

SWaP-C Mission Control Computer

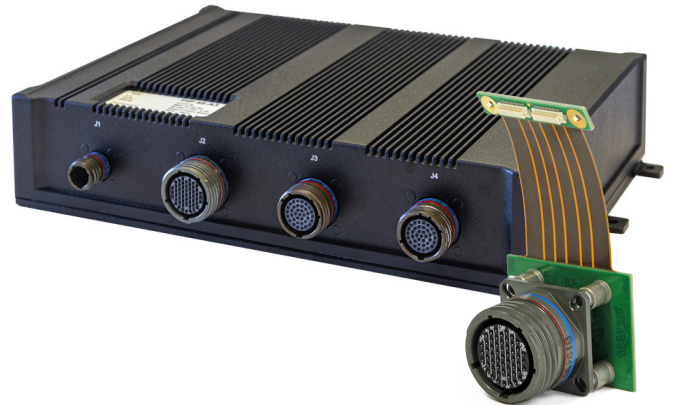
with 9th Gen Intel CPUs built in IP67 Housing

General Description

The MILCOTS-4x Mission Computer was developed with the target to meet the MIL-STD-810 as well as parts of the DO-160 specifications. The solution is installed in a compact IP67 housing with a total of four 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 MILCOTS-4x comes with interfaces like DVI-D, USB 2.0, GPIOs, serial lines, 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 (Celeron G4930E, Intel i3-9100HL, Intel i7-9850HE, Xeon E-2276ME)
number of cores	Up to 6 cores depending on CPU
Clock speed	1.6GHz up to 4.5GHz depending on CPU
L2 Cache	2 up to 12 MB depending on CPU
Passmark (all cores)	2624 up to 14397 depending on CPU
TPM	2.0 with EAL4.0 support
Memory	Up to 64 GB DDR4 or ECC DDR4 depending on CPU
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)
Serial:	TVP02RW-17-35SN (55-pin)
LAN:	TVP02RW-15-35SN (37-pin)
DVI/USB:	TVP02RW-15-35SA (37-pin)

Power

Input Voltage	10 - 36VDC input voltage range, ESD and EMC protected Optional MIL-STD-1275D and/or MIL STD-704F
UPS	Integrated, SuperCap to support low input voltage during 1.5 sec.

The MILCOTS-4x 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	
Schock	3 shocks in each dir. of the 3 axes, 35g, 18ms, half sine/ final peak saw tooth/ trapezoidal	
	Vibration broad-band random (operating)	10Hz-250Hz, 5.4m/s ² , 10 minutes
	Vibration broad-band random (operating after shock)	10Hz-250Hz, 42.5m/s ² , 5 hours
Dimension	296 mm x 220 mm x 66 mm	

