TANK-XM811

High-Performance 12th/13th/14th Generation Intel® Core™ Processor Fanless Embedded Computer

Features

» Supported CPUs:

Intel® Core™ i5-12500TE 1.9GHz (up to 4.3GHz, 6-core, 35W TDP)

Intel® Core™ i7-12700TE 1.4GHz (up to 4.6GHz, 12-core, 35W TDP)

Intel® Core™ i9-12900TE 1.1 GHz (up to 4.8 GHz, 16-core, 35W TDP)

» 2 x 2.5GbE ports

» Multiple USB ports and serial ports

» Multiple internal expansion boards for flexible selection

» Various optional backplanes and chassis

» CE/FCC compliant

Specifications

Form factor	
SBC Form Factor	» CPU:
	12th/13th/14th Gen Intel® Core™ CPU 35/65W
	Intel® Core™ i5-12500TE 1.9GHz (up to 4.3GHz, 6-core, 35W TDP)
	Intel® Core™ i7-12700TE 1.4GHz (up to 4.6GHz, 12-core, 35W TDP)
	Intel® Core™ i9-12900TE 1.1 GHz (up to 4.8 GHz, 16-core, 35W TDP)
	» Chipset:
	R680E
	» System Memory:
	2 x SO-DIMM DDR4 3200 (8GB pre-installed) (up to 64GB)
	» Power:
	DC Jack: 12 V~28 V DC
	Terminal Block: 12 V~28 V DC
	Consumption: 12V @ 8.8A (Intel® Core™ i9-12900TE with 16GB memory)
I/O Interface	
I/O Ports	» USB:
	8 x USB 3.2 Gen 2
	» Ethernet:
	2 x RJ-45:
	2 x 2.5 GbE by Intel ® I226V (colay I226LM)
	» COM Port:

	2 x RS-232/422/485
	4 x RS-232
	» Digital I/O:
	12-bit Digital I/O (6-in/ 6-out)
	» Display:
	1 x HDMI™
	1 x DP++
	» TPM:
	Support Intel PTT
	» Watchdog Timer:
	Programmable 1 ~ 255 sec/min
Expansion Slots	
Expansion Slots	» M.2:
	1 x 2280 M-key (PCIe x4)
	1 x 2230 A-key (USB+PCIe x1, supports vPRO)
	» Backplane:
	Optional
System	
Cooling method / System Fan	Fanless
	4-pin external system fan connector
Drive Bays	1 x 2.5” SATA 6Gb/s HDD/SSD bay
Indicator&Buttons	
Buttons	1 x Power button
	1 x Reset button
	1 x AT/ATX switch
Indicators	1 x Power LED (green)
	1 x HDD LED (yellow)
Physical Characteristics	
Construction	Extruded aluminum alloy
Color	
Color	Black
Dimensions	
Dimensions	230.6 x 256.04 x 76.2
Weight	
Weight	3.33/3.7 kg
Environment	
Operating Temperature	-20°C ~ 60°C with air flow (CPU TDP35W & SSD)
	-20°C ~ 50°C with air flow (CPU TDP65W & SSD)
Humidity	10% ~ 95% non-condensing
Operating Vibration	Half-sine wave shock 5G, 11ms, 100 shocks per axis (SSD)
Operating Shock	MIL-STD-810G 514.6C-1 (SSD)
Safety & EMC	CE/FCC compliant
OS Support	
OS Support	Microsoft Windows 10 / Windows 11, Linux

Ordering Information

TANK-XM811-i9AD-R11	Ruggedized Fanless Embedded System With Intel® 12th i9 CPU, 16GB RAM, 1xHDMI, 1xDP++, 2x2.5GbE Lan, 2xRS232/422/485, 4xRS232, 8xUSB3.2, 12xGPIO, 12~28V DC and RoHS
TANK-XM811-i7AC-R11	Ruggedized Fanless Embedded System With Intel® 12th i7 CPU, 8GB RAM, 1xHDMI, 1xDP++, 2x2.5GbE Lan, 2xRS232/422/485, 4xRS232, 8xUSB3.2, 12xGPIO, 12~28V DC and RoHS
TANK-XM811-i5AC-R11	Ruggedized Fanless Embedded System With Intel® 12th i5 CPU, 8GB RAM, 1xHDMI, 1xDP++, 2x2.5GbE Lan, 2xRS232/422/485, 4xRS232, 8xUSB3.2, 12xGPIO, 12~28V DC and RoHS

