



# CLOUDS-P20

DUAL VISION MODE MILITARY 15" IP65 PANEL COMPUTER



## RUGGED PANEL COMPUTER

- Intel® Xeon W-11865MLE
- Sunlight Readable 1000 nits
- NVIS Mode Support Dimmable <1% nits
- 5W Resistive Touch with EMI Mesh
- 15" Colorful LCD XGA resolution
- 20 Programmable Function Keys
- Optical Bonding G.F.G resistive Touch with AG, AR
- IP65 Rating with DTL38999 connectors
- Extended Temperature -40°C ~+60°C

# Table of content

<b>1</b>	<b>Edge AI Inference GPU System</b> .....	<b>3</b>
	<b>1-1 Modular, Open, Scalable Architecture – SK515 COM E T6 Platform</b> .....	<b>3</b>
	<b>1-2 Dual Vision Mode</b> .....	<b>5</b>
<b>2</b>	<b>High Performance Supercomputing CPU&amp;GPU</b> .....	<b>5</b>
	<b>2.1 Intel® Xeon Processors:</b> .....	<b>5</b>
	<b>2.2 NVIDIA Ampere Quadro A2000:</b> .....	<b>5</b>
<b>3</b>	<b>Introduction &amp; Key Features</b> .....	<b>6</b>
	<b>3.1 Introduction</b> .....	<b>6</b>
	<b>3.2 Description of Key Features</b> .....	<b>6</b>
<b>4</b>	<b>MIL-STD-461/1275</b> .....	<b>9</b>
	<b>4.1 MIL-STD-461</b> .....	<b>9</b>
	<b>4.2 MIL-STD-1275</b> .....	<b>10</b>
<b>5</b>	<b>Specifications</b> .....	<b>11</b>
<b>6</b>	<b>Dimension</b> .....	<b>13</b>
<b>7</b>	<b>Mounting Type</b> .....	<b>14</b>
<b>8</b>	<b>Ordering Information</b> .....	<b>15</b>
<b>9</b>	<b>Appearance</b> .....	<b>16</b>

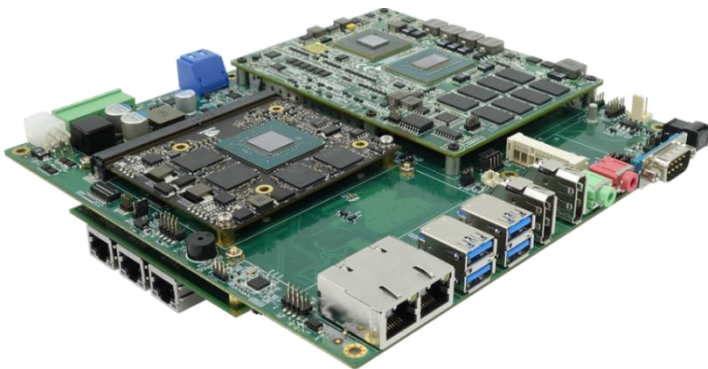


# 1 Edge AI Inference GPU System

Artificial intelligence (AI) is quickly becoming one of the most crucial components to business success now and in the foreseeable future. Today, the necessity of deploying powerful computing platforms that can accelerate and cost-effectively scale their AI-based products and services has become vital for successful enterprises.

7StarLake ruggedized AI inference platform ensures CLOUD15-P20 operate in harsh environments. With SK515 COM Express Carrier board, CLOUD15-P20 features stunning inference performance, powerful Intel XEON CPU and PCIe/104 expansion capability. In addition, 7StarLake's MXM GPU Module enables to combine with vast array of GPU from high performance NVIDIA RTX A series to pro design workstations Quadro series.

