

## Extremely Rugged Computer Solution based on Intel® 8th & 9th Gen. Processor

### General Description

The PIP40 Product Family is a high performance, low power and highly integrated rugged Embedded Computer, based in the latest Intel technology. The solution is available in a compact aluminum housing with DIN-Rail or flange, a rugged MIL IP67 enclosure, a 19" rack system or an open frame solution with a cooling plate. All configurable depending on your application or needs. The unique chassis solutions allows to operate the PIP40 product range in a moderate as well as in harsh environments. The design integrates standard connectors for easy connection or lockable headers, depending on housing choice or needs. Therefore, the PIP40 Family can be used for any high quality x86 application where a complete but still expandable solution is needed.

### PIP40 Family Highlights

The PIP housings offer sufficient space for 2.5" SSD or other expansions like UPS, RAID...). Two mPCIe and three m.2 slots allow to expand the system very easy. The internal expansion bus allows to integrate PCIe/104 or PCIe cards. These expansion possibilities give a maximum on customization for additional interfaces and features. Particular precautions during the design have been taken that the entire system EMC is within the CE and FCC limits and standards like EN50155, IEC 60945 or MIL-STD-810 can be met.

#### Key features are:

- Up to 32GB DDR4 memory \*
- Fanless operation, also from -40°C to +65°C
- Long term availability
- Extremely flexible
- AMT / vPro support \*

*\* depending on selected CPU*

The PIP40 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.

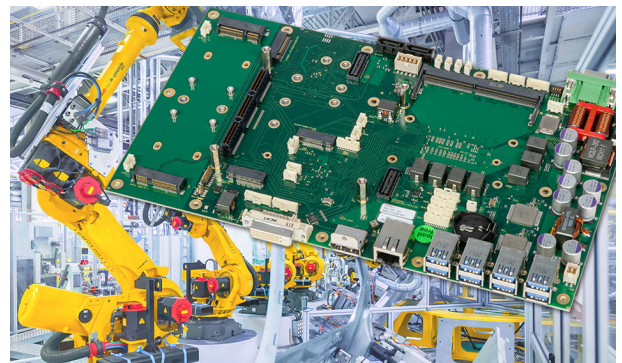
**The PIP40 Family** is available for different Industries and is the perfect embedded computer solution for industrial environments, railway applications, MIL/COTS, SWaP-C applications, or whenever a rugged long-term available computer is needed.



All MPL products are 100% designed and manufactured in Switzerland (since 1985).



PIP40 for rough use in military environment



PIP40 for integration in existing housing



PIP40 used in rugged railway application

MPL AG is an ISO9001 certified company

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## Technical Features

Board Key Data				
	PIP44	PIP46	PIP48	
Processor	Intel i5-8400H	Intel i7-8850H	Xeon E-2176M	additional CPUs will follow after release from Intel (including 9th Gen)
# of cores / threads	4 / 8	6 / 12	6 / 12	
Clock speed	2.5 / 4.2 GHz	2.6 / 4.3 GHz	2.7 / 4.4 GHz	
L2 Cache	8 MB	9 MB	12 MB	
Passmark (all cores)	10353	13811	14049	
Chipset	Intel CM246, supports ACPI power states S1, S4, and S5, USB 3.1...			
Memory	2x dual-channel DDR4 SODIMM slot, supports up to 16GB modules (total board memory 32GB) *			
BIOS	On-board soldered 8MB Flash, MPL engineered BIOS (AMI), customizable			
TPM	Trusted Platform Support TPM 2.0 (optional)			
Watchdog Timer	Configurable granularity 1-255 sec. or 1-255 min.			
Indicator LEDs	Power, HDD, LAN (optional 2 user programmable LEDs)			
Mass Storage				
SATA	2x SATA 3.0 ports			
mSATA	2x mSATA Full-Mini Card combo socket with SATA 3.0 & USB 2.0			
m.2	1x NVMe or SATA SSD			
Interfaces				
Graphics Interfaces	Display Port (DP) up to 4096x2160 (DP) and DVI-D (LVDS / eDP up to 1920 x 1200 optional) Triple display capable, ESD protected. Gen3 PCIe port x16 (PEG) for graphic card.			
USB	8x USB 3.1 ports, supports USB keyboards and mice as legacy devices 4x additional internal USB2.0 ports			
LAN	AMT / vPro support *, optional up to 5 LAN ports			
Serial Ports	4x full modem RS232/422/485 ports, ESD protected and isolated on external DB9 connectors			
HDAudio	Intel HDAudio signals, available on a 1 mm header, sound card (HDSOUND-1) is available			
Expansions				
mPCIe	2x mPCIe PCI Express Gen3, x1 lane & USB 2.0 (combined with mSATA)			
m.2	2x communication slot (1x Key-A, PCIe/USB 2.0 & 1x Key-B, USB 3.x/PCIe/SATA), dual SIM connector			
PCIe/104	1x PCIe/104 slot (4x PCIe x1 lane, x16 PEG port, 2x USB 2.0)			
Power				
Input Voltage	10 - 36 VDC input range, ESD and EMC protected power input (optionally up to 110VDC) Protection against: up to -36 VDC over voltage, reverse polarity, up to 150V load dump Combinded power button and ignition input, specifically for vehicles			
Power consumption	5-65 Watt (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 (-4°F to +140°F)			
Ext. Temp. (optional)	-40°C to +65°C (-40°F to +149°F)			
Relative Humidity	5% to 95% non condensing, optional coating available			
Standard Compliance				
The PIP40 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			

\* depending on selected CPU

## Packaging

Chassis version	length	width	heights	weight	
DIN Rail	270	x 162	x 62/83/120mm	2.2 kg (4.85 lb.) with HDD	(custom color or foil available)
Flange	290	x 162	x 62/83/120mm	2.2 kg (4.85 lb.) with HDD	(custom color or foil available)
Open Frame	260	x 154	x 33mm	1.0 kg (2.2 lb.)	(custom cooling plate available)
IP67 MIL	304	x 234	x 75/95mm	3.0 kg (6.6 lb.)	(custom housings and connectors available)
The aluminum housings are internally chromated, externally powder coated or anodized, no ventilation holes.					
The cooling plate for the open frame versions is chromated. Depopulated versions or solutions with headers can be offered.					

Specifications are subject to change without notice

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