



LAND



SEA



AIR



SR800-X2

FANLESS RUGGED COMPUTER WITH
INTEL® XEON® D
PROCESSOR, MIL-DTL-38999
CONNECTORS



- Design for reliability under demanding MIL-STD-810G Thermal, Shock, Vibration, Humidity/EMI/EMC conditions
- Ultra-High Performance Intel® Xeon® D-1587 (2.3GHz, 16 cores, 32 threads)
- Up To 128GB DDR4 ECC RDIMM
- Rugged MIL-DTL-38999 Souriau Connector

Features

- **Ultra-High Performance Intel® Xeon® Performance**

Broadwell DE: The Intel® Xeon® processor D-1500 product family is Intel's third-generation 64-bit system on a chip (SOC) and the first Intel® Xeon® SoC based on Intel® 14 nm silicon technology. This lineup offers hardware and software scalability from two up to sixteen cores, making it the perfect choice for a broad range of high-performing, low-power solutions that will bring intelligence and Intel® Xeon® reliability, availability, and serviceability (RAS) to the edge. For applications where space is a premium, an integrated Platform Controller Hub (PCH) technology and Intel® Ethernet in a ball grid array (BGA) package offer an inspiring level of design simplicity. The Intel® Xeon® processor D-1500 product family is offered with a seven-year extended supply life and 10-year reliability for Internet of Things designs.

Enhanced performance per watt:

The Intel Xeon processor D-1500 product family delivers exceptional value and unmatched performance density per watt with Intel® Xeon® processor in a SoC package. Its TDP of ~19W to 65W, industry-leading 14 nm process technology and a compute-only design make it ideal for meeting the diverse needs of customers seeking mid-range low-power, high-density solutions.

Expanded hardware and software scalability:

The Intel Xeon processor D-1500 product family boasts hardware and software scalability from two to sixteen cores in a thermal design power (TDP) of ~19W to 65W. Utilizing similar development tools and processes as Intel® Core,™ Intel® Atom,™ and other Intel Xeon processors, the Intel Xeon processor D-1500 product family delivers broad application compatibility and software consistency from the data center to the edge. The reliable Intel® x86 64-bit software support helps save time, cost, and validation.

Integrated SoC solution:

Save on engineering time and cost thanks to the efficiency of a one-chip solution offered by the Intel Xeon processor D-1500 product family. It brings the performance and advanced intelligence of Intel Xeon processors into a dense, lower-power system-on-a-chip. It removes board design complexity by integrating Platform Controller Hub technology and Intel® Ethernet, and by utilizing an integrated heat spreader and a BGA package to meet TDP targets.

Enabling more IoT Use Cases:

The Intel® Xeon® processor D-1500 product Family drives a host of new IoT opportunities for a wide range of environments, while addressing real-time optimization, and workload consolidation. Its temperature rating spans from -40° C to 85° C operating ambient conditions, which establishes

new possibilities for Intel® architecture in markets that require robust products, like aerospace and industrial.

- **MIL-STD 461**



SK711, the power board adopted by SR800 & HORUS200, supports input range from 18V to 36V. Compliant with MIL-STD 461, SK711 performs as an ideal converter module for severe environment. The Cosel Hi-Rel DC/DC CONVERTER also provides ,Output Over Current Protection (OCP), Output Overvoltage Protection (OVP) and Over Temperature Protection (OTP) to made stability and safety. Module Compliance with MIL-STD-461C/D/E Standards. Furthermore, with parallel design, two SK711 combining can generate double power of 300W, supporting prominent system performance.

SK711 is a wide input board type converter supporting input range from 18V to 36V. Possessing military standard filter for EMI avoidance, SK711 guarantees the stability of voltage and electric current for system operation, especially suitable for application in military or other harsh environment. Furthermore, with parallel design, two SK711 can be combined for double power of 300W, supporting prominent system performance. Compliant with MIL-STD 461, extended operating temperature from -40 to 85°C, SK711 performs as an ideal converter module for severe environmental usage. The Cosel Hi-Rel DC/DC CONVERTER it also provides Output Over Current Protection (OCP), Output Overvoltage Protection (OVP) and Over Temperature Protection (OTP) to made stability and safety.