## 1-1 Modular, Open, Scalable Architecture – SK515 COM E T6 Platform



7StarLake's SK515 based on modular, open, scalable architecture, which combines COM Express Type 6, MXM expansion slots and PCIe/104 expansion, features extremely scalable and stackable, ensuring high performance CPU and GPGPU processing capabilities. SK515 supports a range of Intel processors, up to the latest Intel XEON series. It can operate in harsh environmental conditions from

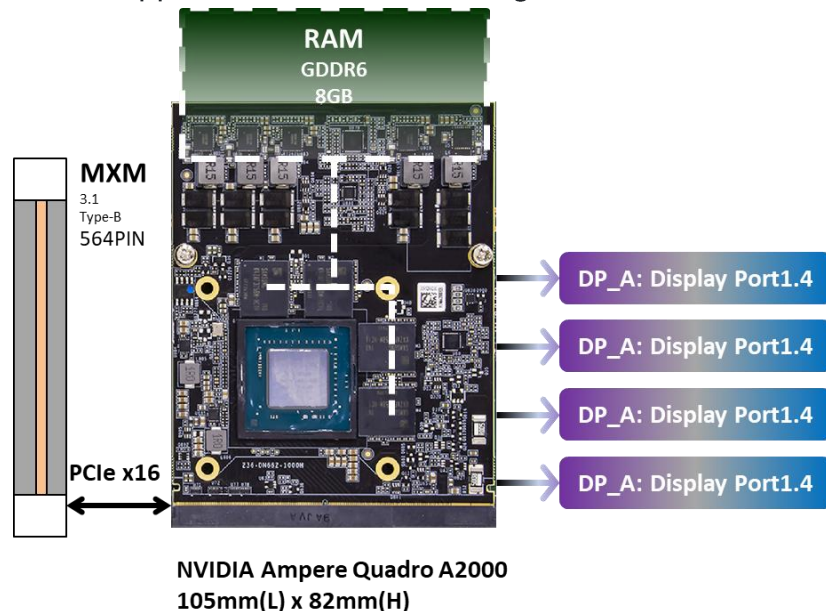
-40°C to 85°C. From low power consumption to high performance processing power, SK515 are built to suit a wide range of computing applications from signal processing to unmanned vehicles and more.

### COM E T6 Carrier board

7StarLake's COM Express Carrier Boards are small feature rich, super flexible carrier boards that integrate with any industry standard Type 6 COM Express module. COM Express is the most versatile and most scalable COM standard. It's unique in that it may be used in two ways: as a single board computer and as a processor mezzanine that can be plugged onto a base board, or "carrier" board, that contains the user's application specific I/O. 7StarLake's COM Express Type 6 carrier boards are ideal for compact and high performance computing applications in industrial, military/aerospace and transportation fields.

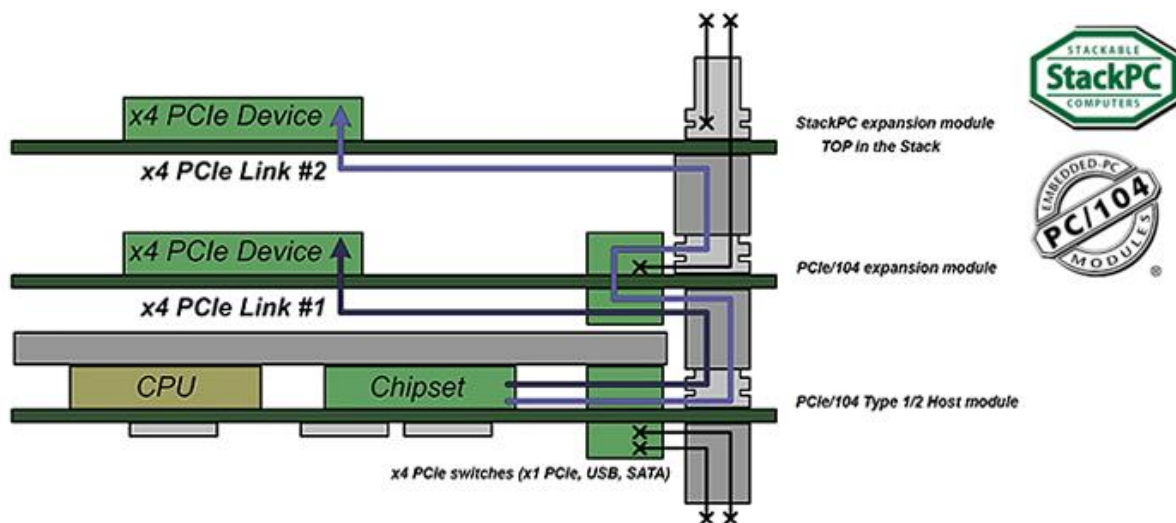
## MXM GPU Module

Based on the industrial standard Mobile PCI Express Module (MXM) Version 3.1 specification, 7StarLake's MXM modules are the compact, thinnest graphics module solution, delivering the latest and cutting-edge GPU benefits for your embedded systems. It features the most scalability and upgradability for GPGPU computing performance and rigorous data processing capabilities. 7StarLake's MXM GPU Modules are the ideal solution for performance demanding systems such as AI computing, defense applications and medical image.