Packing List

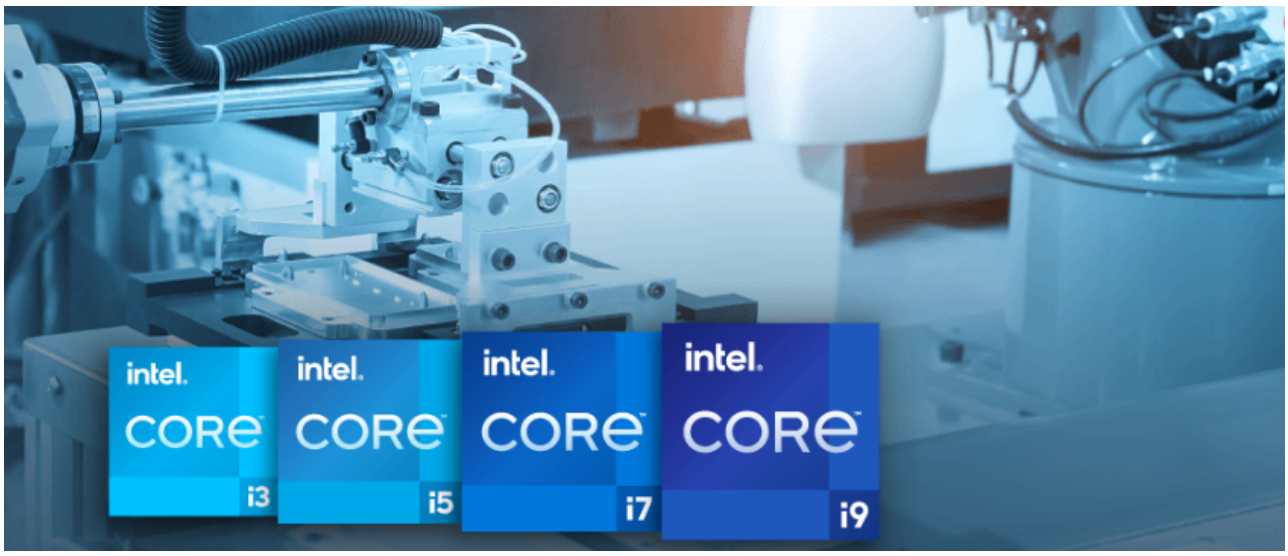
1 x Wall mounting kit	1 x Screw pack
2 x Terminal block	

TANK-XM811

IEI has engineered the TANK-XM811 with the latest technologies to deliver optimized and reliable processing performance at the rugged edge. This product features 12th generation Intel® Core™ processors, expandable GPU power, rapid NVMe storage, and scalability through IEI's eChassis modules. This product can be used for various industrial IoT applications, including surveillance, transportation, and advanced manufacturing.
Furthermore, the system effectively reduces lead times and inventory carrying costs by providing comprehensive modularized options and easy configuration.

12th Gen Intel® Core™ with Intelligent Workload Optimization, up to 36% CPU Performance Improved