- **Rugged D38999 Series connectors**

D38999 connectors offer the highest performance capabilities and reliability for both general duty and severe environment applications. This cylindrical connector family designed for cable-to-panel I/O applications in military, aerospace and other demanding hazardous situations. D38999 connectors are capable of operation within a temperature range -65 to 200°C. They are lightweight and can stand up to environmental challenges. Made with removable crimp or fixed hermetic solder contacts, these connectors provide high-vibration characteristics and are suitable for severe wind and moisture problem areas.



- **Swappable CMOS Battery**

If the computer date has reset to the BIOS manufacturer date, epoch, or a default date such as 1990, 2000 or 2005, it is a good indication that the CMOS battery is failing or is already bad. This 1U Rack-mount computer has an easy to replace swappable battery tray. Pull the tray fully out of the computer and you'll see a coin-cell battery. Using new CR2032 battery, replace and push the tray back into the computer and lock screw.



- **Dual Removable Solid-State Disk**

An ultra durable metal casing provides efficient protection Easy handle, quickly and easily swap Maintenance and replacement conveniences. Easy remove and insert of dual 2.5in SATA hard drives from single drive bay. This rugged SATA hard drive swap bay allows you to install two 2.5in SATA hard drives (HDD) or solid state drives (SSD)



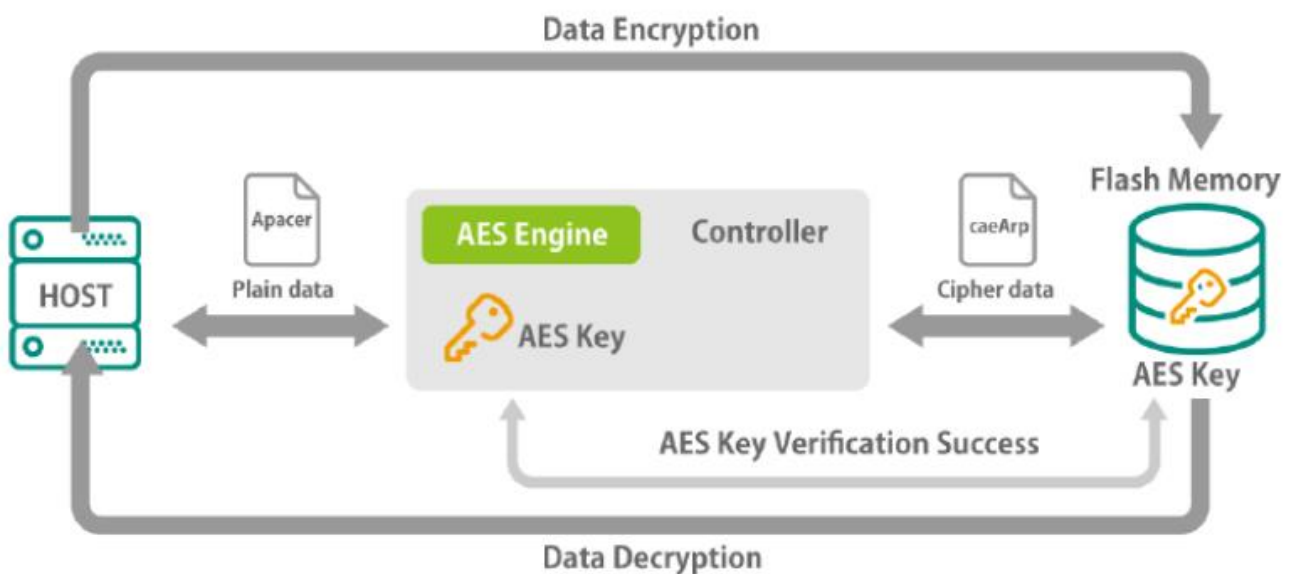
- **Hardware Secure Erase**

All the data stored on a drive protected by AES encryption needs to be decrypted by a matching AES key before it can be read. The real advantage of AES encryption is that the key is automatically generated during production and provides an instant protection mechanism. And since it is a 256-bit key, the chance of it being brute-forced