## PCIe/104

A PCI-104 board with only the PCI Express connector is called PCIe/104. The purpose of PCIe/104 is to provide a System level Stack-Up Only approach. Specification adopts PCI-Express, Ethernet, SATA, USB as well as LPC, SPI, Field Buses and Common Power Connector to the any stacked architecture. 7StarLake's PCIe/104 MXM Carrier brings many advantages, including fast data transfer, low cost and high reliability. The rugged modules are optimized for mission-critical, harsh environments where failure caused by sudden shock or unpredictable vibration is not an option.



## 1-2 Dual Vision Mode

Operating in outdoor or hazardous environments can pose many challenges, whether there are blistering hot or freezing cold temperatures, high exposure to dust and water, or potentially explosive atmospheres. In the battle field, For soldiers, it's very important to clearly visualize their targets under these kinds of situations, thus, intelligent rugged display is needed.

7StarLake Cloud12-P28 ruggedized panel computer equipped dual LED backlight control systems, can support sunlight readable high bright and exceptional low nits readable.

## 2 High Performance Supercomputing CPU&GPU

### 2.1 Intel® Xeon Processors:

The Intel Xeon processors are definitely power processors. They are practically built for workstation computers. The large number of cores and advanced RAM functions give it enough processing power and speed to handle the most intensive creative applications, from computer-aided design (CAD) to 4K video editing to 3D rendering. Intel Xeon processors deliver essential performance and advanced security technologies for entry server solutions, professional workstations, and secure cloud services.

Driven by Intel® Xeon W-11865MLE (24M Cache, Max. 4.5 GHz, 25W) processor soldering onboard, CLOUD15-P20-F2A2 is an ideal solution for both land and naval battle.

### 2.2 NVIDIA Ampere Quadro A2000:

Cloud15-P20-F2A2 can install with Nvidia Ampere RTX Quadro A2000 (2560 CUDA, 8GB GDDR6 ). As NVIDIA RTX technology to professional workstations is a powerful, low-profile design. Transform your workflows with real-time ray tracing and accelerated AI to create photorealistic concepts, run AI-augmented applications, or review within compelling VR environments. Supported by major creative and design applications, the power of RTX is yours.

#### MMA2000B6-8G

MMA2000B6-8G features advanced NVIDIA RTX™ A2000 GPU with NVIDIA Ampere Architecture in the MXM 3.1 Type B, bringing excellent performance and power efficiency into a wide variety of embedded systems.

It features 2560 CUDA cores, 8GB GDDR6 on-board memory and the power consumption is rated at 38W (80W maximum) with 224.0GB/s memory bandwidth, 9456G single precision FLOPS, 155.1G double precision FLOPS.

# 3 Introduction & Key Features

## 3.1 Introduction

7StarLake Cloud15-P20-F2A2 is a rugged mission-critical panel computer, with LCD super brightness up to 1000 nits and night vision (NVIS) under 1% nits, optical bonding of protective glass (GFG) touch screens, EMI filtering / EMI mesh shielding, and anti-reflection/anti-glare (AR/AG) coatings, possess also built-in CPU module w/ Intel Xeon W-11865MLE which is a 64-bit, 8-core, 16Thread, 24 Smart cache processor and 20 programmable function keys . The rugged panel computer is designed with IP-65 waterproof and dust proof all-aluminum housings, supporting extended operating temperature range from -40 to 65°C and flexibly support extended DC power input range from 18V to 36V.

