FeatherBox

On-Orbit Data Processing Unit

EXO-SPACE

FeatherBox is a compact Data Processing Unit for artificial intelligence applications on-orbit. Designed for low-earth orbit missions, its small size (0.5U) and low power makes it compatible with most cubesat platforms. Rather than sending large sets of raw data down to ground stations, Featherbox can process data directly from onboard sensors and only send down the relevant information. Processing data on orbit reduces downlink costs and improves response times to observable events.

FeatherBox comprises a powerful AI computing module integrated with Exo-Space's rad-tolerant motherboard. The device is a fully-integrated Linux system, designed to accelerate machine learning algorithms, and capable of performing 4 trillion operations per second (4 TOPS). Precision thermal management is handled within the enclosure, meaning there is little to no need for additional external thermal control systems.

FeatherBox leverages the fastest, most power efficient computer products on the market while also maintaining the reliability needed for space applications. Combined with FeatherWare, it provides a complete AI payload for on-orbit edge computing.

USE **CASES**

- ❖ Space Situational Awareness

- ❖ Autonomous Rendezvous Proximity Operations and Docking

- ❖ Satellite Inspection and Servicing

- ❖ Earth Observation Image Processing

- ❖ Data Storage, Compression, and Encryption

- ❖ Synthetic Aperture Radar

PROTECTIONS AGAINST THE EFFECTS OF RADIATION

- ❖ Structural shielding to minimize Total Ionizing Dose (TID) and Single Event Effects (SEE)
- ❖ Multiple software and hardware redundancies and mitigations
- ❖ Voltage and current monitoring with automatic power cycle capabilities

info@exo-space.com   **www.exo-space.com**

TECHNICAL SPECIFICATIONS

Interfaces	
Connector	15 pin D-Sub Micro-D connector
UART	Data rates up to 5 Mbps
Ethernet	Data rates up to 1000 Mbps
Non-Standard	Additional interfaces/protocols upon request: SpaceWire, QPSK, etc.

Properties	
Mass	1.4 kg
Size	96 mm x 96 mm x 50 mm
Power Supply	5V
Power Consumption	9 W (typ), 22 W peak (tens of microseconds)
Operating Temperature	-25 °C to +85 °C
Storage Temperature	-40 °C to +85 °C

Software	
Operating System	Linux based
AI/ML Model Type	TensorFlow

Performance	
CPU	Quad Cortex-A53
GPU	Integrated
ML Accelerator	Coprocessor: 4 TOPS
RAM	4GB LPDDR4 with ECC
Flash Memory	32 GB SLC NAND Flash (EDAC) Up to 512 GB SSD SLC Flash

CONTACT US

To learn more about our product, please contact: **info@exo-space.com**