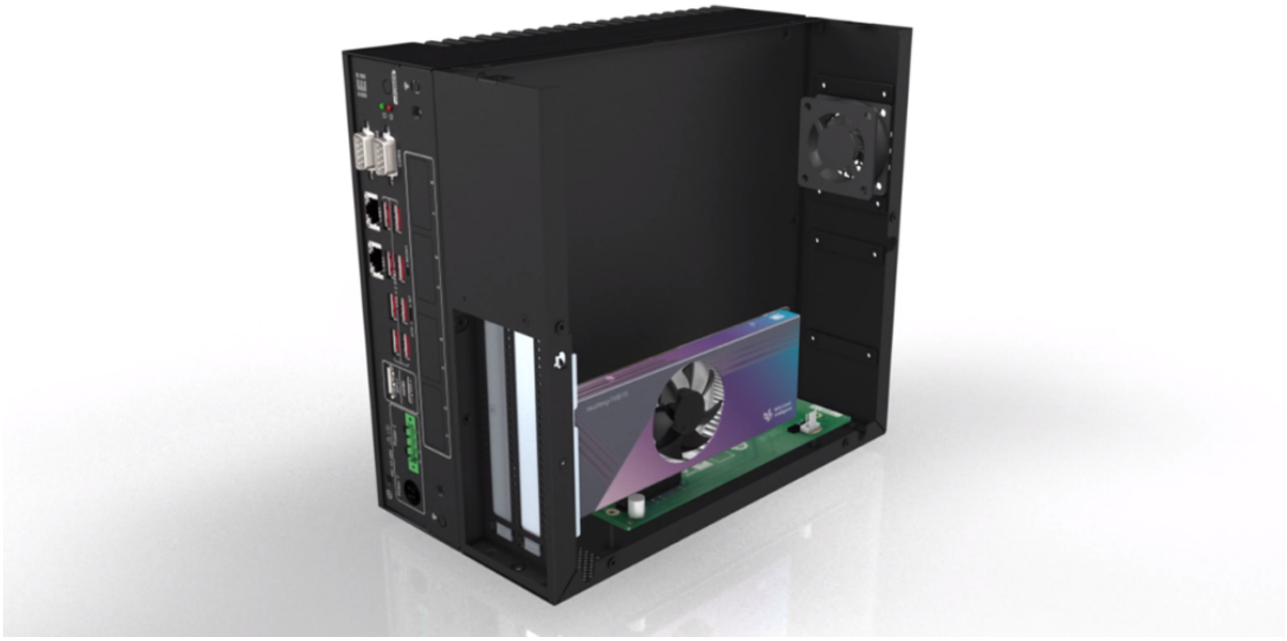
IEI TANK-XM811 is a rugged edge AI inference system that supports up to 65W TDP processors. It is integrated with the 12th Gen Intel® Core™ desktop CPU and Intel® R680E chipset. This solution is up to 36%, 35%, and 94% faster for single-thread performance, multi-thread performance, and graphics performance than previous generations.
In addition, the integrated GPU, Intel UHD Graphics 770, can offer up to 32 graphics execution units (EUs) and a clock speed of up to 1.55 GHz (depending on the CPU model). With the improved graphics performance and GPU image classification inference performance, the TANK-XM811 can support better AI workload parallelization and image classification inference.



Flexible Expansion with eChassis

The TANK-XM811 supports the unique eChassis modules that enable performance acceleration through GPUs, accelerators and other add-on cards. Furthermore, comprehensive modularized options and the ease of configuration effectively reduce lead times for customers' diverse requirements.

Install add-on cards. Close the chassis and fasten the screws.



Four Steps to Configure Your Edge AI Inference System

The TANK-XM811 series of embedded computers from IEI provides great scalability and flexibility, thanks to its unique eChassis modules. This makes it easy for system integrators to configure a system that meets specific user requirements.

Flexible Expansion via PCIe/PCI Slot

For performance upgradability and flexibility, the TANK-XM811 supports eChassis and eBP modules to add edge inference capabilities. It also provides up to 7 system configuration options. Users can select a specific package that provides extra PCIe expansion slots for add-on cards such as frame grabber cards, accelerator cards, I/O cards, motion control cards, and even GPU accelerators for machine learning and AI workloads. Selection Guide

	A	B	C	D	E	F	G
eChassis	TXC-XM81-3S	TXC-XM81-3S	TXC-XM81-4S	TXC-XM81-4S	TXC-XM81-4S	TXC-XM81-G1	TXC-XM81-G2
eBP	TXCBP-XM81-2A	TXCBP-XM81-2B	TXCBP-XM81-4A	TXCBP-XM81-4B	TXCBP-XM81-4C	TXCBP-XM81-G1-PW	TXCBP-XM81-G2-PW
							
Slot 1	PCIe x16	PCIe x16 (x8 signal)	PCIe x16	PCIe x16 (x8 signal)	PCIe x16	PCIe x16	PCIe x16 (x8 signal)
Slot 2	-	-	PCIe x1	PCIe x4	PCIe x4	PCIe x1	-
Slot 3	PCIe x4	PCIe x16 (x8 signal)	PCIe x4	PCIe x16 (x8 signal)	PCI	PCIe x4	PCIe x16 (x8 signal)
Slot 4	-	-	PCIe x4	PCIe x4	PCI	PCIe x4	-
Slot 5	-	-	-	-	-	-	PCIe x4
Slot 6	-	-	-	-	-	-	PCIe x4

