SKAIDOCK Datasheet

OVERVIEW

The SKAIDOCK Data Processing Unit (DPU) is a powerful and versatile solution designed for advanced satellite data processing applications. Built on the robust Xilinx® Zynq™ UltraScale+™ Multi-Processor System-on-Chip (MPSoC) architecture, SKAIDOCK offers seamless integration into satellite systems through its CubeSat-compatible PC104 form factor. Its side connectors provide flexible interfacing options for diverse mission requirements. Equipped with 256 MB of QSPI Flash for system functions, dual 128 GB eMMC storage for high-capacity data handling, and 4 GB of ECC-protected RAM, the SKAIDOCK DPU is housed in an aluminium enclosure, ensuring reliable performance in the demanding environment of space.

FEATURES

- Utilizing Xiphos Q8 computational module
- CubeSat-compatible PC104 form factor
- Fully qualified for space environment
- Achieves TRL9 by Q1 2025, demonstrated on the TROLL mission

Technical specification

CAMERA CONNECTOR

The camera connector is fully compatible with the Simera Sense CubeSat imager, featuring I2C, SPI, PPS, and LVDS pairs. It also supports LVDS pairs for SpaceWire signals and provides a 5V power output to the camera.

OTHER INTERFACES

SKAIDOCK includes two CAN interfaces, with optional bus termination. I2C and SPI interfaces, that operate at 3.3V. DPU supports a configurable serial interface. It can be configured as 1x RS422, 1x RS485, or 2x RS232, depending on the application requirements.

POWER CONSUMPTION

The SKAIDOCK DPU's idle power consumption is approximately 4W, increasing to 5.5W during on-board AI data processing.

Interfaces	2xCAN I2C SPI LVDS Ethernet USB RSxxx (configurable 1x RS422 or 1x RS485 or 2x RS232) Power input Power output
Temperature range	-20 to + 60 °C
Dimensions	94.0mm * 90.02mm
Voltage range signal input	6 - 15V

Delivery

SKAIDOCK IS DELIVERED WITH:

- Interface Control Document (ICD)
- Full schematic and CAD model
- Board support package (BSP)
- Qualification report
- User manual and more…

Qualification Testing

SKAIDOCK has been qualified for operation in a space environment. During thermal-vacuum (TVAC) testing, it was tested for operational temperatures between -20°C and +60°C. The board has also undergone sine and random vibration testing, shock testing, and radiated emissions measurements. The Xiphos Q8 module, with extensive flight heritage, has also been fully qualified.