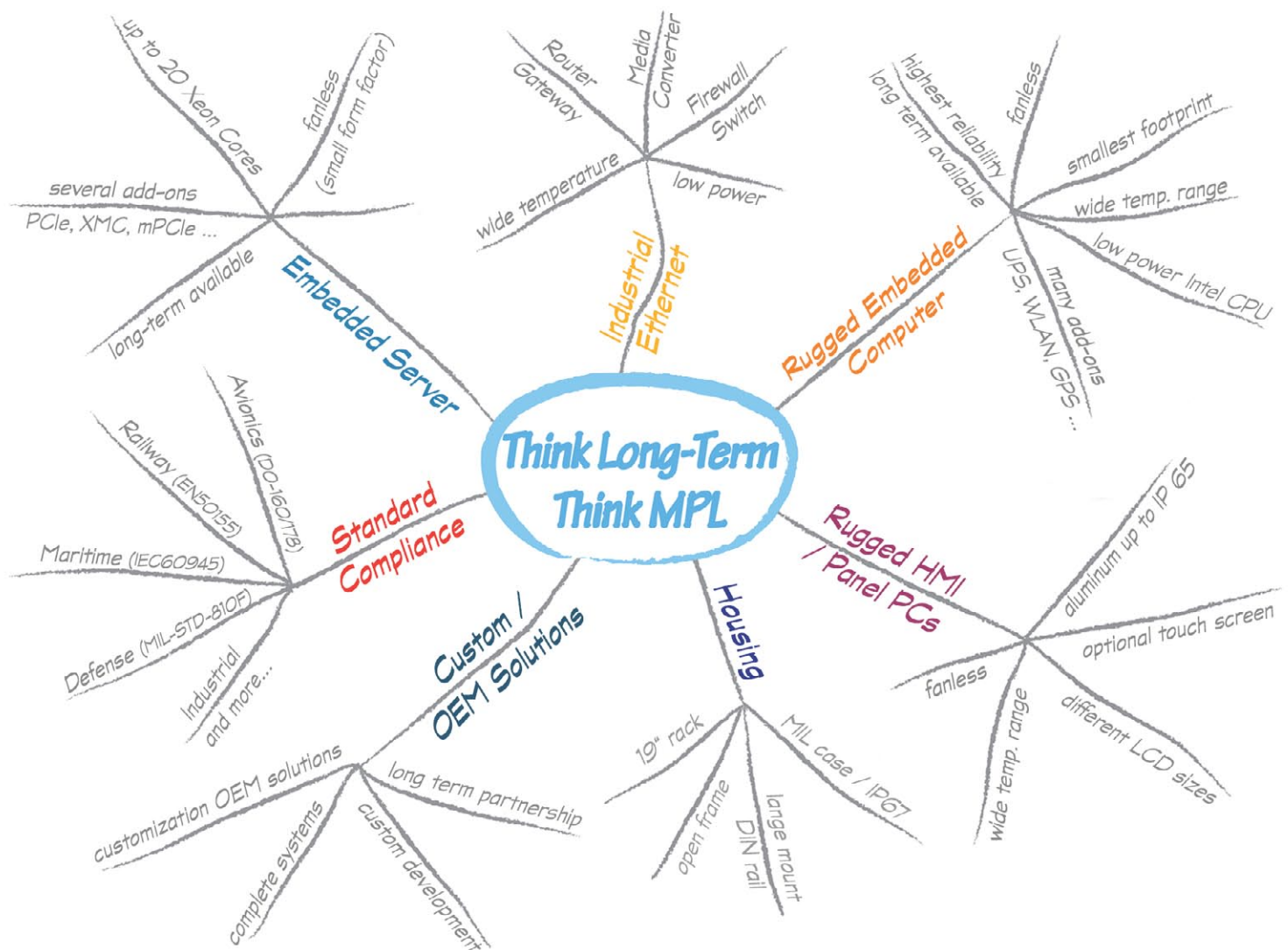


# MIL/COTS Solutions



# Why is MPL the right partner for MIL/COTS applications?

## TEN Reasons to buy MPL Products

### 1. Continuity

Since 1985, MPL has been the industry leader in developing and manufacturing rugged, fanless electronics, and embedded systems for customers demanding best quality. MPL's commitment to design, high reliability, low power consumption, extended temperature, and long-term available products are the cornerstones of our success.

