

# CS2200 Series



MilDef's CS2200 series computers are designed to be used in tactical environments. Providing highly secure and reliable high-performance computer solutions for cloud computing data centers, military weapons and radar systems, data analytics applications, intelligence-gathering programs and much more. For integrators, the CS2200 range can be used across all communication systems of military vehicles, aircrafts, helicopters, and ships.

The CS2200 series is ideal for environments with specialized form-factor requirements such as size, weight, power, port-density, port-media, and ruggedization needs. All products are designed to fulfil military standards such as MIL-STD-461, MIL-STD-810, MIL-STD-1275 or airborne standard RTCA DO-160. The CS2200 series computers are available in different configurations, either with circular MIL connectors or rugged industrial connectors. Please refer to the customization section for further details on other options.

## Guaranteed performance

MilDef products are designed for the long lifecycles of military programs and come with a lifetime support program to ensure your equipment maintains peak performance for many missions to come. We also guarantee the availability of spare parts for an additional 5 years after product end-of-life.

## Small form factor

The MilDef 19"/2<sup>®</sup> form factor is optimized for reduced size, weight, and power (SWaP) to meet industry and military requirements without sacrificing reliability, ruggedness or performance.

## Primary features

<b>CPU</b>	<b>Intel 9th Gen Xeon-E processor</b> <ul style="list-style-type: none"> <li>• Intel Xeon-E 2276ML/ME</li> <li>• 6 cores, 12 threads</li> <li>• Up to 4.5GHz</li> <li>• 64GB DDR4-2666 ECC RAM (128GB in customized solutions)</li> </ul>
<b>GRAPHICS</b>	<b>Intel HD Graphics P630</b> <ul style="list-style-type: none"> <li>• 4K resolution</li> <li>• Microsoft DirectX 12.1</li> <li>• OpenGL 4.4</li> <li>• OpenCL 2.0</li> </ul> <p><b>NVIDIA T1000</b> is available as an option if additional GPU power is required (also other GPUs are available at request).</p>
<b>STORAGE</b>	<ul style="list-style-type: none"> <li>• Fast storage access by PCIe x4 NVMe disk</li> <li>• Optional secondary SSD</li> <li>• RAID card – up to 8 disks (optional)</li> </ul>
<b>SECURITY</b>	<ul style="list-style-type: none"> <li>• Error Correction Code (ECC) memory to protect your computer from potential crashes and changes due to single-bit errors</li> <li>• Intel vPro technology is supported and delivers hardware-enhanced security features, identity protection technologies and remote manageability.</li> <li>• Trusted platform module TPM2.0 to assure the integrity of the platform.</li> <li>• UEFI Secure boot to ensure that code launched by firmware is trusted</li> </ul>
<b>INTERFACES</b>	<p>The CS200 series offers a wide range of interfaces including, serial ports, USB, CAN, ethernet, video in, video out, digital I/O, etc. mPCIe slots are available to integrate customer specific functionality.</p> <p>Please see Product range section for more details.</p>
<b>NETWORK</b>	<p>High speed Gigabit Ethernet interfaces by Intel i350 with custom physical media (Copper/Fiber)</p> <p>10G Ethernet is available as an option.</p>
<b>OTHER</b>	<p>Customizable BIOS (standard configuration, boot order)</p>

# Flexible mounting

The 19"/2® standard enables flexible mounting options for a wide array of integration scenarios. The unit can be mounted in a standard 19" rack, half racks, or directly to a surface and in any angle.

## Mounting examples



Stacked



19" Rack



Half rack

# Standards

## Power standards

<b>Polarity protection</b>	Protected against polarization failure on the power input in the voltage range of normal operation
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<b>MIL-STD 1275E</b>	Fully compliant
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## Environmental specification

<b>Functional shock - operating</b>	MIL-STD-810H, Method 516.8, Procedure I - Functional Shock. Table 516.8-IV, Terminal peak sawtooth pulse, Ground Materiel 40 g 11 ms
<b>High temperature - operating</b>	MIL-STD-810H, Method 501.7, Procedure II – Operation 65 °C (140 °F)*
<b>High temperature - storage</b>	MIL-STD-810H, Method 501.7, Procedure I – Storage 71 °C (160 °F)
<b>Humidity</b>	MIL-STD-810H, Method 507.6, Procedure II - Aggravated 95 ± 4% RH Ten 24-hour cycles
<b>IP Class</b>	IP65* or IP67*
<b>Low air pressure - rapid decompression</b>	MIL-STD-810H, Method 500.6, Procedure III - Rapid Decompression 2,438 m (8,000 ft) 12,192 m (40,000 ft)
<b>Low air pressure - operating</b>	MIL-STD-810H, Method 500.6, Procedure II - Operation/Air Carriage 4,572 m (15,000 ft)
<b>Low temperature - operating</b>	MIL-STD-810H, Method 502.7, Procedure II - Operation -40 °C (-40 °F)
<b>Low temperature - storage</b>	MIL-STD-810H, Method 502.7, Procedure I - Storage -40 °C (-40 °F)

