MILCORTEX 4000

12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Alder Lake-S)
Up to 16 Physical Cores for Mission Critical Computing

Created for the battlefield, bridge, or mission control , the Rugged Science MILCORTEX 4000 is a military-grade embedded computer designed to meet the highest standards of performance, durability, and security. It can deliver fast and flexible connectivity for any network environment, thanks to its support for both Copper and Fiber Optic networks up to 10GbE. It can also withstand extreme temperatures, shocks, vibrations, and electromagnetic interference via its ruggedized design and stringent mil-spec testing.


POWERFUL COMPUTING

Powered by an Intel 12th Gen Alder Lake-S CPU with up to 16 physical cores, the MILCORTEX 4000 can accommodate 64 GB of ECC/non-ECC RAM, dual 2.5in SSDs, and features support for GPU accelerators to enable advanced AI edge computing solutions. Native support for Intel® vPro, TPM 2.0 and Time-Sensitive Networking (TSN)

FLEXIBLE EXPANSION

Designed with multiple connectivity options for maximum application flexibility, the MILCORTEX 4000 can support up to 9 Independent 2.5G LANs with 4 IEEE 802.3at PoE+, 2 Fiber LANs up to 10GbE, 6 USB 3.0, miniPCIe and m.2 expansion ports, SUMIT expansion ports, native support of 8k graphics, and up to 4 independent displays.

SOLID-STATE RELIABILITY

The MILCORTEX 4000 has an innovative mechanical design that enables a fanless, passive approach to cooling. Fans are loud, dirty, and prone to failure, impacting overall reliability. With no moving parts, the MILCORTEX is completely solid state, ensuring a silent, ultra-reliable computing solution in operating temperatures of -40°C to +70°C.
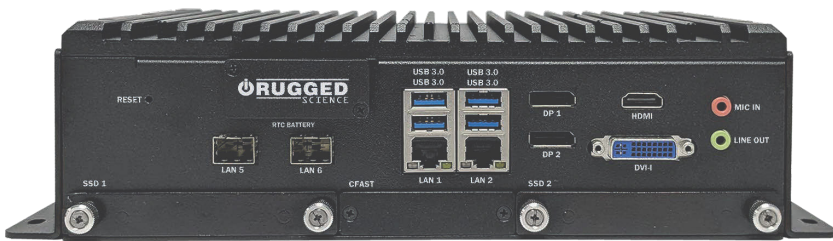
FRONT

The MILCORTEX 4000 is designed as a common computing platform that offers seamless connectivity with nearly any device via the front and rear faceplates. Internal expansion ports can further enhance I/O alternatives to meet many custom application requirements. Contact a sales engineer for MILCORTEX configuration options.

REAR

Specifications

System

Processor	12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Alder Lake-S)
Chipset	Intel® R680E Series Chipset
BIOS	AMI SIO IT8786E
SIO	IT8786E
Memory	2 DDR4 3200MHz SO-DIMM, up to 64GB (ECC/Non-ECC)
OS	Windows 11, Linux

I/O Interface

Serial	Up to 4 COM RS-232/422/485
USB	6 USB 3.2 Gen 2
Isolated DIO	16 Isolated DIO : 8 DI, 8 DO (Optional)
LED	Power, HDD, PoE, Wireless
RTC Battery	Front-access RTC Battery

Expansion

Mini PCIe	1 Mini PCIe Expansion Socket (Optional)
M.2	-1 M.2 Key B Socket (3042/3052) -1 M.2 Key E Socket (2230)
SUMIT	-2 SUMIT Slot (Optional)

Graphics

Graphics Processor	Intel® UHD Graphics 770/730 driven by Intel® Xe Architecture
Interface	4 independent displays : -2 DisplayPort : Up to 7680 x 4320 @60Hz/5120 x 2880 @60Hz -1 DVI-I : Up to 1920 x 1080 @60Hz -1 HDMI : Up to 4096 x 2160 @60Hz

Storage

SATA	2 SATA III (6Gbps) support S/W RAID 0, 1
mSATA	1 SATA III (Mini PCIe Type, 6Gbps)
M.2	1 M.2 Key M Socket,2280, PCIe x4 (Optional)
Storage Device	-2 Front-access 2.5" SSD/HDD Tray -1 Front-access CFAST Tray

Audio

Audio Codec	Realtek® ALC888S-VD, 7.1 Channel HD Audio
Audio Interface	1 Mic-in, 1 Line-out

Ethernet

LAN 1	Intel® I219LM GigE LAN supports iAMT
LAN 2 (Optional)	Intel® I226 2.5GigE LAN supports TSN