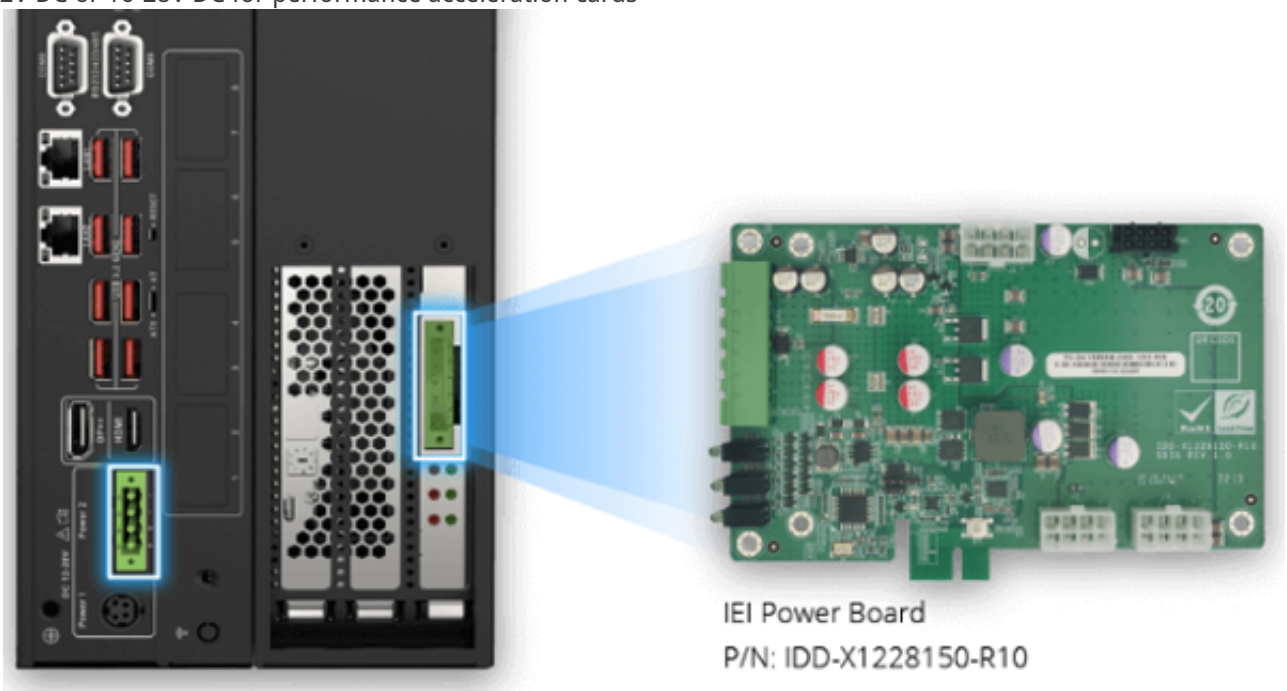
GPU Expansion Box

The GPU eChassis, TXC-XM81-G1 and TXC-XM81-G2, are the scalable graphics card expansion chassis designed for artificial intelligence applications. They can support up to total 600 W and 339.8 mm in a full-length, full-height form factor. Other PCIe add-on cards like high speed I/O cards, data collection cards, frame grabber cards and motion cards are also supported to expand functionality.
*Please choose the corresponding eBPs, TXCBP-XM81-G1-PW for TXC-XM81-G1 and TXCBP-XM81-G2-PW for TXC-XM81-G2.

Dual-Power Input for Performance Acceleration

The TANK-XM811 provides a dual-power input solution for stably and efficiently powering the high power loading add-on cards. The IDD-X1228150 power board provides additional power for GPU cards and accelerators that require more than 75W.

