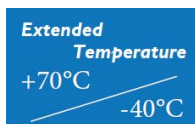


# SNV-12

MIL-STD-810G RUGGED MISSION-CRITICAL  
PANEL COMPUTER WITH INTEL® XEON  
E3-1505L PROCESSOR, NVIDIA GTX1050  
MIL-DTL-38999 CONNECTORS



- INTEL XEON E3-1505L V5 PROCESSOR
- 2 X DDR4 UP TO 32 GB ECC MEMORY
- NIGHT BATTLE VISION RUGGED PANEL COMPUTER
- 5-WIRE RESISTIVE TOUCH W/ANTI-SCARTCH SURFACE
- HEAVY-DUTY FULLY IP67 RUGGED ALUMINUM CHASSIS WITH MIL-DTL-38999 CONNECTORS
- ULTRA BRIGHTNESS 1000 NITS , COMPATIBLE WITH SUN LIGHT READABLE
- 12.1" GLASS-FILM-GLASS TOUCH PANEL
- 24 USER PROGRAMMABLE FUNCTION KEYS
- DC-IN 12V~40V
- 2 X GIGABIT ETHERNET, 2 X USB, 2 X COM
- MEETS MIL-STD-461, MIL-STD-1275, MIL-STD-704, MIL-STD-810G
- EXTENDED TEMPERATURE -40 TO 85°C



**COMPLIANT**

**MIL-STD**

**461/1275/704  
D0160**

## FEATURES

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

### Intel Xeon E3-1505L v5:

The Intel Xeon E3-1505L v5 is a 64-bit quad-core x86 high-end quad-core processor. It's part of the Skylake Xeon series. In addition to four CPU cores with Hyper-Threading clocked at 2.0 - 2.8 GHz, the chip also integrates an HD Graphics P530 GPU and a dual-channel DDR4-2133/DDR3L-1600 memory controller. The CPU is manufactured using a 14 nm process with FinFET transistors.

The most important difference of the Xeon series compared to consumer models like the Core i7-6920HQ is the support for additional management and security features such as ECC memory.

### Architecture:

Skylake replaces both Haswell and Broadwell and brings the same microarchitecture in every TDP class from 4.5 to 45 W. The extensive improvements of the Skylake design include increased out-of-order buffers, optimized prefetching and branch prediction as well as additional performance gains through Hyper-Threading. Overall, however, performance per clock has been increased by only 5 to 10 percent (compared to Haswell) respectively under 5 percent (compared to Broadwell), which is quite modest for a new architecture ("Tock").

### Performance:

Thanks to its improved architecture, the E3-1505L v5 performs somewhat better than most Haswell-based predecessors like the Core i7-4900MQ. Under long-lasting full load, the Skylake chip profits by its advanced 14 nm process, which leads to a higher energy efficiency and reduces throttling. Even the most demanding applications and excessive multitasking are handled easily.

### Power Consumption:

Specified at a TDP of 25 W (including CPU, GPU and memory controller), the Xeon is best suited for panel PC.

