



COLOSSUS Falcon



Falcon, our most advanced GPU data processor, provides massive parallel computing capability to your satellite in a compact form factor. Based around the NVIDIA Jetson Orin AGX module, the design also includes a built-in SSD for mass data storage and many options for connectivity. An added FPGA provides flexibility for interfaces as well as additional compute hardware.

Colossus' design adds protection and telemetry circuits for routine monitoring, as well as fault detection and isolation. Each subsystem is protected with a resettable e-fuse 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.

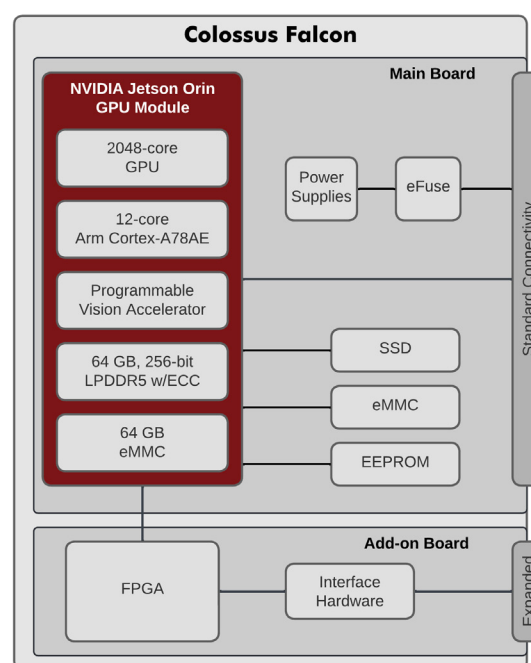
PROCESSING CAPABILITIES	
AI Performance	248 TOPS
GPU	2048-core Ampere @ 1.2 GHz 64 Tensor Cores
CPU	12-core A78AE @ 2.0 GHz
PVA	Programmable Vision Accelerator
FPGA	Up to 78k LUTs
OS	Linux-based (built w/Yocto)

MEMORY/STORAGE	
RAM	64 GB of 256-bit DRAM with ECC
Module eMMC	64 GB eMMC
Internal eMMC	256 GB
Internal SSD	1 TB
EEPROM	512 kb

CONNECTIVITY	
Ethernet	Two 1000BASE-T
UART	Four RS-422, RS-485 compatible
CAN	Two 1 Mbps
USB	Three USB3.2 Gen2
PPS	RS-422 hardware
GPIO	4 buffered GPIOs
Debug	JTAG, Recovery USB, UART
Expanded Capabilities with Add-on board	Additional Gigabit Ethernet SpaceWire LVDS, Camera Link PCIe, SpaceFibre, 40G Ethernet

SIZE, WEIGHT, & POWER	
Size	Optimized for SmallSats 118 x 100 x 30 mm 3U SpaceVPX planned
Mass	600 g
Power	Idle: <10W Max Efficiency: 45 W Absolute Max: 90 W
Input Voltage	24-36 VDC
Protection	eFuse input protection and monitoring
Telemetry	Internal ADC for voltage/ temperature telemetry

ENVIRONMENTAL	
Radiation	Minimum 5-year LEO mission
Temperature	-40 to +60 C Operating -55 to +85 C Storage
Testing	Thermal, Vibration, and EMI/EMC compliant to GSFC-STD-7000



Questions? Comments?

Need high-performance computing on your satellite?

Please contact: sales@colossuscompute.com



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All information subject to change.

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