## 3.2 Description of Key Features

### (1) Sunlight Readable Up to 1000 nits



CLOUD15-P20-F2A2 ruggedized smart display can support sunlight-readable to meet high ambient light conditions such as direct sunlight, it also adopt our excellent optic bonding technical process, when bonded together the light passes through the bonded layers and is absorbed somewhat into the screen. Optical bonding is therefore important in making screens sunlight readable.

### (2) Night Vision Mode Support

When system at night mode, the operator can adjust brightness by hot key to turn it to darker, the display brightness down to under 1% nits or other customized night vision mode immediately, and the display gets ready at low brightness right away once its trigger and protect the usage of night vision devices at once.



### (3) MIL-DTL 38999



MIL-DTL-38999 is a high-performance cylindrical connector family designed to withstand the extreme shock, exposure and vibration that are commonplace in Defense and aerospace

**Amphenol®** applications. 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.

#### (4) G.F.G. Resistive Touch Screen

GFG touch screens are operable with fingers, pens and gloves. The glass surfaces makes the glass-film-glass sensor very durable and scratch resistant (7H).



#### (5) Soft Touch Buttons



**CLOUD15-P20-F2A2** quipped up to 20 ruggedized function keys, and 1 power button by rubber-tooling made,

each key pad dimension at 16 x 16 mm even the operator access function keys with wearing MOPP levels gloves.

#### (6) IP65 Certified



**CLOUD15-P20-F2A2** has complete resistance to dust and water; which is ruggedized and reliable for

constrained military, ground army and defense.

#### (7) MIL-STD 810G Compliance



**CLOUD15-P20-F2A2** compliances of MIL-STD-810 for shocks, vibration etc;

**CLOUD15-P20-F2A2** is rigorously field-tested to meet or exceed MIL-STD810G a for extremely high & low temp. humidity, shock, and vibration.

#### (8) MIL-461/1275 EMI Filter



**CLOUD15-P20-F2A2** is designed with MIL-STD-1275/704, protecting against vehicle/

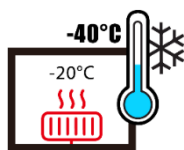
aircrafts voltage surges, spikes and transients, and even electromagnetic interference. The characteristic is well suited for the strictest military requirement and deliver optimal performance in harsh conditions.

#### (9) Intelligent Heater

Due to consider boot up in extreme cold environment -40 degree,

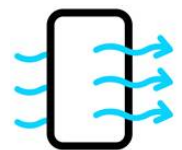
**CLOUD15-P20-F2A2** is designed /w intelligent heater to control

temperature automatically.



#### (10) Waterproof Valve

**CLOUD15-P20-F2A2** has completely waterproof to balance atmospheric pressure to meet different altitude environment.



## (11) Optional Features - EMI Shielding Cable Kits

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, maximizing shielding effectiveness.



