5 Key FEATURES OF A RUGGED EDGE COMPUTER FOR EDGE COMPUTING

What is a Rugged Edge Computer?

Rugged edge computers are specifically developed to withstand the rigors of harsh usage conditions and are able to achieve a high level of durability through incorporating ruggedized features throughout its entire product design. From the external enclosure to the internal components, every piece of a rugged edge computer is purpose-built through a combination of mechanical andthermal engineering to address the issues of strong vibrations, extreme temperatures and wet or dusty situations.

1. WIRELESS CONNECTIVITY

Access to Wifi, 4G LTE, Bluetooth and future 5G networks including GPS/GNSS location tracking allows more flexibility and possibilities for devices to gather important data points for new IoT technologies.

What are some critical wireless technologies that benefit edge computing?

Wireless Technology	Standard Supported
Wi-Fi 5	EEE802.11ac/a/b/g/n
Wi-Fi 6	IEEE802.11ax
4G LTE	CAT 1 - 8
Bluetooth	4.x, 5.x

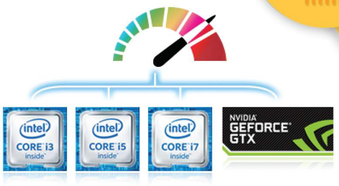
2. MOBILITY and REMOTE DEPLOYMENT

A key feature for rugged edge computers is the capability to be deployed in various mobile and remote locations decentralized from resources in the cloud. These type of applications often times have space fitting constraints and require compact form factors to fit into tight-spaces.

Therefore, a key foundation for mobility and remote deployments heavily rely on mission critical capabilities that ensure 24/7 reliability due to the lack of on-site technical support. The idea for mobility and machines actively running in remote locations leverage "watchdog" functions that allow for remote self-reset and system monitoring from a hub.

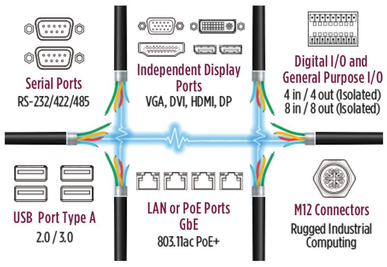
3. PERFORMANCE ACCELERATORS

Increase in processor performance, GPU based inference analysis, and large capacity data drives have empowered rugged edge computers to manage local analytics without having to move data over the network to the cloud thus saving bandwidth and eliminating latency effects.



4. VARIETY of I/O PORTS and PCIe and PCI EXPANSION SLOTS

What allows edge computers to work so well is the capability to connect to various legacy and modern devices for data gathering both in legacy analog and digital IoT signals. By including GPIO and Digital I/Os, edge computers can capture signals from sensors of all kinds for actionable results. The ability to support multiple Universal Serial Buses (USB 2.0 and 3.0) are also key in today's digital data transformation framework due to these sensors and devices leveraging highspeed and superspeed transfer rates up to 10 Gbps.

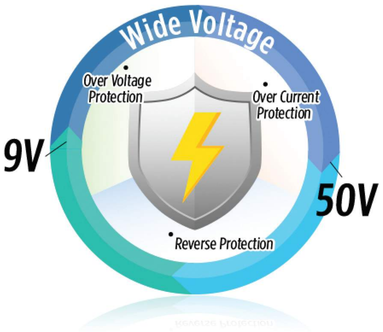


5. RUGGEDNESS and HARDWARE SECURITY

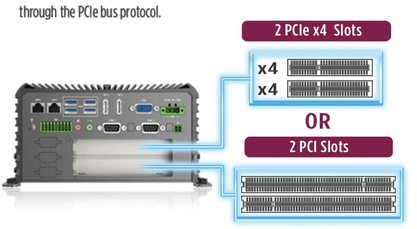
Without proper protections against external environmental elements and factors that are harmful to sensitive computer components then edge computing won't be able to provide the benefits of real-time analytics in harsh operating environments. As a foundation for edge computing features should include fanless designs, wide operating temperatures, varied voltage input ranges and high shock and vibration reliability.

LAN/PoE port availability also enable smart cameras that are advancing at a rapid pace for better depth perception and image processing for computer vision technology in digital surveillance. In addition to that, rugged edge computers also have lockable M12 connectors for most I/O ports that secure the system in cases of environments where shock and vibration are present and can endanger operations.

- Wide operating temperatures -40°C to 70°C
- Fanless & Cable-less Design
- 50G shock & 5Grms vibration



Another critical feature is to have flexibility for application specific performance add-in cards through common computing standards like legacy PCI or current PCIe Gen 2,3 and now recently 4. This flexibility provides not only fast data transmission speeds but options for applications specific performance cards like GPU, VPU, or capture cards that communicate through the PCIe bus protocol.



In addition, at the core of edge computing its imperative that deployment models ensure strengthened security, accelerated performance, and increased scalability. Security layers are equally important on both hardware and software layers, each working together to provide authentications for critical operations in mobile and remote locations. For example the Trusted Computing Group publishes the Trusted Platform Module (TPM 2.0) hardware specification that is an international standard that adheres to modern security and privacy protection features.

TRUSTED® COMPUTING GROUP = TPM 2.0