel Xeon 8 cores
- 2× 32GB DDR4 ECC (total **64GB**)
- 2× 2.5" SATA SSD 1T
- 1× BMC (1× RJ45 / 1× VGA)
- fanless / -20°C to +60°C
- 2× RS232
- 2× LAN Gbit
- 2× 10Gbit SFP+ port
- 19 - 36 VDC input

MXCS-1529ML / Intel Xeon 4 cores
- 2× 8GB DDR4 ECC (total **16GB**)
- 2× mSATA SSD 512GB
- 1× BMC (1× RJ45 / 1× VGA)
- fanless / -20°C to +60°C
- 2× LAN Gbit
- 2× RS232
- 19 - 110 VDC input

The MXCS 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 with cooling concept is needed.

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Technical Features

Board Key Data	MXCS-1548ML	MXCS-1577ML	MXCS-1587ML
Processor *	Intel Xeon D-1548	Intel Xeon D-1577	Intel Xeon D-1587
Clock speed	2.0 / 2.6GHz	1.3 / 2.1GHz	1.7 / 2.3GHz
Cores / threads	8 / 16	16 / 32	16 / 32
Smart Cache	12 MB	24 MB	24 MB

Memory	up to 128 GB DDR4 ECC memory in four RDIMM slots, or up to 64GB UDIMM memory
TPM	over separate module (INTEL or FPGA)
Watchdog Timer	configurable granularity 10 ms, 1 s or 1 minute, results in a timeout from 2.5 seconds up to 4 hours.
Indicator LEDs	power, reset, various others

Interfaces
Serial	1 x RS232 on connector
	1 x RS232/422/485 on DB-9
USB	4 x USB 3.0 ports on type A (D-1529 USB 2.0 only)
LAN	2 x 1Gbit copper ports on RJ45
	2 x 10Gbit SFP+ copper or fiber ports (D-1529 1Gbit SFP only)

Internal Expansions
mPCIe	4 x mPCIe Full-Mini Card sockets
PCI/104-Express	1 x PCIe/104 (PCIe x8 Gen3)
PCIe x16	1 x PEG port connector (PCIe x16 Gen3)
SATA	2 x SATA 3.0
	2 x mSATA
	2 x M.2 Key M ports
RAID	optional RAID controller board with on-board memory and flash,
	up to 8 x SAS/SATA ports, RAID 0/1/5/10 support

Baseboard Management Controller (BMC)
Memory	DDR4-1600 up to 1GB
Graphics	1 x VGA, ESD protected up to 1920 x 1200
LAN	1 x GbE port, ESD protected / IPMI management port
BIOS	redundant AMI BIOS FLASH

Power
Input Voltage	19 - 36 VDC input range, ESD and EMC protected power input (redundant capability)
	reverse polarity protection, load dump protection
	reset & power button
	optional internal UPS system, optional galvanic separation, other voltage possible
	ignition input specifically for vehicles
Power consumption	40 - 100 Watt (depending on CPU), Enhanced Intel Speed Step Technology

Environment
Storage Temperature	-45°C up to +85°C (-49°F to +185°F)
Operating Temperature	-20°C to +60°C (Fanless)
Relative Humidity	5% to 95% non condensing, optional coating available

Standard Compliance
The MXCS 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

* other D-1500 CPUs on request

Packaging

Chassis version		length	width	heights	weight	
MXCS-ML	IP67 MIL version	TBD - to customer specifications				custom housings / connectors available
MXCS-CA	**C**ompact **A**luminum	207mm	351mm	66mm	5 kg (11 lb.)	see housing specific datasheet MXCS-CA
MXCS-RK	19" Rack version	415mm	19"	2U	18.2 kg (40.1 lb.)	see housing specific datasheet MXCS-RK
MXCS-OF	Open Frame	201mm	342mm	50mm	3.2 kg (7 lb.)	see housing specific datasheet MXCS-OF

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