is practically impossible. The Hardware Secure Erase (Instant AES Key change) function, as shown in below. When an Instant Key change command is issued, a new key will be generated to replace the original key stored in the flash memory less than a second. Since the new key does not match the old one, when the host is attempting to access the data present in the flash memory, the data will be irretrievable due to AES key authentication failure. The data has not been erased in the conventional sense of all the bits being rewritten as ones or zeros, but it is

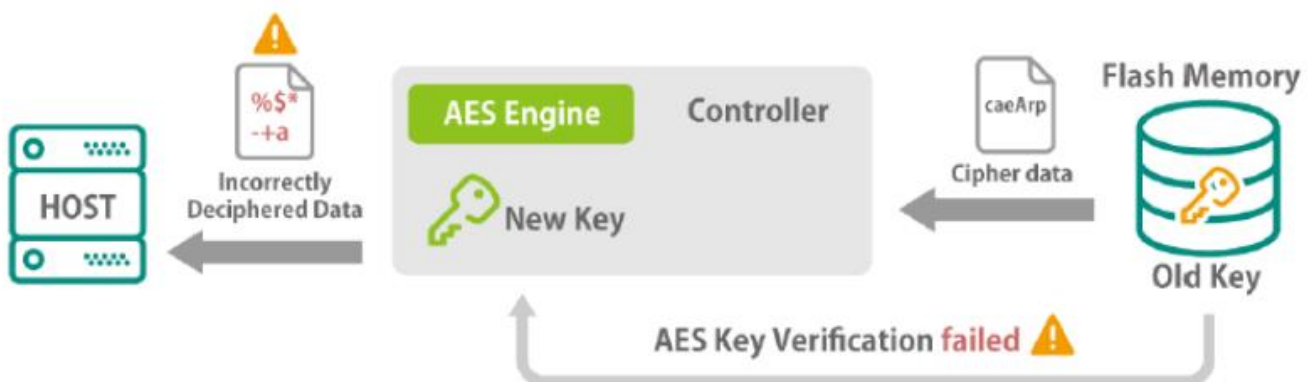


functionally unreadable and therefore completely protected. The Instant Key change function is that it can be activated in a hardware trigger activated.

- Open protection cap
- Press button for destroyed SSD AES key
- Data/partition becomes unrecognizable



Typical implementation of AES encryption/decryption



Data unreadable after execution of AES Key change command

Specifications

SYSTEM

High Performance Processor	Intel® Xeon® Processor D-1587 (Frequency 1.7GHz, Turbo Boost Frequency up to 2.3GHz), 16-Core, 32 Thread Support, 24MB SmartCache. Build-in Turbo Boost Technology 2.0, VPro and Hyper-Threading support.
Memory type	4 x DIMMs Up to 128GB ECC RDIMM DDR4 2133MHz
Chipset	SoC, integrated with CPU

DISPLAY

Graphics Processor	ASPEED AST2400
Resolution	Up to 1920x1200@60Hz 32bpp

STORAGE

HDD/SSD	2 x 2.5" SSD
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ETHERNET

Ethernet	1 x Intel I350-AM2 Gigabit LAN Interfaces (10/100/1000Mbps)
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REAR I/O

VGA	1 (M20 connector)
IPMI	1 (M20 connector)
USB3.0	2 (M20 connector)
USB2.0	1 (M20 connector)
X1 (DC-IN)	1 (Souriau 8ST7-10G05PN)
X5 (Gigabit Ethernet)	1 (Souriau 8ST7-10G35SA)
X6 (100M Ethernet)	1 (Souriau 8ST7-08G35SN)
X9 (RS232)	1 (Souriau 8ST7-10G35SB)