### 2. Innovation

MPL products differ clearly from other products on the market. Most other products are cost optimized, but neglect the quality in design control, life cycle management, low power consumption, and MTBF optimization found in each MPL product. MPL maintains special agreements and relationships with the major chip suppliers who offer MPL early access to the latest technology developments.

### 3. Unmatched Quality

MPL products are designed from inception to insure high reliability when operating in rugged and tough railway environments. A further development focus is to produce consistent, stable, long-term available products, helping to reduce our customers TCO.

### 4. Low power Design increases MTBF

We design products and solutions that have the lowest possible power consumption in the industry. They generate less heat, less stress, and therefore a higher MTBF value with a better reliability rate as the proven result.

### 5. Extended Temperature Range (-40°C up to +85°C)

Each standard MPL product withstands operating temperatures of -20°C to +60°C. Products with the extended temperature option receive additional specific product tests and test cycles in our environmental chambers. Test reports are delivered with each product. Wherever possible, components with a temperature range of -40°C to +85°C will be selected.

### 6. Long-term available Solutions

Our main target is long-term availability, as this is a major cost reduction factor for our customer. Whenever possible, MPL uses products out of the embedded road map from various suppliers. MPL maintains end-of-life stock to ensure longevity of supply and longevity of repair. Typical long-term availability is 10 years after introduction, and repairs over 20 years.

### 7. Highly Ruggedized

MPL products are specifically designed to withstand harsh environmental operations. In numerous MIL applications, MPL COTS products have proven their ability to withstand extreme temperatures, thermal cycling stress, high shock, and vibration conditions. They have been used worldwide on vehicles, airplanes, and land based applications, according to MIL-STD-810G.

### 8. Reliable Partnership

MPL offers to its customers and business partners a long-term, cooperative engagement. Our financial strength and independence is important to sustain MPL's growth and future.

### 9. Closeness

Our distributors are near you! To serve our customers the best, we maintain a global distributor network which will handle your local pre- and post sales support.

### 10. MPLcare

MPLcare is a system which is maintained by design engineers, management, and the MPL administration team. MPLcare is provided to each customer free of charge and includes technical support questions answered in less than 24 hours by the product design engineering team.

Think Long-Term – Think MPL

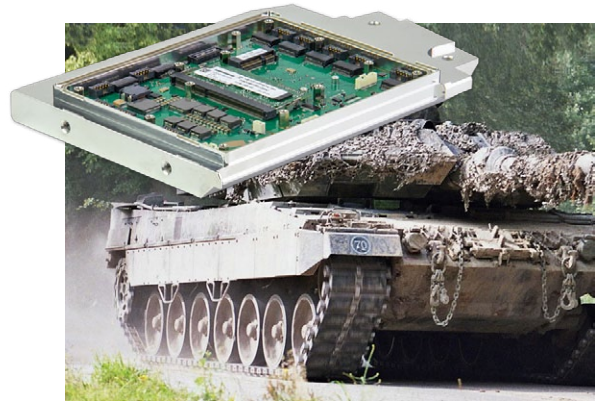


## Customized Firewall for Defense application

To guarantee cyber security, a GUARD is indispensable. MPL develops and produces the customized GUARD, the customer is responsible for the software. The solution meets MIL-STD-461 and MIL-STD-810 and many other specific requirements for tracked vehicles.

### Features

- GUARD with locking headers
- Ruggedness & small size
- Customer customized cooling plate
- Special cooling concept
- Extended temperature -46°C to +85°C
- Supplied as Open Frame solution
- Long-term availability of the equipment



## Mission Management Computer (MMC)

Used on various aircraft

### Features

- Rugged embedded i7 CPU
- Extended temperature -40°C to +55°C
- 2 second hold-up time (programmable)
- 48 DIOs, 16 serial lines, 2x GigE, CAN Bus
- 2x 1553 redundant, 2x 1553 transmit inhibited
- IP67 housing with 10x D-38999 connectors
- SWaP-C (265 x 292 x 71mm)
- Removable SSD



## MXCS-1587RK Server for Military Applications

The IP54 protected MXCS server is used in various military applications.