Figure : EMI Shielding Cable Kit



# 4 MIL-STD-461/1275

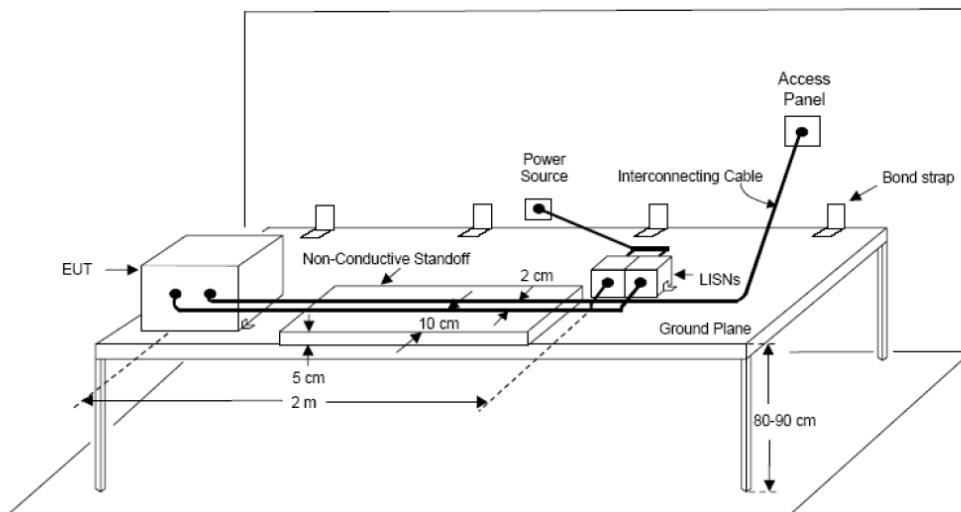
## 4.1 MIL-STD-461

**MIL-STD-461**

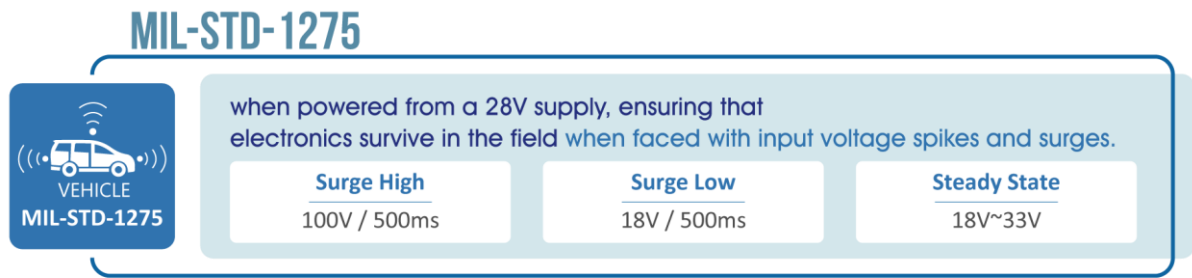
Ensures function properly within electromagnetic (EM) environments and avoid releasing EM energy cause EM interference (EMI) with nearby devices.

<b>CE 102</b> 10 kHz-30 MHz Conducted Emissions, Radio Frequency Potentials & Power Leads, basic curve	<b>RE 102</b> 30 MHz - 5 GHz Radiated Emissions, Electric Field	<b>RE 103</b> 80 MHz - 3 GHz Radiated susceptibility, Electric Field
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MIL-STD-461 is a military standard that establishes the control of electromagnetic interference (EMI) emissions and susceptibility characteristics of electronic, electrical & electromechanical equipment and subsystems for military equipment. EMI encompasses any undesired signals, “noise”, generated by electronic equipment. Keeping EMI under control is crucial for military applications, because if it’s out of control, the military will be detected by the enemy and it might cause a great loss. To design a product that meets strict requirements, engineers should possess extensive knowledge of both electrical and mechanical design to avoid unintentional generation, propagation and reception of electromagnetic energy, which may cause unwanted effects, for example, physical damage in operational equipment.



## 4.2 MIL-STD-1275



One of the hardest challenges met during development is managing to design a rugged, protected, power-efficient design within limited available space. As a leading military computers' producer, 7starlake designed products compliant with not only MIL-STD-810 and MIL-STD-461, but also MIL-STD 1275. MIL-STD 1275 is a military standard that defines a series of test conditions to be applied in various military vehicles, including electromagnetic compatibility (EMC), cranking/starting mode, and operating mode from battery and generator-only operation with their associated spikes, surges and operating limits. By adopting MIL-STD 1275 compliant products, users don't need to worry about potential risk caused by power system.

# 5 Specifications

## 15" TFT LCD DISPLAY & RESISTOR TOUCH SCREEN

<b>Resolution</b>	1024x768 XGA	<b>Brightness</b>	1000 nits
<b>Aspect Ratio</b>	4:3	<b>Contrast Ratio</b>	4000
<b>Touch Panel</b>	Glass-Film-Glass 5-Wire resistor touch panel (Optional)		

## SYSTEM SPEC

<b>CPU</b>	Intel® Xeon W-11865MLE Processor (8C x 1.5/4.5 GHz), 24M Cache (25W)
<b>Memory type</b>	3 x SO-DIMM, Dual Channel DDR4 3200 ECC support, up to 96GB
<b>Storage</b>	1 x M.2 M-key SATA 512GB SSD
<b>NVIS switch</b>	Day Mode: Ultra-Brightness 1000 nits Night Mode: NVIS (Dimmable under 1% Nits)
<b>Triple Mode</b>	Invisible Mode: Backlight Off
<b>OSD</b>	Backlight Dim + Backlight Dim – Function Key backlight On/Off
<b>Function key</b>	20 Soft programmable function buttons 1 for power button (On/Off)
<b>DC-IN</b>	18V ~ 36 V, 12Vdc Optional: MIL-STD-461, MIL-STD-1275,