» 12-28V DC for host system
» 12V DC or 16-28V DC for performance acceleration cards



Industrial-grade Hardened Hardware Design with 12V~28V DC Wide-range Power Input

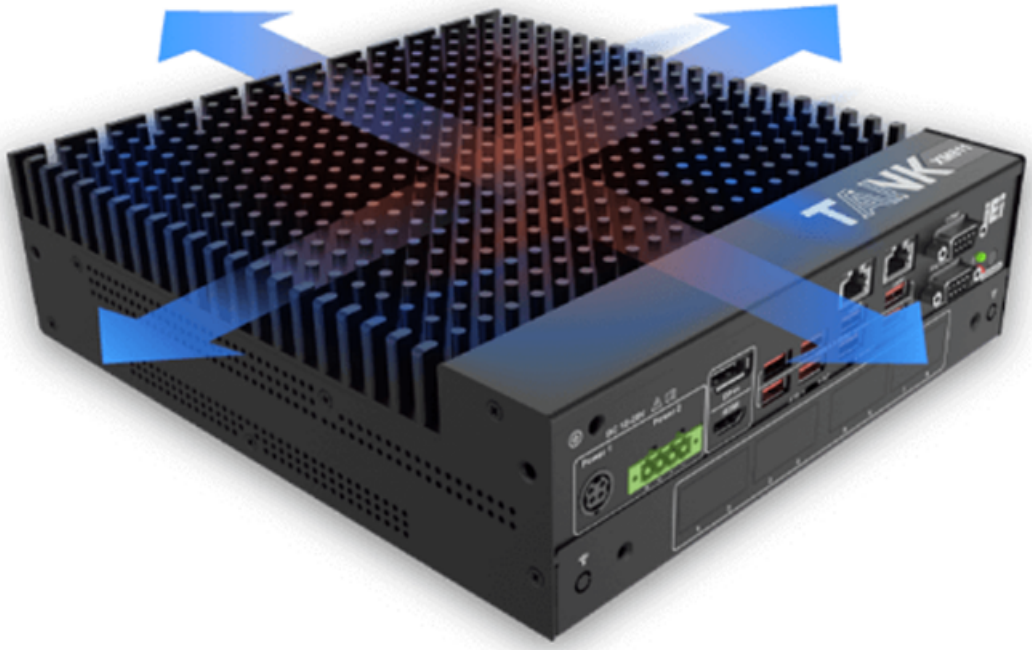
Ruggedized hardware architecture safeguards the small factor computer in harsh, remote and dynamic environments.

» Fanless cooling eliminates failure points
» Wide 12V to 28V DC voltage input

» -20°C to 60°C wide operating temperature
» Intel® Platform Trust Technology (Intel® PTT) to enable ready cybersecurity

Fanless System with Reliable Thermal Design

The TANK-XM811's thermal design is optimized for better heat conduction using a pin-fin heatsink concept. This enhances two dimensional heat conduction and reduces flow impedance for better heat dissipation in this fan-less system. The overall weight and dimensions are thus reduced, significantly enhancing system reliability in vibration-sensitive applications, such as AGV. Moreover, this innovative thermal design allows the TANK-XM811 to maximize superior performance than those with traditional heatsink consisting of parallel fins.



Advanced High-efficient Fan Kit Releases Extreme Computing Power

For applications that require a lot of computing power, users can add an external fan for active cooling. This will help maintain high system performance in high temperature environments and under high CPU loads. This design is reliable and prevents dust from getting into the hardware. It is also easy to disassemble and clean.

» TDP 35W operates at -20°C ~ 60°C w/o external fan
» TDP 65W operates at -20°C ~ 60°C with external fan

100% CPU Power

Easy Assembly

Silent Operation

Fan Kit P/N :