SIDE I/O

Button	1 x Secure Erase Button (SSD2 support AES Secure Erase) 1 x Power Switch with Dedicated LED
HDD Tray	1 x Dual 2.5" HDD/SSD Easy Swap Tray
CMOS Battery Tray	1 x Removable CR2032 CMOS Battery Tray

Dedicated LED 1 x Red LED (OVHT) 5 x Green LEDs (2 x LAN, 1 x PWR, 1 x SSD, 1 x RDY)

POWER REQUIREMENT

Power Input MIL-STD 461 power supply 300W, 18V ~36V

APPLICATIONS , OPERATING SYSTEM

Applications Commercial and Military Platforms Requiring Compliance to MIL-STD-810G Embedded Computing, Process Control, Intelligent Automation and manufacturing applications where Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions. Used in all aspects of the military.

Operating System Windows 10 64Bit, Windows Server 2008 R2, Windows Server 2012 R2, Windows Server 2016, Ubuntu14.04, Fedora 20/23, RedHat Linux EL 7.1/7.2, Vmware ESXi 6.0, ESXi 6.5

PHYSICAL

Dimension (W x D x H) 260 x 350 x 102mm (10.24" x 13.78" x 4.02")

Weight 9.6 Kg (21.16lbs)

Chassis Aluminum Alloy, Corrosion Resistant

Finish Anodic aluminum oxide (Color Iron gray)

Cooling Natural Passive Convection/Conduction. No Moving Parts

Ingress Protection IP65

ENVIRONMEN TAL

MIL-STD-810G Test	Low Temperature	Method 502.4 Procedure 2	0°C, 4 hours, change rate: $\leq 20^{\circ}\text{C}$.
	High Temperature	Method 501.4 Procedure 2	+50°C, 4 hours, change rate: $\leq 20^{\circ}\text{C}$.
	Humidity	Method 507.4	85%-95% RH without condensation, 24 hours/ cycle, conduct 10 cycle.
	Vibration	Method 514.5 Category 4, figure	5-500Hz, Vertical 2.20Grms, 40mins x 3axis.

514.5C-3

Shock	Method 516.5 Procedure 1	20 Grms, 11ms, 3 axes.
Non-Operating Tests		
Low Temperature Storage	Method 502.4	-33°C, 4 hours, change rate: $\leq 20^{\circ}\text{C}$.
High Temperature Storage	Method 501.4 Procedure 1	+71°C, 4 hours, change rate: $\leq 20^{\circ}\text{C}$.
Vibration	Method 514.5 Category 4, figure 514.5C-3	5-500Hz, Vertical 2.20Grms, 40mins x 3axis.
Shock	Method 516.5	20 Grms, 11ms, 3 axes.
Reliability	No Moving Parts; Passive Cooling. Designed & Manufactured using ISO 9001/2000 Certified Quality Program.	
EMC compliance	MIL-STD-461E : CE102 basic curve, 10kHz - 30 MHz RE102-4, (1.5 MHz) -30 MHz - 5 GHz RS103, 1.5 MHz - 5 GHz, 50 V/m equal for all frequencies EN 61000-4-2: Air discharge: 8 kV, Contact discharge: 6kV EN 61000-4-4: Signal and DC-Net: 1 kV EN 61000-4-5: Leads vs. ground potential 1kV, Signal und DC-Net: 0.5 kV EN 61000-4-2: Air discharge: 8 kV, Contact discharge: 6kV EN 61000-4-4: Signal and DC-Net: 1 kV EN 61000-4-5: Leads vs. ground potential 1kV, Signal und DC-Net: 0.5 kV EN 61000-4-2: Air discharge: 8 kV, Contact discharge: 6kV EN 61000-4-4: Signal and DC-Net: 1 kV EN 61000-4-5: Leads vs. ground potential 1kV, Signal und DC-Net: 0.5 kV EN 55022, class A EN 61000-4-3: 10V/m CE	

Operating Temperature	0 to 50°C
Storage Temperature	-40 to 85°C

Dimension