## CONNECTORS

<b>DC-IN</b>	1x Power IN
	X1: 1x mini-DP (Amphenol MDPFTV7AGF312)
	X2: 2x USB2.0 + 2x RS232
<b>IO Ports</b>	X3: 2x LAN (GbE )
	X4, X5: 1x BNC:
	<b>IP68 Water proof Valve</b>

## APPLICATIONS

<b>Applications</b>	Marine, Naval, Ground and Airborne environment.
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## PHYSICAL

<b>Dimension</b>	442.5 x 370 x 82 mm (WxHxD)	<b>Weight</b>	8.8Kg	<b>Finish</b>	Anodic aluminum oxide
<b>Chassis</b>	Aluminum Alloy, Corrosion Resistant	<b>Ingress Protection</b>	IP65 Dust /water Proof		

## MIL COMPLIANCE

MIL-STD-810G (OPERATION TEST)		
<b>Low Temp.</b>	Method 502.5 Procedure 2	Exposure(24h x 3 cycle) at -40°C min.
<b>High Temp.</b>	Method 501.5 Procedure 2	60°C for 2 hrs after temperature stabilization.
<b>Humidity</b>	Method 507.5 Procedure 2	RH -95%. Test cycles: ten 24-hrs , functional test after 5th and 10th cycles
<b>Vibration</b>	Method 514.6 Category 20	10-500Hz 1.04Grms Test duration: 1 hr x 3 axis (total 3 hrs)
<b>Shock</b>	Method 516.6 Procedure 1	20G, 11mSec, 3 per axis
MIL-STD-810G (NON-OPERATING TESTS)		
<b>Low Temp.</b>	Method 502.5	Exposure(24h x 7 cycle) at -40°C min.
<b>High Temp.</b>	Method 501.5 Procedure 1	71°C for 2 hrs after temperature stabilization.

<b>Vibration</b>	Method 514.6 Category 24	200 to 2000Hz Test duration: 1hr per axis; rms = 7.7 gs
<b>Shock</b>	Method 516.6 Procedure 1	20G, 11mSec, 3 per axis