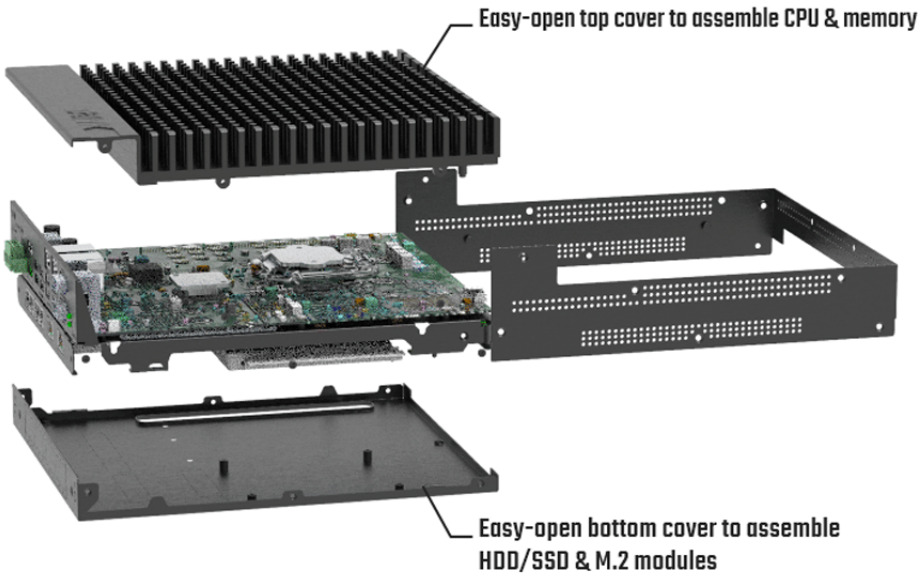
SF-TANK-XM81

Versatile for Installation Flexibility

The TANK-XM811 supports side mounting and can be mounted on the wall or desktop for quick deployment in a variety of edge AI applications. No matter it is in the field, cabinet or equipment.

Easily Integrated Enclosure for Local CTOS

The mainboard is attached to a support bracket to keep it from bending or warping. The top and bottom covers can be opened in a few steps for installing the CPU, memory, and hard drive. Moreover, the system integrator can take advantage of local configure-to-order-service.



Wireless Connectivity from the Edge

IEI TANK-XM811 series enables seamless wireless connectivity for remote and mobile edge deployments. WiFi 6 and Bluetooth 5.0 reliably connect to sensors for indoor applications. Dual SIM sockets provide continuous LTE cellular connectivity and network redundancy to ensure uninterrupted data transmission for outdoor mobile edge deployments. Furthermore, the TANK-XM811 is 5G ready through a 5G add on card and the on-board SIM slot, providing greater cellular speeds.

IEI Wireless Expansion Module P/N: TXIOB-XM81-A
» 1 x M.2 2230 A key slot for WiFi and Bluetooth (PCIe x1 & USB 2.0 mode)
» 1 x Full-size PCIe Mini slot with SIM holder (PCIe x1 & USB 2.0 mode)
» 1 x M.2 3042/3052/3080 B key slot with SIM holder (PCIe x1 & USB 3.2 mode) for LTE/5G cellular, NVMe SSD or AI accelerator
» 1 x M.2 3042/3052/3080 B key slot with SIM holder (PCIe x2 mode) for LTE/5G cellular, NVMe SSD or AI accelerator

Eight 2.5GbE PoE+ for Added Device Connectivity

Oftentimes embedded computers are deployed in environments where it is difficult or costly to add power outlets for connected devices. IEI's TANK-XM811 features eight PoE+ (IEEE 802.3at) ports. Each port is capable of providing up to 30 watts over a single Ethernet cable to transmit both data and power.
IEI provides an Ethernet daughterboard module that can be easily integrated into the TANK-XM811 through standard PCIe protocols. The PoE+ connectivity allows organizations to power devices such as sensors and cameras through Ethernet ports. It also provides additional Ethernet I/O ports and scalable connectivity for IoT deployments.
Moreover, the 2.5GbE PoE module allows the TANK-XM811 to connect to devices that need intensive bandwidth, like high-resolution cameras. This lets the camera transfer high-resolution video feeds to an embedded system.

IEI PoE/LAN Module

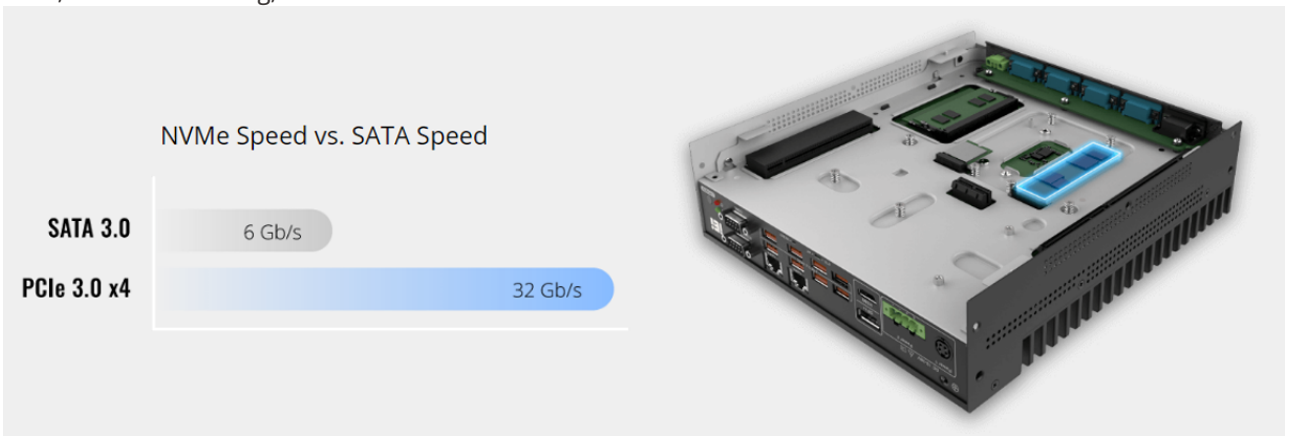
P/N: GPOE-XM81-8P
» Interface: 8 x PCI Express® x1
» Ethernet: 8 x 2.5GbE Intel® I225-V controller
» PoE Capability: IEEE 802.3at with 30W / 52V per port (total power 60W)

