

# MILSYNAPSE 4000

Intel® Core™ Ultra 7/5 Processor (Meteor Lake-U)  
Up to 12 Cores with Integrated AI Boost for Edge Intelligence



- Up to 12-core Intel® Core™ Ultra 7/5 Processor with Integrated AI Boost
- 1 DDR5 RAM up to 48GB
- Fanless -20°C to 65°C Operating Temperature
- Dual 2.5G LAN with TSN, four 1G LAN ports, and two 1G SFP ports
- 1 SATA SSD support with internally mounted, easily accessible bracket
- CMOS battery access for field maintenance
- 9V to 55V DC-in
- Supports Intel® vPro, TCC, Time-Sensitive Networking (TSN), and TPM 2.0
- 3 USB 3.2 Gen 2 (incl. 1x USB-C)
- Supports Triple Independent Displays, up to 4K resolution

**AI-Ready Performance | Ultra-Compact Design**  
**Rugged Connectivity | Versatile I/O Expansion**

The Rugged Science MILSYNAPSE4000 is a military-grade embedded computer purpose-built for mission-critical deployments such as vehicle control, command centers, and secure comms. Designed for ultra-reliable performance in extreme environments, it features 12-core Intel® Core™ Ultra processors with integrated AI acceleration via Intel® AI Boost, support for high-speed DDR5 memory, and full compatibility with Intel® vPro, TPM 2.0, and Time-Sensitive Networking (TSN).

The MILSYNAPSE4000 delivers high-efficiency edge processing in a compact, fanless form factor rated from -20°C to +65°C. It supports triple independent displays, dual 2.5G LAN with TSN, four 1G LAN ports, two 1G SFP ports via pre-installed SUMIT expansion, and multiple USB 3.2 Gen 2 interfaces—including a 20Gbps USB-C port with DisplayPort support. With rugged construction and wide voltage input (9V–55V), the MILSYNAPSE4000 is ideal for tactical edge compute applications requiring long lifecycle stability and seamless I/O adaptability. Contact Rugged Science for available configurations.

# Specifications

## System

Processor	Intel® Core™ Ultra 7 165U Processor (12 Cores) Intel® Core™ Ultra 5 135U Processor (12 Cores)
Chipset	Intel® SoC
BIOS	AMI
SIO	IT8786E
Memory	1 DDR5 SO-DIMM, up to 32GB
OS	Windows 11, Windows 10, Linux

## I/O Interface

Display	Supports Three Independent Displays - 1 HDMI 2.1: Up to 4096x2304 @60Hz - 1 DisplayPort 1.4: Up to 4096 x 2304 @60Hz - 1 DisplayPort 1.4: Up to 3840 x 2160 @60Hz by USB Type-C
Serial	(Optional) 2 COM RS-232/422/485 (ESD 8KV)
USB	- 1 USB 3.2 Gen 2x2 Type-C support max 20Gbps and DP 1.4 (5V/3A) - 2 USB 3.2 Gen 2 Type-A
LED	With internal 2.5" HDD/SSD bracket

## Expansion

M.2	- 1 M.2 Key B Socket (3042/3052, PCIe x2/USB 3, default/USB2) with internal SIM - 1 M.2 Key E Socket (2230, PCIe x1/USB2)
SUMIT	1 SUMIT B (Optional, with customized chassis)

## Storage

SATA	1 SATA III (6Gbps) with internal 2.5" HDD/SSD bracket
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## Audio

Audio Codec	Realtek® ALC888S-VD, 7.1 Channel HD Audio
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## Ethernet

LAN 1	Intel® I226 2.5GigE LAN supports TSN
LAN 2	Intel® I226 2.5GigE LAN supports TSN

## Power

Power Input	DC 9V to 55V
Power Interface	3-pin Terminal Block: V+, V-, Frame Ground

## Others

TPM	Infineon SLB9672 supports TPM 2.0, SPI Interface
Watchdog Timer	Reset: 1 to 255 sec./min. per step
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.

## Mechanical

Dimensions	MS4002: 6.1" x 4.09" x 5.23"
Weight	MS4002: 3.1 lbs

## Environment

Operating Temperature	-20°C to 65°C (-4°F to 149°F)
Storage Temperature	-20°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% Humidity, non-condensing
Relative Humidity	95% @75°C
Vibration	Designed to meet MIL-DTL-167-1 integrated into various enclosures
Shock	Designed to meet MIL-DTL-901E integrated into various enclosures
EMC	Designed to meet MIL-STD-461 integrated into various enclosures

\*Environmental ratings for base system only.

## Dimensions & Drawing

Unit : inch