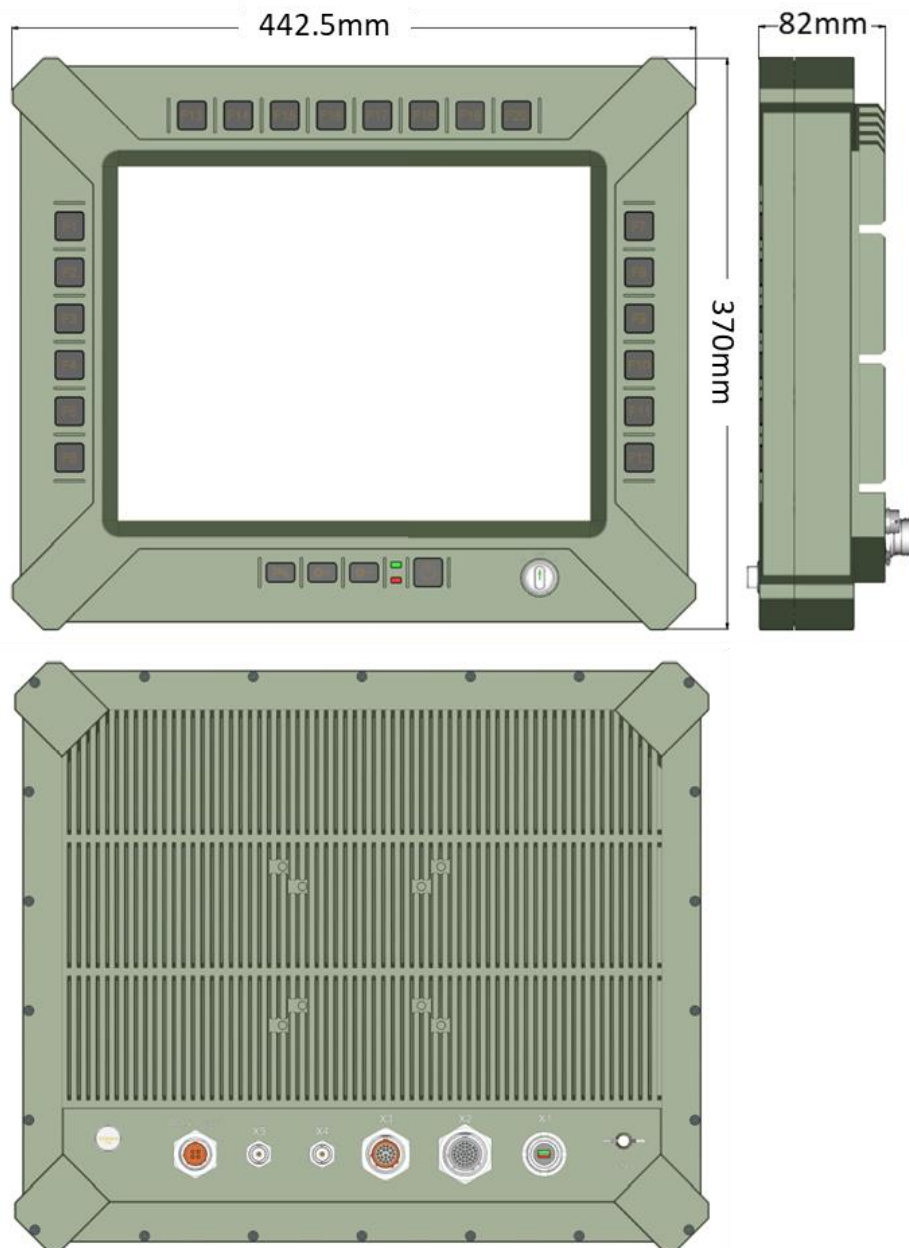
**MIL-STD-461 (OPTION)**

CE102	2MHz - 30 MHz
RE102-4, (1.5 MHz)	1.5 MHz -30 MHz - 5 GHz
RS103	1.5 MHz - 5 GHz

**ENVIRONMENTAL QUALIFICATIONS**

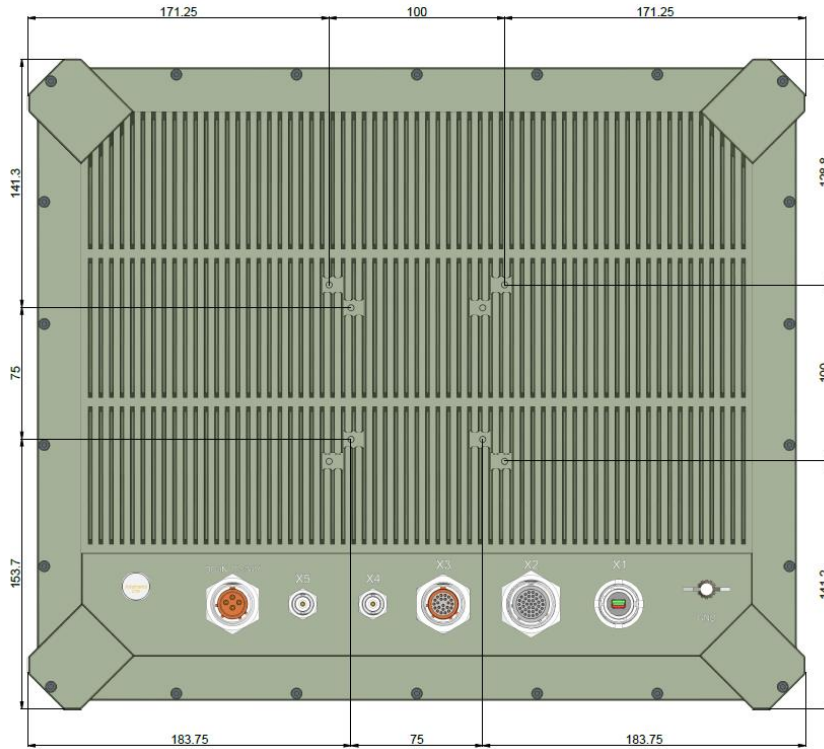
<b>Regulatory</b>	CE , FCC Compliance
<b>Operation Temp.</b>	-40°C~60°C (ambient with air flow)
<b>Storage Temp.</b>	-40~+85 °C
<b>Green Product</b>	RoHS, WEEE compliance