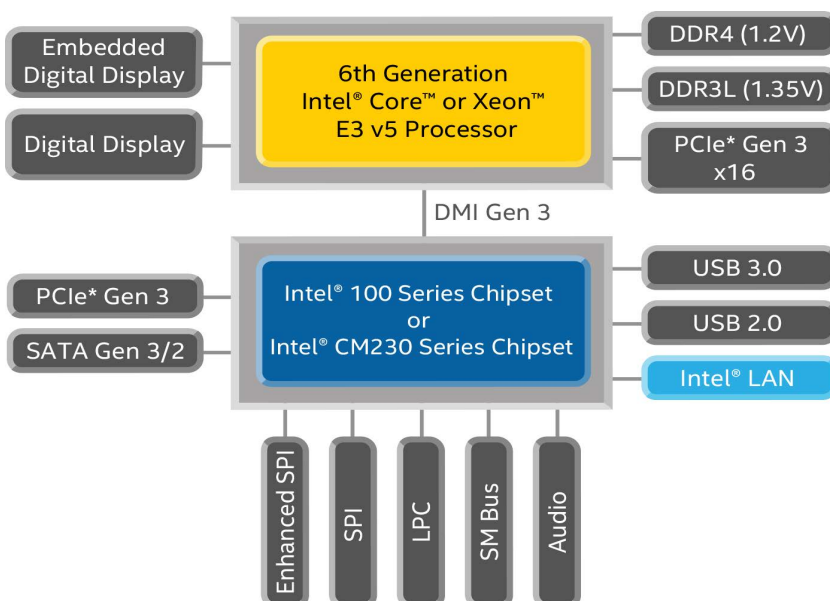


Figure : Intel Xeon E3-1505L v5 Block Diagram

## FEATURES

- **NVIDIA GeForce GTX 1050**

**NVIDIA GeForce GTX 1050:**

The Nvidia GTX 1050 is a mainstream GPU based on the Pascal architecture. Contrary to the faster models, the GTX 1050 uses the GP107 chip, which is manufactured in a 14 nm process at Samsung. It is shipped with up to 4 GB GDDR5-VRAM attached via 128-bit interface and a 7 Gbps memory data rate (112 GB/s).

**Highlight:**

The GP107 chip is manufactured in a 14 nm FinFET process at Samsung and offers a number of new features, including support for DisplayPort 1.4 (ready), HDMI 2.0b, HDR, Simultaneous Multi-Projection (SMP) as well as improved H.265 video de- and encoding (PlayReady 3.0). A full list of improvements and the new Pascal desktop GPUs is available in our dedicated Pascal architecture article.

**Performance:**

The performance of the GeForce GTX 1050 can vary quite a lot depending on the cooling system. The GeForce GTX 960M is beaten by around 30%. It is therefore an upper mainstream GPU. Monitor can be displayed in high settings an the Full HD resolution.

**Power Consumption:**

The power consumption of the GeForce GTX 1050 is roughly on par with the old GTX 960M, which would mean around 40-50 Watts and (probably due to better selection and optimized parts) therefore much lower compared to the desktop counterpart.

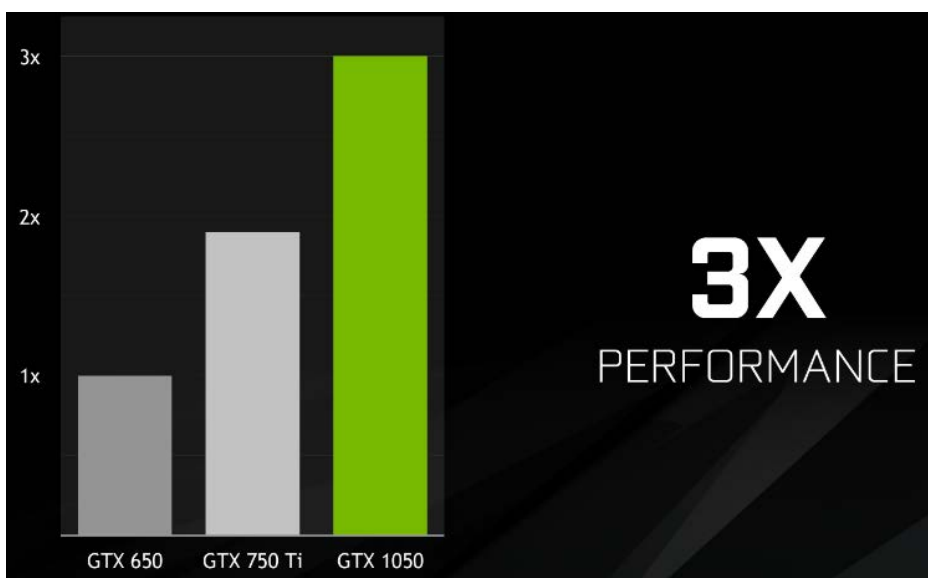


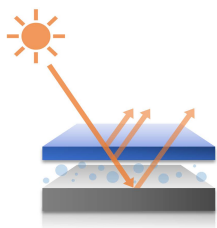
Figure : GTX1050 / GTX750Ti / GTX650 Performance Benchmark

FEATURES

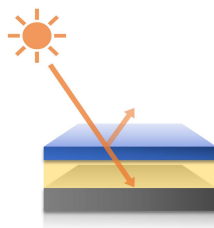
• LCD Panel

**Optical Bonding:**

Optical bonding technology plays a decisive role in the display which is installed in the highly humid, outdoor, or harsh environments due to its enhanced ruggedness and visual performance to the display. There are some factors that affect displays' readability. The most common one is "fog", or condensation, which forms on the inner surface of display's vandal shield. Another factor is the reflection of sunlight, which causes a mirror-image on the display. Reflection is caused by optical index mismatch between air and the glass. Both issues can be solved by using optical bonding. Not only optical improvement, using optical bounding technology with a protective cover glass can also improve scratch and damage resistance.

