

TANK-XM810

High-Performance 10 th / 11 th Generation Intel® Core™ Processor Fanless Embedded Computer



Features

» Supported CPUs:

Intel® Core™ i3-10320 3.8 GHz (up to 4.6 GHz, quad-core, 65W TDP)

Intel® Core™ i5-10500 3.1 GHz (up to 4.5 GHz, 6-core, 65W TDP)

Intel® Core™ i5-10500TE 2.3 GHz (up to 3.7 GHz, 6-core, 35W TDP)

Intel® Core™ i7-10700E 2.9 GHz (up to 4.5 GHz, 8-core, 65W TDP)

Intel® Core™ i7-10700TE 2.0 GHz (up to 4.4 GHz, 8-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: |
| | 10/11 th Gen Intel® Core™ CPU 35/65W |
| | Intel® Core™ i3-10100TE 2.3 GHz (up to 3.6 GHz, quad-core, 35W TDP) |
| | Intel® Core™ i3-10320 3.8 GHz (up to 4.6 GHz, quad-core, 65W TDP) |
| | Intel® Core™ i5-10500 3.1 GHz (up to 4.5 GHz, 6-core, 65W TDP) |
| | Intel® Core™ i5-10500TE 2.3 GHz (up to 3.7 GHz, 6-core, 35W TDP) |
| | Intel® Core™ i7-10700E 2.9 GHz (up to 4.5 GHz, 8-core, 65W TDP) |
| | Intel® Core™ i7-10700TE 2.0 GHz (up to 4.4 GHz, 8-core, 35W TDP) |
| | » Chipset: |
| | Q470/Q470E |
| | » System Memory: |
| | 2 x SO-DIMM DDR4 2933 MHz (up to 64GB) |
| | » Power: |
| | DC Jack: 12 V~28 V DC |
| | Terminal Block: 12 V~28 V DC |
| | Consumption: 12V @ 8A (Intel® Core™ i9-10900TE with 8GB memory) |
| I/O Interface | |
| I/O Ports | » USB: |
| | 6 x USB 3.2 Gen 2 |
| | 2 x USB 2.0 |
| | » 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: 2 x 2280 M-key (PCIe x2) bay (RAID 0/1 support) |
| | 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 | 3.2/3.5 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 Compatible | |
| OS Compatible | Microsoft Windows 10 / Windows 11, Linux |

Ordering Information

| | |
|---------------------|--|
| TANK-XM810-i7BC-R12 | Ruggedized Fanless Embedded System with Intel® i7-10700E 2.9GHz, (up to 4.5GHz, 8-core, TDP 65W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |
| TANK-XM810-i7AC-R12 | Ruggedized Fanless Embedded System with Intel® i7-10700TE 2.0GHz, (up to 4.4GHz, 8-core, TDP 35W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |
| TANK-XM810-i5BC-R12 | Ruggedized Fanless Embedded System with Intel® i5-10500 3.1GHz, (up to 4.5GHz, 6-core, TDP 65W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |
| TANK-XM810-i5AC-R12 | Ruggedized Fanless Embedded System with Intel® i5-10500TE 2.3GHz, (up to 3.7GHz, 6-core, TDP 35W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |
| TANK-XM810-i3BC-R12 | Ruggedized Fanless Embedded System with Intel® i3-10320 3.8GHz, (up to 4.6GHz, 4-core, TDP 65W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |
| TANK-XM810-i3AC-R12 | Ruggedized Fanless Embedded System with Intel® i3-10100TE 2.3GHz, (up to 3.6GHz, 4-core, TDP 35W), 8GB DDR4 pre-installed memory, 1xHDMI, 1xDP++, 12~28V DC and RoHS |

Packing List

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

TANK-XM810 Modular Edge AI Inference System

IEI has engineered the TANK-XM810 with the latest technologies to deliver optimized and reliable processing performance at the rugged edge. This product features 11th/10th generation Intel® Core™ processors and comes with multiple I/O combinations and a modular expansion solution. Expansion is supported by iEi's unique eChassis boxes and eBP backplanes.

