

When advanced optics meet powerful onboard processing, real insights start in orbit.

By combining HyperScape100 hyperspectral imaging with Leopard DPU, this integrated solution enables faster, smarter, and more efficient Earth Observation - with key data acquired, processed, and stored directly onboard the satellite.

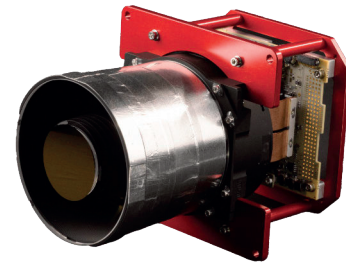
### Leopard DPU

Designed for Micro and Nano Satellites in a compact PC-104 form factor, offering powerful on-board data analysis using Artificial Intelligence.



### HyperScape100

Covers the visible and near-IR spectral range in up to 32 bands at an unprecedented spatial resolution and form factor.



|                                                                                                    |                                                                                               |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Processor:</b> Quad ARM Cortex-A53 + Dual Cortex-R5                                             | <b>Resolution:</b> 4096 pixels across track                                                   |
| <b>FPGA:</b> AMD Zynq UltraScale+ MPSoC ZU6EG   ZU9EG   ZU15EG                                     | <b>Spectral bands:</b> 32 Bands                                                               |
| <b>Real-time processing support:</b> cloud masking, hyperspectral compression and object detection | <b>GSD:</b> 4.75 m                                                                            |
| <b>Software:</b> 64-bit Linux + AI model support (PyTorch, TensorFlow)                             | <b>Focal length:</b> 580 mm                                                                   |
| <b>Power consumption:</b> 5-20 W (load-dependent)                                                  | <b>Power consumption:</b> 7.75 W                                                              |
| <b>Mass:</b> 725 g                                                                                 | <b>Mass:</b> 1.26 kg                                                                          |
| <b>Volume:</b> 95.89 x 90.17 x 47.2                                                                | <b>Volume:</b> 98 x 98 x 176 mm (1.5U)                                                        |
| <b>Storage:</b> 2 x 320 GB pSLC                                                                    | <b>Storage:</b> 128 GB                                                                        |
| <b>Interfaces:</b> CAN, SPI, UART, RS422/485, LVDS, GTH, SpaceWire, I2C, 3 x 1G Ethernet           | <b>Interfaces:</b> Control - I <sup>2</sup> C, SPI, RS-422, SpaceWire, Data - LVDS, SpaceWire |

## ■ Combined Specification

**Volume:** 2.5U (single configuration) 3U (dual configuration) in total

**Interface compatibility:** SpaceWire, RS-422, LVDS, SPI - fully supported on both ends

**Typical power budget:** 12,75W (combined operation, typical load)

**Platform alignment:** Micro and Nano Satellites compatible

## ■ Key Applications

### Cloud & Object Detection

Real-time AI-based detection of clouds, surface changes, and orbiting objects.

### Hyperspectral Compression

Onboard reduction of 32-band data to cut downlink volume.

### Onboard Data Storage

Provides additional flash memory for buffering and storing mission data.

### Smart Data Handling with OBDP

Filtering and prioritizing data onboard to reduce transmission load.

## ■ Use Case

OPS-SAT VOLT is an ESA mission dedicated to in-orbit testing of advanced technologies, including optical and quantum communications, onboard computing, and intelligent payloads.

As part of this mission, KP Labs and Simera Sense jointly deliver a payload combining the HyperScape100 hyperspectral camera and the Leopard Data Processing Unit (DPU), led by Craft Prospect's AI demonstration.

Key outcomes include:

- Real-time inference (e.g., cloud masking, object detection)
- Environmental analysis (e.g., NDVI)
- Reduced data transmission via onboard filtering
- Coordinated payload operations using Leopard's control features

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