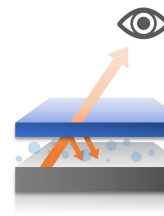


Without Optical Bonding

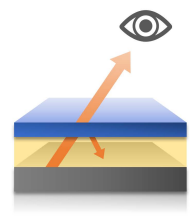


With Optical Bonding

Reduction of light reflections and better image quality



Without Optical Bonding

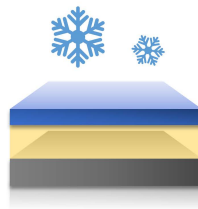


With Optical Bonding

The same effect goes the other way



Without Optical Bonding



With Optical Bonding

Moisture condensation prevention and dust protection



Without Optical Bonding



With Optical Bonding

Increased physical endurance

**Ultra Brightness:**

Nowadays, displays have been transformed into interactive Human Machine Interfaces (HMI), and as a result, we see more and more outdoor applications appearing. Specifications for outdoor applications are totally different from general displays. For example, when we use a mobile phone which is normally 350 nits outdoors, the screen usually looks washed out or becomes invisible under strong sunlight, the reason being that ambient light is too strong (normally 10,000 nits) causing strong reflections that reduce readability of the screen. Outdoor applications also suffer extreme temperature fluctuations which mist up the screen between the two glass layers (LCD & touch sensor) making the image unclear. To address this issue, high brightness solution is required.

### Ultra Brightness:

In direct sunlight, most LCD panels will overheat and will turn black on the panel. We use a special panel with ultra-high brightness that can withstand surface temperatures of up to 70°C without a blackening error, making this number one for Digital Signage in shop windows.

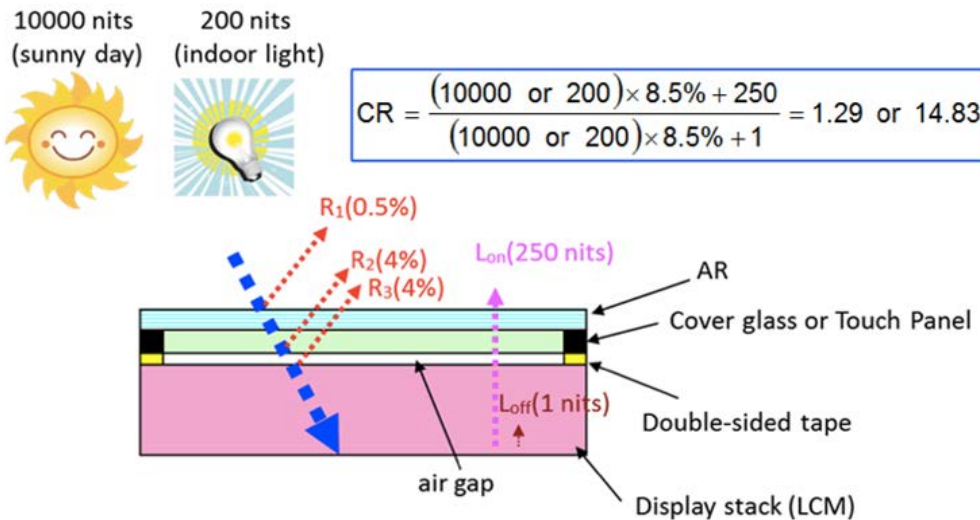


Figure : Ultra Brightness

### EMI Shielding Cable Kit:

Electromagnetic Interference (EMI) is prevalent throughout the anywhere. The main purpose of effective EMC Shielding is to prevent electromagnetic interference (EMI) or radio frequency interference (RFI) from impacting sensitive electronics. This is achieved by using a metallic screen to absorb the electromagnetic interference that is being transmitted through the air. The shield effect is based on a principle used in a Faraday cage – the metallic screen completely surrounds either the sensitive electronics or the transmitting electronics. The screen absorbs the transmitted signals, and causes a current within the body of the screen. This current is absorbed by a ground connection, or a virtual ground plane.

By absorbing these transmitted signals before they reach the sensitive circuitry, the protected signal is kept clean of electromagnetic interference, maximising shielding effectiveness.