The TANK-XM810 can support up to 65W processors and can operate in temperatures ranging from -20°C to 60°C. It is designed for use in harsh environments like digital surveillance, transportation system, machine vision and advanced manufacturing.



10th Gen Intel® Core™ Outstanding Computing Power

8 Cores, 16 Threads, Up to 65W CPU

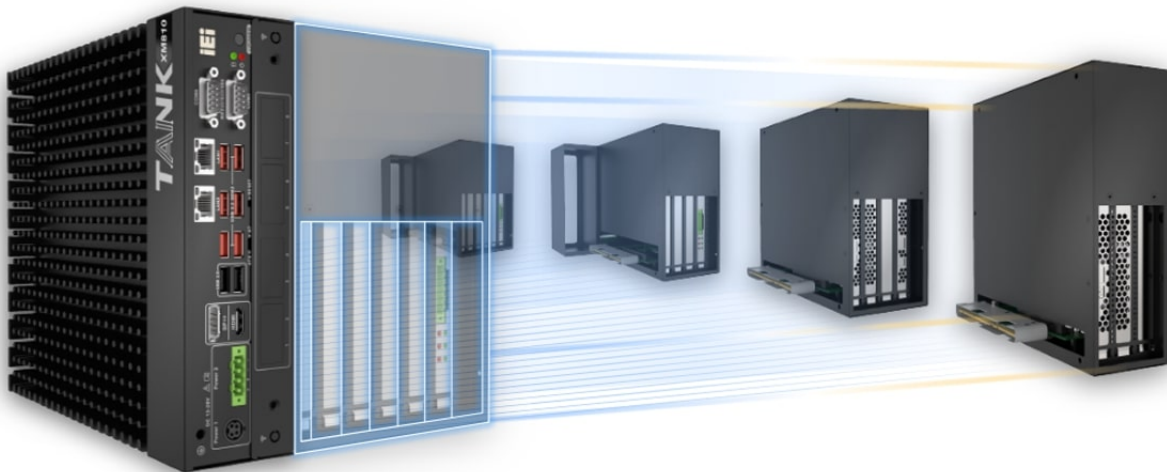
The TANK-XM810 series is powered by the 10th generation Intel® Core™ i7/i5/i3 processors. With up to 8-core architecture and high-speed DDR4-2933 memory support, it provides low-latency edge responsiveness for data-driven industrial AI and machine vision applications.

Moreover, the 10th Gen Core™ i7 CPU brings 50% better multi-tasking performance for compute-intensive application than 9th Gen CPU. DDR4 2933 MHz memory further increases speed by 10%. With increased I/O capacity and the outstanding computing power, the TANK-XM810 delivers the performance required to consolidate industrial multiple workloads.



Flexible Expansion with eChassis

The TANK-XM810 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 time for customers' diverse requirements.



Four Steps to Configure Your Edge AI Inference System

The TANK-XM810 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-XM810 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.



| | 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 expansion chassis designed for adding graphics cards to enhance 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 Enables Performance Upgrade

more than 75W.

The TANK-XM810 provides a dual-power input solution for stably and efficiently powering the add-on cards requiring high power. The IDD-X1228150 power board offers additional power for GPU cards and accelerators that require high power to 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
- » -20°C to 60°C wide operating temperatures
- » Intel® Platform Trust Technology (Intel® PTT) to enable password protection, device authentication and future-ready cybersecurity
- » Wide 12V to 28V DC voltage input
- » 50 G shock and 3 Grms vibration



Fanless System with Reliable Thermal Design

The TANK-XM810'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-XM810 to maximize superior performance than those with traditional heatsink consisting of parallel fins.



100% CPU performance, no throttling @ 60°C

Advanced High-efficiency 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



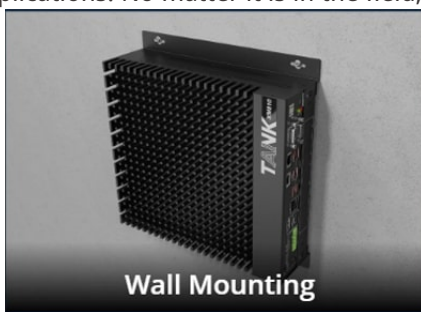
Silent Operation



Fan Kit P/N :
SF-TANK-XM81

Versatile for Installation Flexibility

The TANK-XM810 can be mounted on the side, wall, or desktop for quick deployment in a variety of edge AI applications. No matter it is in the field, cabinet or equipment.