2.5G PoE

LAN 3 to LAN 6	2.5GigE IEEE 802.3at (25.5W/48V) PoE+ by Intel® I226

2.5G Ethernet (Optional)

LAN 7 to LAN 9	Intel® I226 2.5GigE LAN

10G Ethernet (Optional)

LAN 7 to LAN 8	Intel® X710-AT2 10GigE LAN

Power

Power Input	DC 11V to 50V
Power Interface	-3-pin Terminal Block : V+, V-, Frame Ground -4-pin Mini-DIN
Ignition Control	16-mode Software Ignition Control
Remote Switch	3-pin Terminal Block

Others

TPM	Infineon SLB9670 supports TPM 2.0, SPI Interface
Watchdog Timer	Reset : 1 to 255 sec./min. per step
Smart Mgmt.	Wake on LAN, PXE supported
HW Monitor	Monitor temperature, voltages. Auto throttling control when CPU overheats.

Mechanical

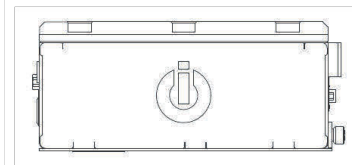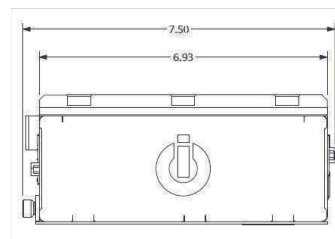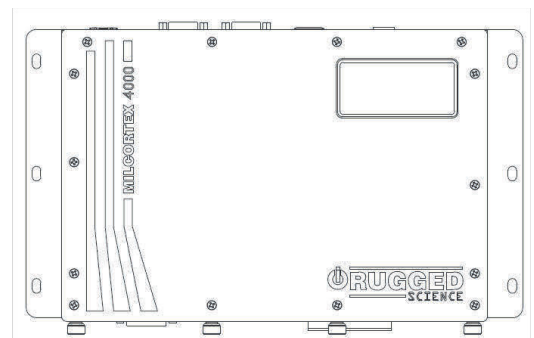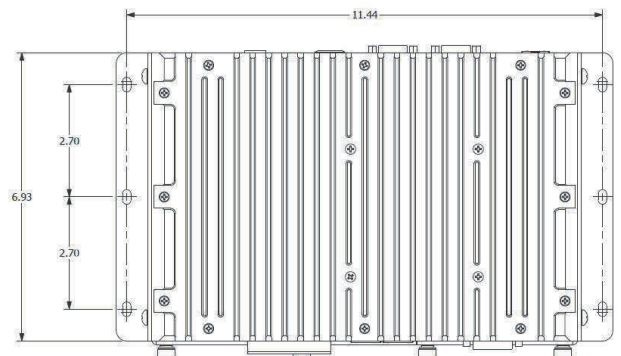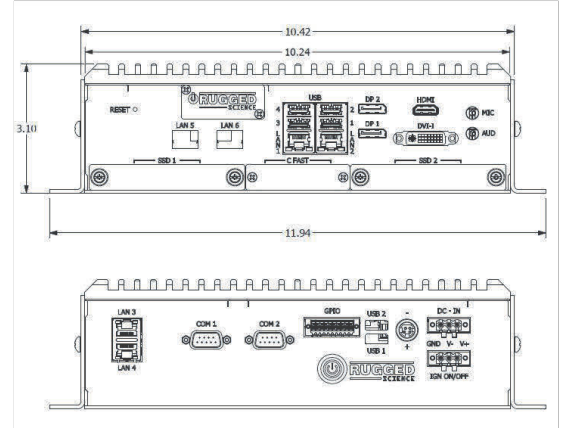|	
Dimensions	10.24" x 6.93" x 3.10"
Weight	8.5 lb
Mounting	- Plate mount via mounting bracket - DIN Rail Mount (Optional) - 2U Rackmount (Optional)

Environment

Operating Temp.	-40°C to 70°C (-40°F to 158°F), Fanless
Storage Temp.	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% Humidity, non-condensing
Relative Humidity	95% @70°C
Shock	Designed to meet MIL-DTL-901E when integrated into various enclosures
Vibration	Designed to meet MIL-STD-167-1 when integrated into various enclosures
EMI	Designed to meet MIL-STD-461 when integrated into various enclosures

CPU Options

Series	CPU	CORES	GHz	TDP	ECC
Intel® Core™	i9-12900TE	16	4.8	35	Y
	i7-12700TE	12	4.7	35	Y
	i5-12500TE	6	4.3	35	Y
	i3-12100TE	4	4	35	Y

Dimensions & Drawing
Unit : inch

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