<b>Noise level</b>	Maximum noise level of 40 dB SPL A-weighting at 1 m (3.3 ft) distance
<b>Salt fog</b>	MIL-STD-810H, Method 509.7 5 ± 1% (by weight) Two cycles, 24 h wet + 24h dry / cycle
<b>Temperature shock - operating</b>	MIL-STD 810H, Method 503.7, Procedure I-C, - Multi-Cycle Shocks from Constant Extreme Temperature 55 °C (131 °F) -40 °C (-40 °F)
<b>Vibration - helicopter</b>	MIL-STD-810H, Method 514.8, Procedure I - General vibration, Category 14 - Rotary wing aircraft - helicopter
<b>Vibration - loose cargo</b>	MIL-STD-810H, Method 514.8, Procedure II - Loose cargo transportation, Category 5 - Truck/trailer - loose cargo
<b>Vibration - tracked vehicles</b>	MIL-STD-810H, Method 514.8, Procedure I - General Vibration, Category 20 - Ground vehicles - ground mobile, Tracked vehicles
<b>Vibration - wheeled vehicle</b>	MIL-STD-810H, Method 514.8, Procedure I - General Vibration, Category 20 - Ground vehicles - ground mobile, Wheeled vehicles

\*Depending on configuration

## EMC specification

<b>EMI conducted CE101</b>	MIL-STD-461F Method: CE101
<b>EMI conducted CE102</b>	MIL-STD-461F, Method CE102 BASIC CURVE 10 kHz to 10 MHz
<b>EMI radiated RE102</b>	MIL-STD-461F Navy Mobile & Army 2 MHz - 18 GHz
<b>EMS conducted CS101</b>	MIL-STD-461F, Method CS101, conducted susceptibility, power leads. CURVE #1 30 Hz to 150 kHz

<b>EMS conducted CS114</b>	MIL-STD-461F Army, Ground 10 kHz - 200 MHz
<b>EMS conducted CS115</b>	MIL-STD-461F Conducted susceptibility, bulk cable injection, impulse excitation
<b>EMS conducted CS116</b>	MIL-STD-461F 10 kHz - 100 MHz
<b>EMS radiated RS103</b>	MIL-STD-461F Army 2 MHz - 1 GHz