Wall Mounting

Using the two-side wings onto the wall



Side Mounting

Space-saving side mouting in a cabinet

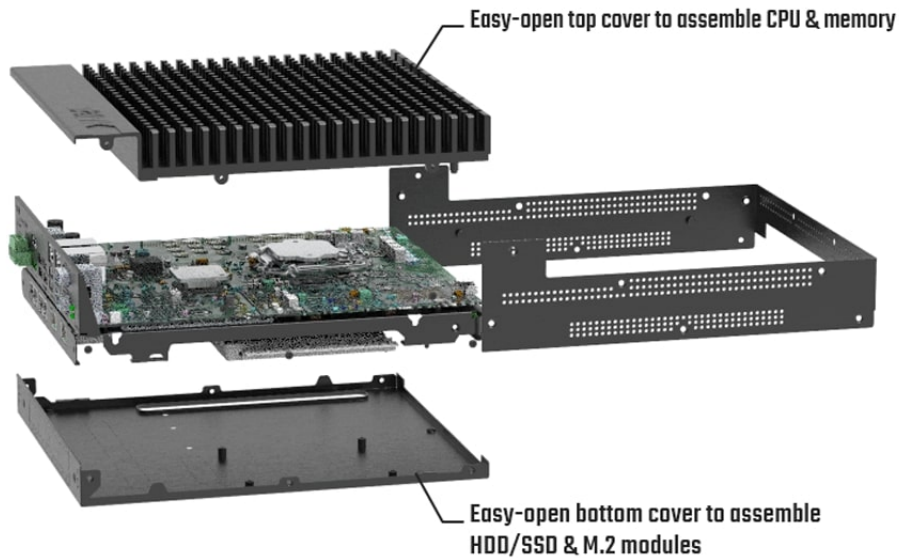


Desktop Mounting

Easy for field maintenance

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-XM810 series enables seamless wireless connectivity for remote and mobile edge deployments. Wi-Fi 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-XM810 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-XM810 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-XM810 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-XM810 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-XM810 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.



NVMe RAID 0/1 Ensures Uptime and Availability

The TANK-XM810 can efficiently store and retrieve large volumes of data using its high-performance PCIe 3.0 x2 NVMe storage. This makes it ideal for complex data cache applications that require quick access to large amounts of data.

Furthermore, The RAID 0/1 allows you to read and write data from multiple drives while ensuring uptime and availability. Listed below are the different NVMe RAID storage setups you can choose from the TANK-XM810.

RAID 0 - This works great if your business needs enhanced performance. However, you may face data loss.

RAID 1 - This is great if you want to increase data redundancy and read speeds. It is a cost-effective solution, offering higher uptime and increased backups.



Versatile I/O

IEI's AI edge inference system, TANK-XM810, 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 2 x USB 2.0 | 4 6 x USB 3.2 Gen 2 | 5 2 x 2.5GbE |
| 6 2 x RS-232/422/485 | 7 Remote power | 8 4 x RS-232 | 9 1 x DIO (6-in/6-out) | 10 For IO expansion board |

Optional Item Selection

With flexibility and convenience – various options await! Build your iconic TANK-XM810 by choosing functional expansions!



Mustang-V100-MX8
8 x Intel® Movidius™
Myriad™ X MA2485 VPU
Accelerator



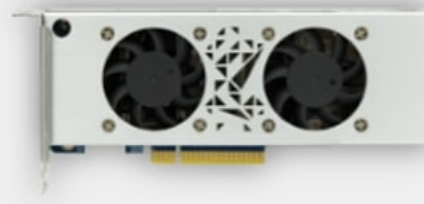
Mustang-V100-MX4
4 x Intel® Movidius™
Myriad™ X MA2485 VPU
Accelerator



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

