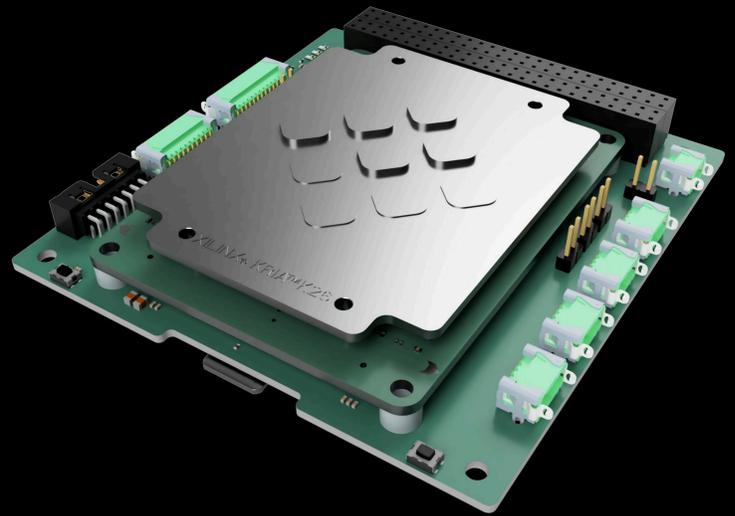


Data Processing Unit

Operate Smarter. Process Onboard.

Compact AI compute module for smart satellite missions

The Protostar Labs DPU is a high-performance onboard computer for demanding space data processing. Built on the Zynq UltraScale+ MPSoC, it combines embedded processing with programmable logic. Using our ProtoSDK, FPGA accelerators can be deployed effortlessly, turning the DPU into a flexible, software-defined processing platform for next-generation missions.



Key Features



Onboard AI Capabilities

Run AI models onboard for real-time inference and detection.



Low-Power, High-Performance

Optimized for efficient processing in compact, power-limited platforms.



Modular and Standardized

PC/104 form factor for easy CubeSat integration and stacking.



FPGA Acceleration

AMD ZYNQ UltraScale+ enables software defined hardware acceleration.

Technical Specifications

Feature	Value
FPGA Device	AMD ZYNQ UltraScale+ MPSoC
Dimensions	94 x 89 mm (Fits PC/104 standard)
Interfaces	SpaceWire * 4, RS485, UART, CAN, I2C, SPI
Connectors	Harwin Gecko connectors JTAG header
Other Features	Micro SD card slot 4x boot mode selector switches Triple redundant external clock generator connected via redundant input buffers
Power Supply	12V @ 3A via Harwin Gecko connector or via PC/104 stackable connector
Power Consumption	~9-14 W

Applications

- **Intelligent Earth Observation:** Onboard detection, segmentation, and compression to maximize data efficiency.
- **Data Compression & Optimization:** Fault-tolerant FPGA compression minimizes bandwidth and boosts reliability.
- **Autonomous Operations:** Adaptive imaging and event-driven decision making directly in orbit.
- **In-Orbit Inspection:** Vision-based navigation and tracking for servicing and proximity maneuvers.
- **Smart Mission Control:** Dynamic payload re-tasking driven by real-time onboard analysis.