## Product range

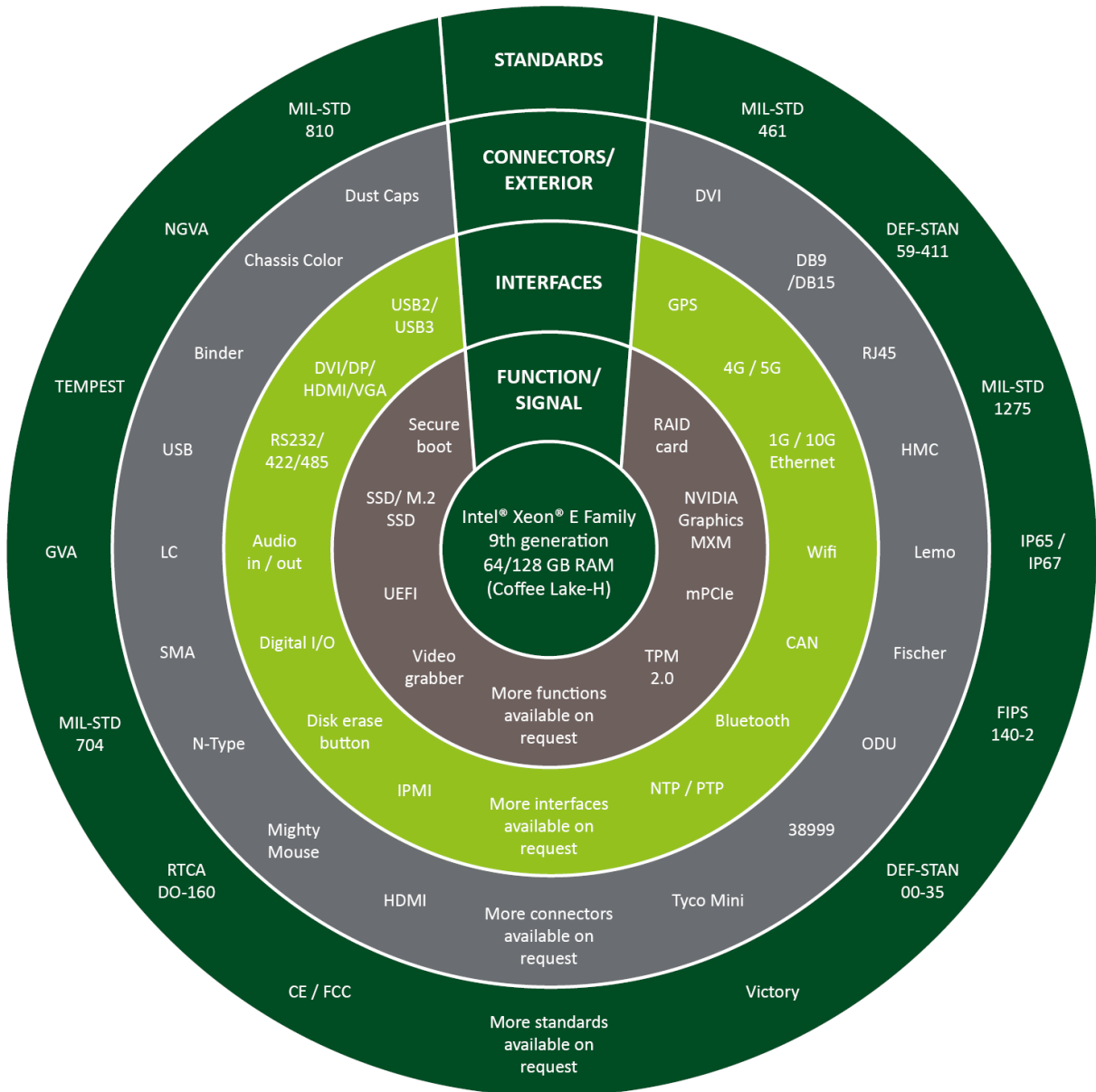
### Roadmap products

The CS2200 series offers a baseline of products that will be supported over a systems entire lifecycle. The current roadmap selection consists of 1U computers, see table below, but in the upcoming future will also include 2U products with RAID and a variant with GPU card.

	CS2201	CS2202	CS2221
Product Picture			
Connector type	MIL		Industrial
Processor	Intel Xeon-E 2276ML 6 cores (12 threads)		
RAM	Up to 64GB		
Storage	M.2 SSD (internal)	M.2 SSD (removable)	
Display	1x VGA 1x DVI		1x VGA 1x HDMI 1x DVI
USB	2x USB3.0 3x USB2.0		4x USB3.0
Serial	3x RS232 (Full)		2x RS232 (full)
Ethernet	4x 1000Base-T	4x 1000Base-T	4x 1000Base-T
Service	1x MilDef Service		
Other	1x Audio in/out 1x Remote power on		-
Power connector	38999		
Power	10-32V DC		

## Customization

The CS2200 series is designed with a high focus on platform flexibility. Besides the roadmap products, MilDef also offers a wide range of choices that enables the customer to design a customized unit that fits to certain specifications. Get in touch with your local sales office to discuss your requirements.



Configuration diagram for the CS2200 series

# Examples of customized variants



2U computer with T1000 Quadro NVIDIA GPU, GVA connectors, DVI, USB 3, secondary memory, etc.



1U computer with Digital I/O, 2x VGA, Audio In/Out, 4x Ethernet, 6x USB, etc.



1U computer with Digital I/O, OS Status pins, USB 3, Gigabit Ethernet, M2 SSD, RS232, etc.



2U computer with T1000 Quadro NVIDIA GPU, IPMI, 7x RS232, 2x RS423, RS422, DP, 6x USB, 2x DVI, etc.



1U computer with SDI output, CAN, 4x Ethernet, M2. SSD, 2x DVI, 9x USB, etc.



2U Computer with 8 port switch, WiFi/Bluetooth, LTE, GPS, 2x RS422, 4x Ethernet, etc.