Stunning 4K Resolution and Dual Independent Display Support

The TANK-XM811 is equipped with Intel® UHD 630 graphics engine for stunning 4K image display via DP++ and HDMI™ ports. The DisplayPort Dual-Mode (DP++) connector can be used with a simple, inexpensive passive adapter to convert to HDMI™. It is completely plug and play, handles both video and audio, and does not need any driver to work.

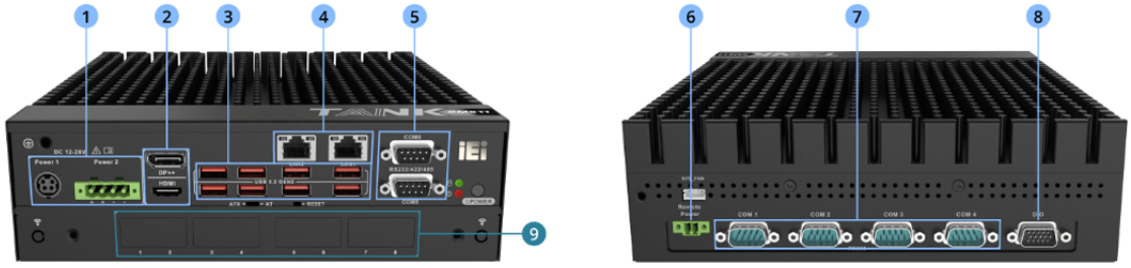
PCIe x4 NVMe Offers Higher Performance and Low Latency for Edge Computing

Compared to a SATA SSD drive, an NVMe-based drive can write to disk up to 4x faster. Thus, the NVMe system is a great solution to enable applications that require real-time data processing and analysis, such as autonomous vehicles, machine learning, surveillance and industrial automation.



Versatile I/O

IEI's AI edge inference system, TANK-XM811, incorporates leading-edge I/O options for a vastly expandable Industry 4.0 solution. Reliable serial ports, multi-display outputs and high-speed USB ensure smooth integration and offer rich scalability to rugged edge deployments.



1 DC IN
2 1 x DP++ 1.4
1 x HDMI 1.4
3 8 x USB 3.2 Gen 2
4 2 x 2.5GbE
5 2 x RS-232/422/485
6 Remote power
7 4 x RS-232
8 1 x DIO (6-in/6-out)
9 For Expansion IO Board

Optional Item Selection

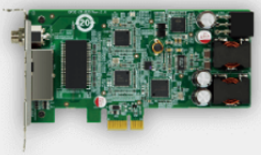
With flexibility and convenience – various options await! Build your iconic TANK-XM811 by choosing functional expansions!

Mustang-V100-MX8

8 x Intel® Movidius™ Myriad™ X MA2485 VPU Accelerator

Mustang-V100-MX4

4 x Intel® Movidius™ Myriad™ X MA2485 VPU Accelerator

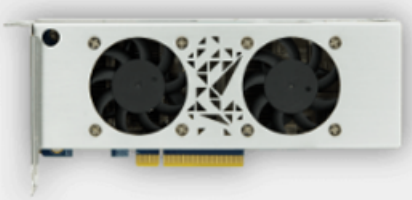


GPOE-2P

2-port 802.3at PoE Card

Mustang-T100-T5

5 x Google Coral edge TPU Accelerator



Mustang-F100

Intel® Arria® 10 GX1150 FPGA Accelerator

Dimensions