Figure : EMI Shielding Cable Kit

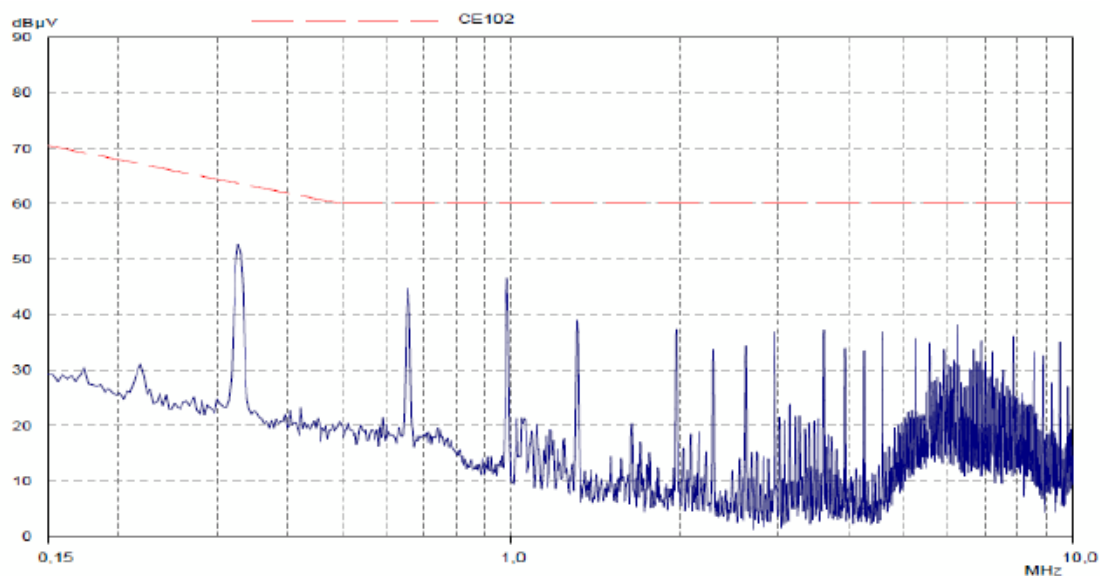
## • MIL-STD-1275/704 Power supply with Voltage transient protections

To enhance reliability, HORUS200 is designed for rugged extremes. durable metal casing with an isolated MIL-STD-1275, MIL-STD 704 and DO-160 power supply in an IP50 (dustproof) ultra durable metal /aluminum chassis that protects against vehicle/aircraft voltage surges, spikes and transients is well suited for the strictest military requirement and deliver optimal performance in harsh conditions.

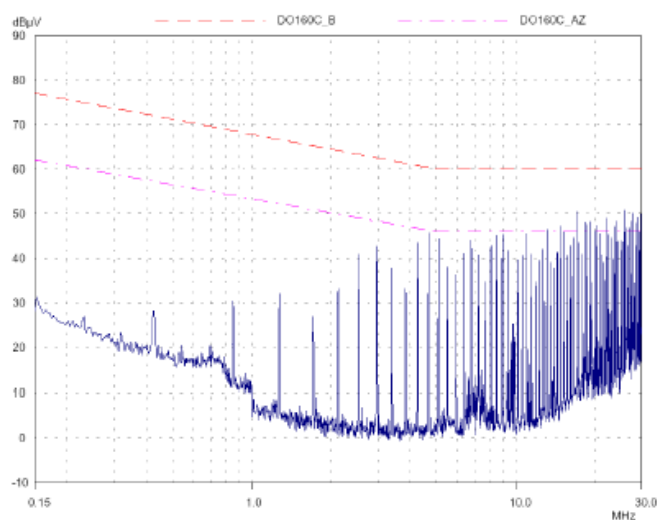
The GAIA Hi-Rel DC/DC CONVERTER it also provides Undervoltage Lockout (UVLO), Output Over Current Protection (OCP), Output Overvoltage Protection (OVP) and Over Temperature Protection (OTP) to made stability and safty.



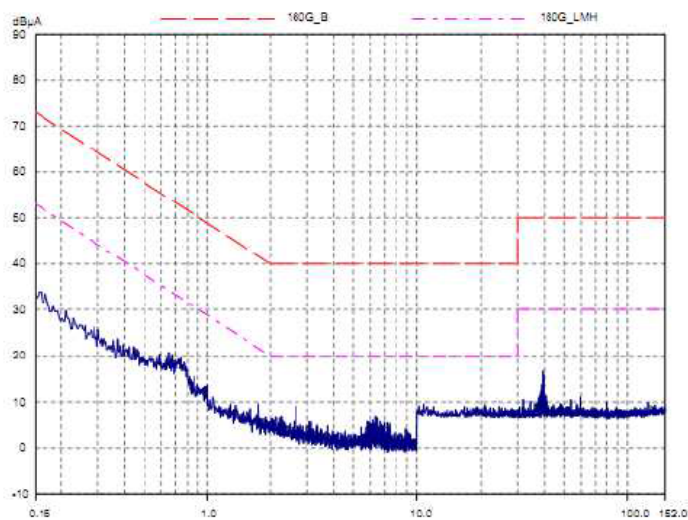
## Module Compliance with MIL-STD-461C/D/E Standards



