

SWaP-C Mission Control Computer

with 9th Gen Intel CPUs built in IP67 Housing

General Description

The MIL-PIP46-C12 Mission Computer was developed to meet the MIL-STD-810G and MIL-STD-461G as well as parts of the DO-160 specifications. The solution is installed in a compact IP67 housing with a total of five MIL connectors.

The engineering approach has been taken very different to most rugged solution in the market. The internal wiring has been eliminated as much as possible. The D38999 MIL connectors are soldered on special MPL designed rigid-flex PCBs. The EMI protection in each interface is integrated directly the connector on the PCBs. This will give best EMI efficiency.

To interface to the standard embedded CPU board from MPL, a mating interface board (ICC) has been designed. The flex part of the connector PCB is connected to the ICC which is interfacing cable free directly to the CPU board. With this concept MPL is able to meet basically any standard in the rugged computing environment. If required, the boards can be coated and bonded to increase the robustness even further.



The MIL-PIP46-C12 comes with interfaces like 3x DVI-D, 4x USB 2.0, Audio, dual LAN, and a wide power input. Additional expansions can be done over the internal expansion interfaces such as mPCIe, m.2, or PCIe/104, These expansions can be done easy and quickly be integrated into the system. This makes the solution flexible and cost efficient customizable.

Technical Features

Processor	Intel 9th Generation CPU, Intel i7-9850HE
Number of cores	6 cores
Clock speed	2.7 GHz up to 4.4 GHz
L2 Cache	9 MB
Passmark (all cores)	12258
TPM	2.0 with EAL4.0 support
Memory	Up to 64 GB DDR4
Mass storage	NVMe, m.2, mSATA, SATA (removable, other configuration possible)

Interfaces

The selected connectors in this solution are: (other connectors or interfaces are possible)

Power:	TVP02RW-9-35PN (6-pin)
2x DVI	TVP02RW-17-35SN (55-pin)
2x LAN	TVP02RW-15-35SN (37-pin)
1x DVI, 3x USB	TVP02RW-15-35SA (37-pin)
1x USB, Audio	TVP02RW-15-35SA (37-pin)

Power

Input Voltage 90 - 254V AC input voltage range, ESD and EMC protected
Optional MIL-STD-1275D and/or MIL STD-704F

UPS (optional) Integrated, SuperCap to support low input voltage during 1.5 sec.

The MIL-PIP46-C12 can be put into various standby mode levels (even below 95 mW) and can also be started with Wake-on-LAN (WOL). The operational power consumption is between 5 and 65W and the power consumption level can be limited. This enables the use for power savings as well as for power hungry applications.

Environment

Storage Temperature	-45°C up to +85°C
Operating Temperature	-20°C to +60°C, fanless (optional -40°C to +75°C)
Relative Humidity	5% to 95% non condensing
Vibration & Shock	MIL-STD-810G
EMC	MIL-STD-461G
IP Level	IP67
Dimension	320 mm x 265.5 mm x 70.54 mm

Rugged Embedded SWaP-C Computer - MIL-PIP46-C12

MIL-PIP46-C12 Rev. 01

Dimensional drawing of the MIL-PIP46-C12

