Fanless Rugged Server Solution
in compact housing 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 compact aluminum housing to meet the SWaP-C specifications. This allows to operate the MXCS in a moderate or harsh environment without the need of fans or air vents. The design integrates standard connectors for easy connection. Alternative connectors (M12, MIL 389999) or different housings (19" rack, MIL IP67 or Open Frame) are available. The MXCS solution can be used for any server application where a compact fanless solution is needed.

MXCS Highlights

The housings offer space for up to 2 x 2.5" SSD. With internal expansion over PCI/104-Express and Mini PCIe, various functions can be added. Particular precautions in the design have been taken that the entire system EMC is within the CE and FCC limits and capable to meet the MIL-STD810G, 461, 704, 1275, as well as standards like IEC60945 or EN50155.

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.

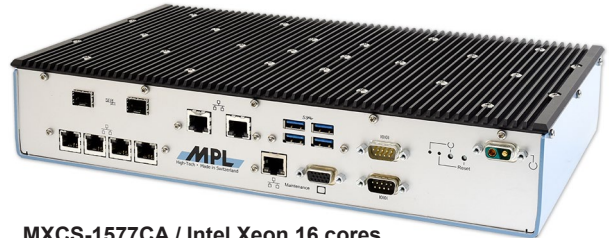** Typically 10 years or more, 20+ years repairable*

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

MXCS configuration samples

MXCS-1577CA / 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)
- 19 - 36 VDC input voltage
- fanless / -20° to +60°C
- 2× RS232
- 4× USB 3.0
- 2× LAN Gbit
- 4× LAN Gbit
- 2× 10Gbit SFP+ port

MXCS-1548CA / Intel Xeon 8 cores
- 2× 32GB DDR4 ECC (total **64GB**)
- 2× 2.5" SATA SSD 1T
- 1× BMC (1× RJ45 / 1× VGA)
- 19 - 36 VDC input voltage
- fanless / -20° to +60°C
- 2× RS232
- 4× USB 3.0
- 2× LAN Gbit
- 2× 10Gbit SFP+ port

MXCS-1529CA / Intel Xeon 4 cores
- 2× 8GB DDR4 ECC (total **16GB**)
- 1× mSATA SSD 512GB
- 1× BMC (1× RJ45 / 1× VGA)
- 19 - 36 VDC input voltage
- 4× USB 3.0
- 2× LAN Gbit
- 2× 10Gbit SFP+ port
- fanless / -20° to +60°C

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.
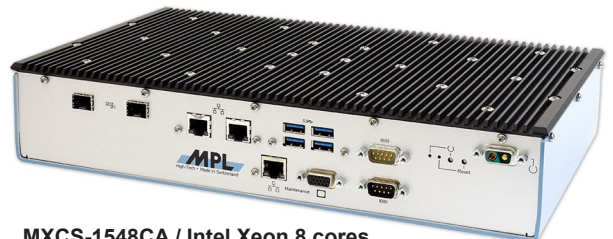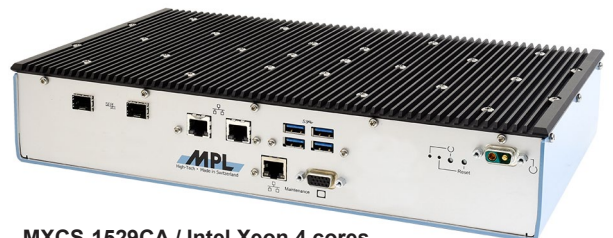

MPL AG is an ISO9001 certified company

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Technical Features

Board Key Data	MXCS-1529CA	MXCS-1548CA	MXCS-1577CA
Processor	Intel Xeon D-1529	Intel Xeon D-1548	Intel Xeon D-1577
Clock speed	1.3 / 1.3GHz	2.0 / 2.6GHz	1.3 / 2.1GHz
Cores / threads	4 / 8	8 / 16	16 / 32
Smart Cache	6 MB	12 MB	24 MB

Memory	up to 128 GB DDR4 ECC memory in four RDIMM slots
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 USB3.0 ports on type A
LAN	2 x 1Gbit copper ports on RJ45 / 2 x 10Gbit SFP+ port (copper or fiber)

Internal Expansions

mPCIe	4 x mPCIe PCI Express Gen2
PCI/104-Express	1 x PCIe x8
PCIe x16	1 x PEG graphic expansion
SATA	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 RJ45 port, ESD protected
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	25 - 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

Packaging

Chassis version		length	width	heights	weight	
MXCS-CA	**C**ompact **A**luminum	207mm	351mm	66mm	5 kg (11 lb.)	
MXCS-RK	19" Rack version	415mm	19"	2U	18.2 kg (40.1 lb.)	see housing specific datasheet MXCS-RK
MXCS-ML	IP67 MIL version	TBD - to customer specifications				see housing specific datasheet MXCS-ML
MXCS-OF	Open Frame	201mm	342mm	27mm	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

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