## 6 Dimension



# 7 Mounting Type

## VESA Mount



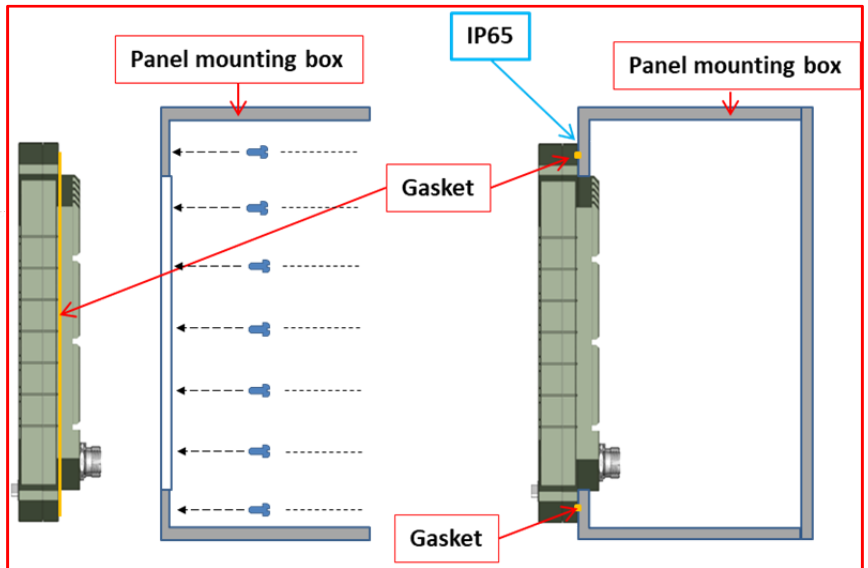
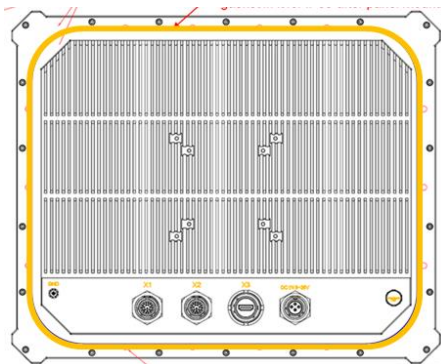
**VESA 100/75 standard mounting hole pattern:**

1. 75mm x 75mm or 100mm x 100mm
2. Screws are 4 or 6mm.
3. The four holes may be centered or located on the lower edge of the monitor.



## Panel Mount (Option)

Customized design for Panel Mount on a mounting Box



## 8 Ordering Information

15" Rugged Smart Display with MIL-DTL-38999 connectors, 20 user programmable function keys, NVIS supported

Cloud15-	PX6	P20	P20-F2A2	P20-A2
CPU	Core i7-1185G7E		Xeon W-11865MLE	Xeon W-11865MRE
Memory	Up to DDR4 32GB		Up to DDR4 64GB	
Storage	M.2 NVMe		SATA III SSD Up to 4TB	
GPU	N/A	N/A	Nvidia MXM A2000	
LAN1	1x 1GbE		1x 1GbE	
LAN2	1x 2.5GbE		1x 1GbE	
NIC				
Mini PCIe 1	No	YES	3G-SDI	Yes
Mini PCIe 2	No	Yes	3G-SDI	Yes
M.2	E key		M.Key	
Function Key	6	20	20	20
NVIS	Yes			
USB	2x USB2.0			
Display	1x DP		4x mDP + 1x VGA + 1x DVI	
COM	1x RS232 + 1x RS232/422/485		4x RS232/422/485	
CAN	Option			
DIO	No		DI/DO (4/4)	
Power	9V~36V DC (Options for 18V~36V MIL-461 EMI)			

## 9 Appearance



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