

Rugged Embedded Computer Solution with Intel® Core™ i7 and Celeron® Processor

General Description

The PIP30 Product Family is a high performance, low power and highly integrated rugged Embedded Computer. The solution is available in a compact aluminum housing with DIN-Rail or flange, a rugged MIL IP67 case, or an open frame solution with a cooling plate, configurable depending on your application. The unique chassis solutions allows to operate the PIP30 product range in a moderate as well as in harsh environments without the need of fan or ventilation holes. The design integrates standard connectors for easy connection or lockable headers, depending on housing choice or needs. Therefore, the PIP30 Family can be used for any high quality x86 application where a complete but still expandable solution is needed.

PIP30 Family Highlights

The PIP housings offer sufficient space for up to four 2.5" HDD/SSD or other expansions like UPS, RAID..). Two mPCIe slots allow to expand the system very easy. The internal expansion bus allows to integrate PCI or PCIe cards. This 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:

- On-board soldered DDR3 ECC RAM up to 4GB (up to 12GB via SO-DIMM slot)
- 4 independent GigE Ethernet ports on RJ45 (optionally on M12 or fiber)
- Fanless operation, also with -40°C to 75°C
- Long term availability*
- Extremely flexible

The PIP30 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 PIP30 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.

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



PIP38 used in harsh environments, equipped with UPS and removable battery, GPRS, GPS, and PoE.



MIL-PIP32 for rough use in military environment as communication controller.



RAIL-PIP37 used in rugged railway application, Profibus & LAN ports on M12 connectors.



OPEN-PIP31 for integration in existing housing. Cooling plate & CPU board are semi-customized.

MPL AG is an ISO9001 certified company

Web: www.mpl.ch
Email: info@mpl.ch

MPL AG, Täfernstrasse 20, CH-5405 Dättwil
Phone +41 56 483 34 34 Switzerland

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Technical Features

Board Key Data				
	PIP31-1	PIP32-1	PIP37-1	PIP38-1
Processor	Intel Celeron 927UE	Intel Celeron 1047UE	Intel i7-3517UE	Intel i7-3555LE
# of cores / threads	1 / 1	2 / 2	2 / 4	2 / 4
Clock speed	1.5 GHz	1.4 GHz	1.7 / 2.8 GHz	2.5 / 3.1 GHz
L2 Cache	1 MB	2 MB	4 MB	4 MB
Passmark (all cores)	566	1188	3807	4080
Chipset	Intel QM77 (Panther Point), supports ACPI power states S1, S4, and S5, USB 3.0...			
Memory	4GB DDR3 on-board soldered ECC RAM 1x 204-pin dual-channel DDR3 SODIMM slot, supports up to 8GB modules (total board memory 12GB)			
BIOS	On-board soldered 8MB Flash, MPL engineered BIOS (SecureCore by Phoenix), customizable			
TPM	Trusted Platform Support			
Watchdog Timer	Configurable granularity 1-255 sec. or 1-255 min.			
Indicator LEDs	Power, Reset, HDD LAN, and Wi-Fi LEDs, 2 user programmable LEDs			
Mass Storage				
SATA	2x SATA 3.0 ports and 2x SATA 2.0 ports, RAID 0/1/5/10 support			
mSATA	1x mSATA Full-Mini Card combo socket with SATA 2.0 & USB 2.0			
eSATAp	Powered external SATA port with SATA 2.0 and USB 2.0, ESD protected connector			
Interfaces				
Graphics Interfaces	Display Port (DP) up to 2560x1600 (DP) and DVI-I and 24-bit LVDS up to 1920 x 1200 Dual display capable, ESD protected. Gen3 PCIe port x16 (PEG) for graphic card.			
USB	4x USB 3.0 ports, 2x USB 2.0 ports, supports USB keyboards and mice as legacy devices 3x additional internal USB2.0 ports			
LAN	4x GbE ports (Intel 82574IT) on RJ45 , ESD protected connectors, Wake on LAN support			
Serial Ports	2x full modem RS232 ports, ESD protected external DB9 connectors 2x additional RS232/485 ports (optional)			
PS/2	For keyboard and mouse, 1x 6-pin Mini-DIN connector, ESD protected			
HDAudio	Intel HDAudio signals, available on a 1 mm header, sound card (HDSOUND-1) is available			
Expansions				
mPCIe	2x mPCIe PCI Express Gen2, x1 lane & USB 2.0 (1 combined with mSATA)			
ePCIe	1x external PCI Express Gen2, x1 lane port with 500 MB/s, ESD protected connector			
PCI/104-Express	1x PCIe/104 slot (4x PCIe x1 lane, 2x USB 2.0), PCI/104 slot (33 or 66 MHz PCI bus)			
Power				
Input Voltage	8 - 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 Reset & Power button*			
Power consumption	Ignition input specifically for vehicles* (*also available on a 4-pin Mini-DIN connector) PIP31: 11-17 Watt / PIP32: 11-19 Watt / PIP37: 11-33 Watt / PIP38: 11-36 Watt (Enhanced Intel Speed Step Technology, all LANs operational)			
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			
Ext. Temp. (optional)	-40°C to +75°C (-40°F to +167°F), fanless , final test in climate chamber with test protocol			
Relative Humidity	5% to 95% non condensing, optional coating available			
Standard Compliance				
The PIP30 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	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.					

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