## MIL-STD-461E : MGDS-15x-H-J with FGDS-10A-50V



## DO-160G : MGDS-15x-H-J with FGDS-10A-50V



## SPECIFICATIONS

SPECIFICATION	
CPU	Intel® Xeon E3-1505L V5 Processor (4C x 2/2.8 GHz), 8M Cache (25W)
Memory	2 x DDR4 up to 32GB ECC memory
mSATA	1 x mSATA Solid State Disk (SSD) - up to 512GB Capacity. Rugged Industrial NAND Flash mSATA Storage w/ Rugged -40/+85C High Capacity, optional Pre-loaded with Linux or Windows OS. 64 / 128 / 256 / 512GB Innodisk 3MG2-P Series MLC SATA III 6Gb/s Flash SSD, Rated for 520 MB/sec Sequential Read ; 350 MB/sec Write Max 1 x 2.5" SSD
DISPLAY	
GPU	NVIDIA GeForce GTX1050 (Cuda Cores:640)
LCD Panel	12.1" TFT LCD
Resolution	1024x768 XGA
Aspect Ratio	4:3
Brightness	Ultra Brightness 1000 nits
Max. Colors	16.7M/262k
Viewing Angle	80° (H) /70° (V)
Response Time	11ms (TYP.)
Contrast Ratio	1000 (TYP.)
Touch Panel	Glass-Film-Glass 5-Wire resistor touch panel
Function key	24user Programmable function keys
Display Control	<ul style="list-style-type: none"> <li>• Power On/Off</li> <li>• LCD Brightness +/-</li> <li>• Function key backlight On/Off</li> <li>• Display mode Select (On/Off/Night Vision)</li> </ul>
POWER	
Power Input	DC-IN 12 ~ 40V Optional: MIL-STD-1275, MIL-STD-704 and DO-160 power supply, 12 to 40V (150W max)
CONNECTOR	
X1	1 x LAN (Amphenol TV07RW-13-98S)
X2	1 x LAN (Amphenol TV07RW-13-98S)
X3	2 x USB (Amphenol TV07RW-13-98S)
X4	2 x COM (Amphenol TV07RW-13-35S)
X5	1 x DC-IN (Ampphenol TV07ZN-11-02PN)

**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 Ubuntu16.04, Ubuntu14.04, Fedora 28

**PHYSICAL**

Dimension (W x D x H)	390 x 110 x 330mm (w/o Stand)
Weight	TBD
Chassis	Aluminum Alloy, Corrosion Resistant.
Finish	Anodic aluminum oxide (Color Desert Yellow)
Ingress Protection	IP67 Dust /water Proof

**ENVIRONMENTAL QUALIFICATIONS**

MIL-STD-810G Test	Method 507.5, Procedure II (Temperature & Humidity) Method 516.6 Shock-Procedure V Non-Operating (Mechanical Shock) Method 516.6 Shock-Procedure I Operating (Mechanical Shock) Method 514.6 Vibration Category 24/Non-Operating (Category 20 & 24, Vibration) Method 514.6 Vibration Category 20/Operating (Category 20 & 24, Vibration) Method 501.5, Procedure I (Storage/High Temperature) Method 501.5, Procedure II (Operation/High Temperature) Method 502.5, Procedure I (Storage/Low Temperature) Method 502.5, Procedure II (Operation/Low Temperature) Method 503.5, Procedure I (Temperature shock)
Reliability	No Moving Parts; Passive Cooling. Designed & Manufactured using ISO 9001/2000 Certified Quality Program.
EMI/EMC	CE ,FCC compliance
Green Product	RoHS, WEEE compliance

**ORDERING INFORMATION**
**SKY-12**

**12.1" MILITARY GRADE PANEL PC, INTEL XEON E3-1505L V5  
PROCESSOR RUGGED MIL-DTL-38999 CONNECTOR, NIGHT  
VISION SUPPORTED**

## DIMENSIONS

