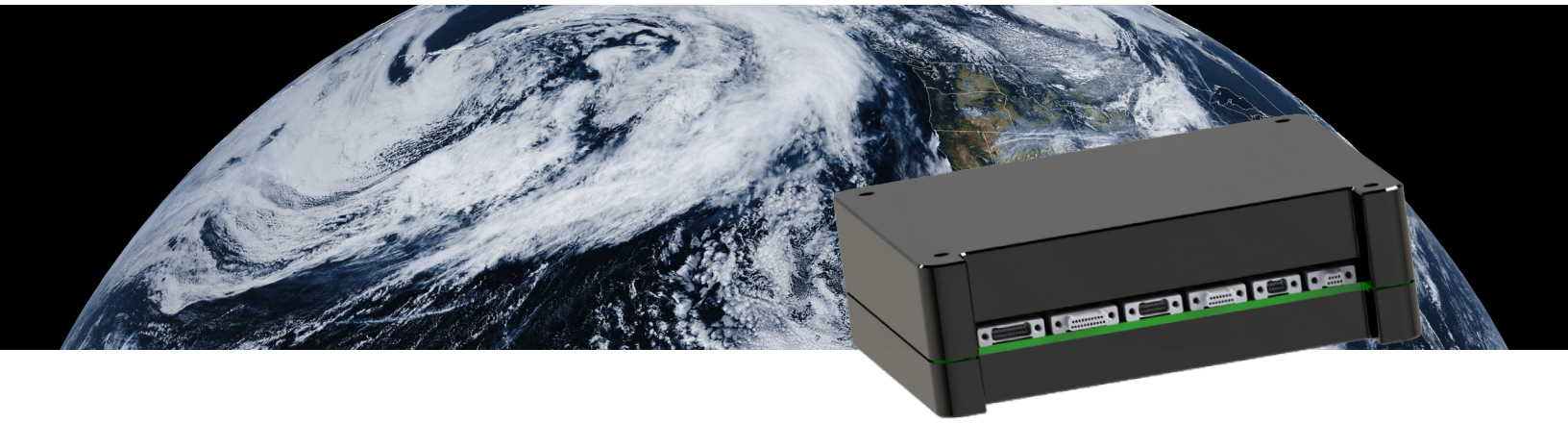
COLOSSUS

COLOSSUS Kestrel



With the NVIDIA Jetson TX2i module at its core, Kestrel adds massive parallel computing capability as well as high-performance CPUs. Colossus' design adds extra storage, including a standard microSD card and M.2 2280 SSD slot. By default these are populated with validated, industrial-grade options. Gigabit ethernet is available for high-speed connectivity, as well as other common interfaces.

Colossus' design adds protection and telemetry circuits for routine monitoring, as well as fault detection and isolation. Each subsystem is protected with a resettable eFuse circuit to mitigate the effects of radiation. Data is protected with Error Correction Codes (ECC) for RAM and the large capacity non-volatile memory allows for the storage of multiple copies of key files.

EFFICIENCY

Filtering, prioritizing, and compressing data allows more efficient use of limited bandwidth by sending data products instead of raw data.

SPEED

Data products can be small enough to allow transmission through satellite-to-satellite networks in seconds instead of waiting hours for a traditional ground station pass.

AUTONOMY

On-board processing enables satellites to make intelligent decisions without waiting hours for commands to be uplinked from the ground. Satellites can respond instantly to changing circumstances.

PROCESSING CAPABILITIES	
AI Performance	1.3 TOPS
GPU	256-Core Pascal
CPU	Quad-Core A57 Dual-Core Denver 2
Video Codecs	H.264, H.265, MPEG1/2/4
OS	Linux-based (built w/Yocto)

MEMORY/STORAGE	
RAM	8 GB of 128-bit DRAM with ECC
Storage	32 GB eMMC
microSD card	default 64 GB
M.2 2280 SSD	default 1 TB
EEPROM	512 kb

CONNECTIVITY	
Ethernet	1000BASE-T
UART	3x RS-422, RS-485 compatible
CAN	Two 1 Mbps
USB	One USB3.0 SuperSpeed Two USB2.0 Hi-Speed
PPS	RS-422 hardware
GPIO	4 buffered GPIOs
Debug	JTAG, Recovery USB, RS-232

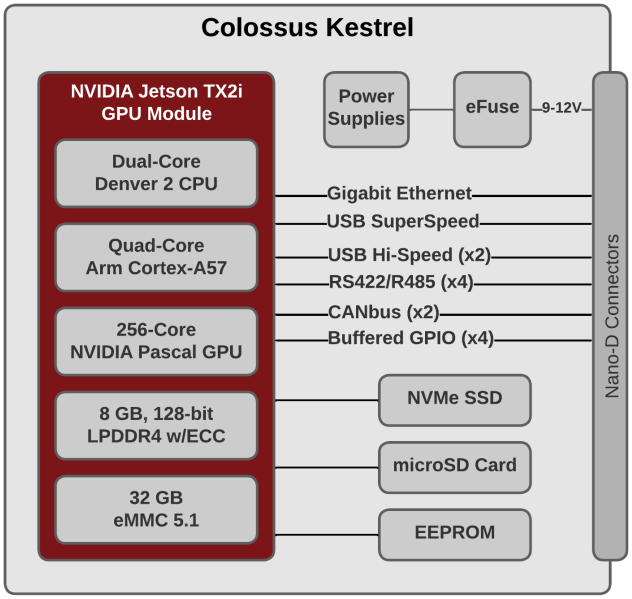
Questions? Comments?

Need high-performance computing on your satellite?

Please contact: sales@colossucompute.com

SIZE, WEIGHT, & POWER	
Size	1/3 U (96 x 89 x 30 mm) Fits CubeSats and SmallSats
Mass	402 g
Power	Idle: <1 W Max Efficiency: 15 W Max Performance: 25 W
Input Voltage	9-12 VDC
Protection	eFuse input protection and monitoring
Telemetry	Internal ADC for voltage/ temperature telemetry

ENVIRONMENTAL	
Heritage	TRL-9 as of March 2024
Radiation	up to 30 krad(Si)
Temperature	-40 to +60 C Operating -55 to +85 C Storage
Testing	Thermal, Vibration, and EMI/EMC compliant to GSFC-STD-7000



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