### Features

- 19" Rack, 2HE, IP54
- Intel Xeon D-1587 (16 Core, 32 Threads, 2,3 GHz, 24MB Cache)
- 128 GB DDR4 ECC Memory, RDIMM with cooling mechanism
- RAID Controller (up to 8x 2.5 SSD)
- OS Linux
- Long term availability
- Meet or exceed MIL-STD-461, MIL-STD-810, EN60068...



## Rugged Embedded Computers

Upgrade of vehicles with a Situation Awareness System, Navigation and Collaboration System, and Radio Communication System. The MIL-PIP is connected to the internal vehicle GPS, two displays for the driver and commander (awareness system), VHF radio (for data communication between vehicles and base station) and GSM (for data communication).

### Features

- Pentium M 1.4GHz with 3 Gbit LAN (MIL-PIP10-1E)
- Integrated SLC SSD for extended temperature
- Dual DVI interface
- Customer specific GSM module
- 3 x RS232 and 1 x RS485 ports
- Connectors according customer requirement
- Each unit tested in climate chamber at -40°C to +75°C
- IP67 aluminum housing (internally chromated externally customer specific power coating)



## Rugged 16-Port Gbit Switch for Ship command & communication

### Features

- 12 & 16-Port rugged 1Gbps LAN switches
- 12 & 16 individual GigE ports each on D-38999 connector
- Customized IP67 housing
- Fully manageable over Web Interface or Telnet
- Long term available switch (+10 years)
- Intensive MIL-STD-810 verification
- Extended temperature operation at -40°C to +85°C
- Only 9 W power consumption

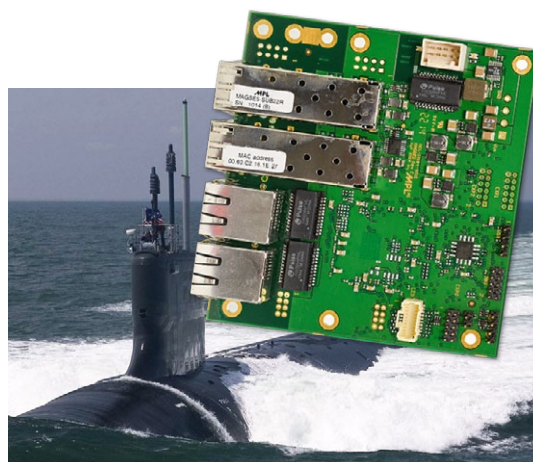


## Sensor Monitoring for Submarines

Total Ship Monitoring System

### Features

- Copper & Fiber sensors report shipboard anomalies to main control computer
- Open frame 5-port switch with copper and fiber
- Rugged and flexible switch solution
- Extended Temperature (-40°C to +85°C)
- Low power consumption
- Long term availability





## Airworthy Computer

The unit is used for Unified Communications Application which will be installed under Airborne Inhabited Cargo (AIC) environment in aircrafts to have facility control & IP based intra-voice communication between cabin crews, passengers, and ground as well.

### Features

- Dual Core i7 CPU 2.1/3.1GHz (MIL-PIP38-1V1)
- Completely fanless
- Sound (HDSOUND-2)
- DDR3 ECC RAM
- 2.5" SLC SSD
- Ethernet switch (MAGBES)
- 10.4" Night Vision Display
- IP67 aluminum housing (HE30)
- Tested in accordance:  
MIL-STD-810G  
MIL-STD-461E  
MIL-STD-704E



## μMAGBES-A100H integrated in Tanks

Reliability and robustness are key features for a monitoring system installed on a tank.

### Features

- Managed 10-port GigE Switch with locking headers
- Ruggedness & small size of the switch
- Customer customized cooling plate
- Special cooling concept
- Extended temperature -40°C to +85°C
- Supplied as Open Frame solution



## Embedded Voice over IP Interface Processor

Used on UAV and other aircraft

### Features

- Rugged embedded i7 CPU
- Extended temperature -40°C to +55°C
- 100ms hold-up time
- 4x E1 interface on XMC
- Removable SSD
- IP67 housing with 5 x D-38999 connectors
- SWaP-C (238 x 188 x 73.2mm)
- MIL-STD-810 and DO-160 testing



## Fanless open frame Swap-C solution with i7 and NVIDIA GPU

Used on various aircraft

### Features

- Solution is rugged enough to be installed on helicopters
- i7, Quad core with NVIDIA CPU (MXM)
- All conductive cooled
- Long term available
- Proven solution with multiple expansions
- ECCDDR on CPU board
- All interfaces are available on lockable headers
- GRIP with MXM board
- SATA drive with hardware erase



## Rugged Embedded Computer

Full featured, flexible controller on ships with shock absorbers.