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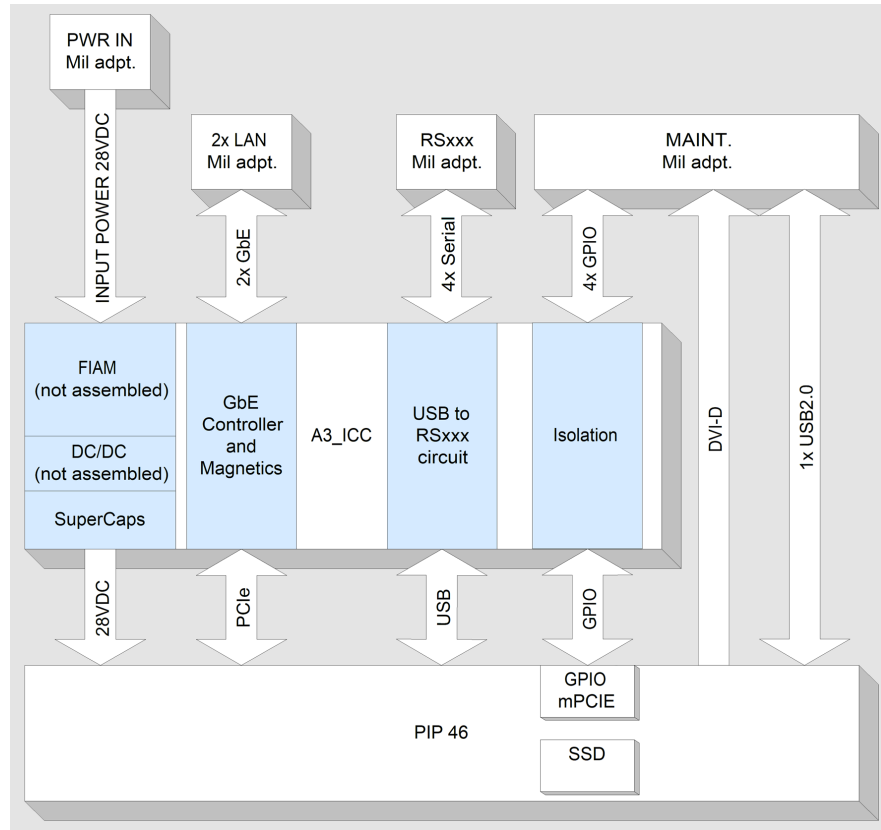
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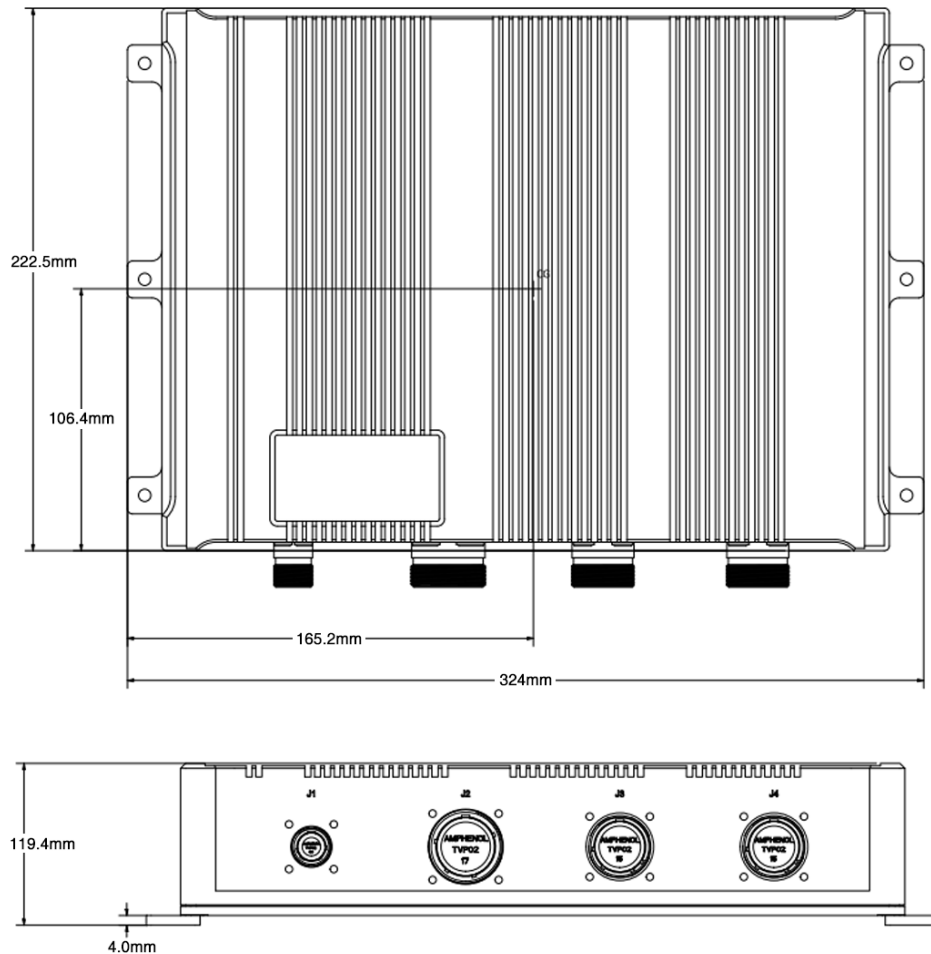
Rugged Embedded SWaP-C Computer - MILCOTS-4x

MILCOTS-4x Rev. 01

Blockdiagram of the MILCOTS-4x



Dimensional drawing of the MILCOTS-4x



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