escICU - Hyperspectral Camera Instrument Control Unit

Camera ICU is a powerful universal payload computer for new space satellite platforms and compatible with cubesat platforms. The dimensions are matched with the PC104 form factor.

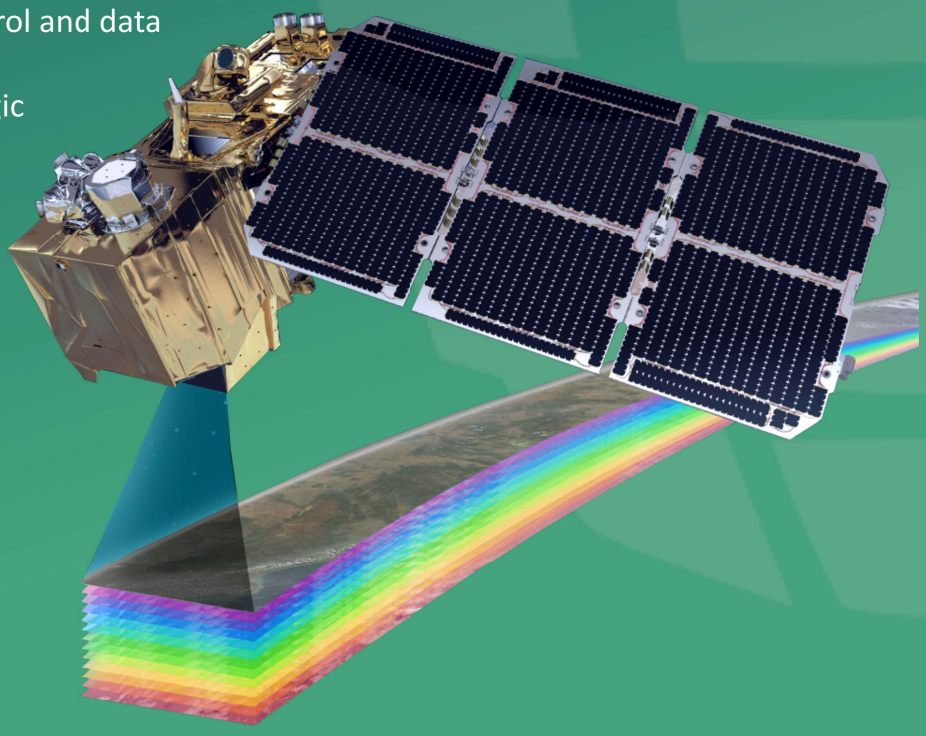
The powerful System on Chip combining multi-core processor and programmable logic array allows efficient and real-time execution of complex algorithms to process raw data on-board, thus reducing space to ground communications bandwidth needs.

Integrated mass memory for storage of acquired data allows to use of the ICU without need of platform data storage. Data is accessible via Cubesat Space Protocol or ECSS PUS-C via platform communication bus.

Latch-up protection of the ICU and imaging sensor is assured by constant current monitoring and several mitigation techniques.

Key features

- Four 64-bit Linux capable user cores + one supervisor core
- Programmable logic array for image sensor readout and functionality extension
- Multiple image sensors readout possible
- Warm/cold redundancy support
- On-board current, voltage and temperature monitoring
- Latch-up monitoring
- Onboard data storage
- User script support for ICU control and data pre-processing (MicroPython)
- Software and programmable logic upgradable



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Technical Specifications

General	
Processor	5x RISC-V 64-bit
Logic blocks	254 K
Processor clock	up to 625 MHz
Program. logic clock	up to 343 MHz
DRAM CPU	1024 MB (ECC) (2048 MB optional)
DRAM FPGA	1024 MB (ECC) (2048 MB optional)
NVM (program)	128 MB (redundant)
NVM (configuration)	16 MB (redundant)
Mass storage	2 GB SLC NAND (up to 32GB optional)
Power supply	5 V ± 5% (28 V optional)
Power supply	up to 10 W
Op. temperature	-30 °C to +60 °C
Non-op. temperature	-40 °C to +85 °C

Interfaces	
CAN	2x
RS422/RS-485	2x
UART 3.3 V	1x
PPS (RS-422)	1x
GPIO 3.3 V logic	8x
JTAG for SoC	1x
Ethernet up to 1Gbps	1x (2x optional)
Image sensor	up to 16x lanes (SerDes 12.7 Gbps) up to 36x pairs (LVDS 1250 Mbps)

Size and Weight	
Length	96 mm
Width	91 mm
Height	35 mm (TBC)
Mass	350 g (TBC)

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