### Features

- Core Duo 1.5GHz (MIL-PIP20-M22) (separated board and system ground)
- Galvanic isolation & wide input
- 2.5" SLC SSD (-40°C to +85°C)
- 1 x RS485 & 1 x RS232 (galvanic isolated)
- Custom housing with custom coating
- Frame grabber card
- Camera link card
- VGA to TV scan converter
- 8 port managed switch
- 2 x PoE injector
- Extended temperature range of system (-40°C to +65°C)
- MIL connectors & shock absorbers acc. customer requirements



## Airborne Mission Networking Avionics Interface

Used on various aircraft

### Features

- Rugged embedded i7 CPU
- Extended temperature -40°C to +55°C
- 2 second hold-up time (programmable)
- 48x DIOs, 12x serial lines, 2x GigE, 2x ARINC 429
- 1x 1553 redundant, 1x 1553 transmit inhibited
- 4x EIA 530 synchronous serial Interface
- IP67 housing with 10x D-38999 connectors all on one side
- SWaP-C (220 x 296 x 120mm)
- Removable SSD



## Combat System Operator system for AC-130J

Used on various aircraft

### Features

- Rugged embedded i7 CPU
- Extended temperature -40°C to +55°C
- 2 second hold-up time (programmable)
- 16x DIOs, 4x serial lines, 2x GigE, CAN Bus
- 2x 1553 redundant, 2x 1553 transmit inhibited
- IP67 housing with 8 x D-38999 connectors
- SWaP-C (265 x 292 x 71mm)
- Removable SSD



### Design

MPL's MIL / COTS Embedded Computers have specifically been designed to operate in harsh environments and under extreme temperature conditions. The unique rugged design, combined with the best industrial-grade components, offer high reliability and long-term performance. This makes it the perfect solution for military and aerospace applications.

MPL products are 100% designed and manufactured in Switzerland by MPL AG. All our products are fan-less, shock and vibration proof, low power, rugged, and long-term\* available. The perfect solution for a system to be used in railway applications and rugged environments.

\* Typically 10 years or more after first introduction, 20+ years repair-ability

### Standards

All MPL products are designed to meet or exceed the most common standards. This includes maritime certification (IEC 60945), railways certifications (EN 50155), defense certifications (MIL-STD-810G), EMI certification, as well as other certification that might be required.

### ISO Certification

MPL AG is an ISO 9001 certified company since 1995. The ISO 9001 quality standard ensures that the products and services are of consistently high quality.

### References

Worldwide, more than 600 companies are using MPL's products on a daily basis. Applications are based in the industrial control, medicine, military/aerospace, traffic, transport, and food service industries. A partial list of MPL's trusted MIL/COTS customers are:

BAE SYSTEMS	BOEING	BOMBARDIER	FRAUENHOFER
GENERAL DYNAMIC	L3 HARRIS	LOCKHEED MARTIN	LEONARDO FINMECCANICA
MBDA	NASA	OTO MELARA	NORTHROP GRUMMAN
RAYTHEON	RHEINMETALL	SAAB	ROCKWELL COLLINS
TATA	THALES	KMW	SIERRA NEVADA CORP
NAVAL	KONGSBERG	AIRBUS	THYSSEN KRUPPS

If you need additional information do not hesitate to contact us.





## **WORLDWIDE DISTRIBUTOR AND SUPPORT NETWORK FROM MPL**

### **Local sales support**

Our distributors are near you! To serve our customers best, we have a worldwide distributor network which will handle your local pre and post sales support.

### **Technical support from the engineer**

Our customers get direct access to our design engineers to assist with initial product function and operation. We do not work with call centers or large support teams, but we rather rely upon our prompt and courteous service, while giving customers direct access to our design engineers to resolve any support issues.

### **MPLcare**

is provided to each customer free of charge and includes technical support questions answered in less than 24 hours by the design engineering team.

**MPL – The Company You Can Trust**



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