# On-board Memory Unit

The On-board Memory Unit is designed to provide data storage for the remote sensing satellites payloads.

Applications

- Small satellites on-board data handling subsystems
- Autonomous storage for the secondary payloads of the large spacecraft

Features

- Large capacity and high write/read rate
- File system with file/block write, transmit, selective re-transmit and erase
- NAND flash wear control and ECC
- Mux'es up to four data streams
- Directly interfaces with SAIT high-throughput transmitters
- Two units stack up to provide double redundancy with cross-strapped connections to data sources and transmitters
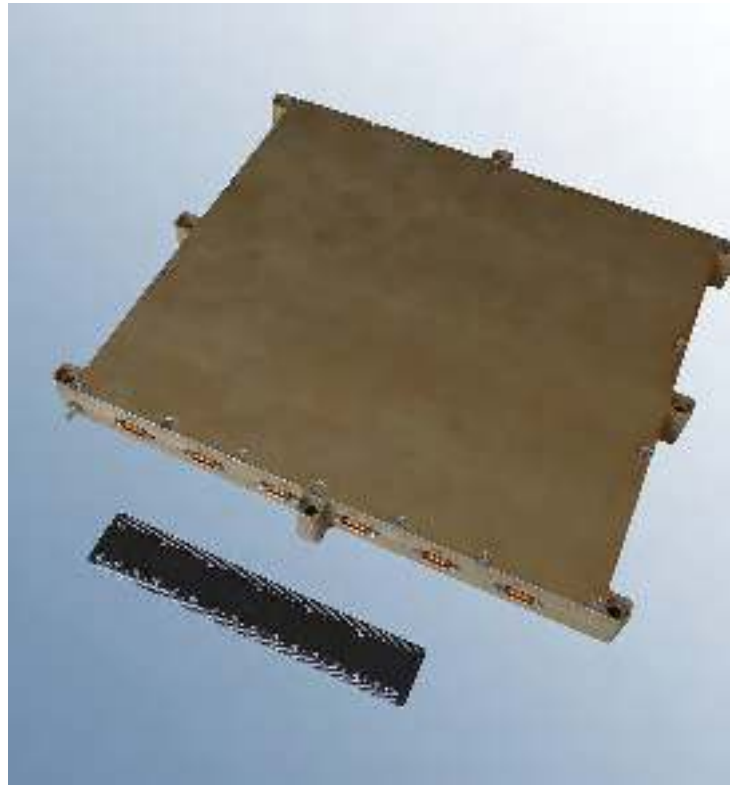

Specifications

Storage capacity			128 GB
			Option 512 GB
Sustained write throughput			1.2 Gbps
Read throughput			800 Mbps
Error rate (3 days storage time on LEO)			10^{-12}
Power consumption write			12 W
read			12 W
standby			0W
Power supply			27 V (22-35 V)
Weight	1.8 kg	Size	292x264x27 mm
Operating temperature			-20 °C to +50 °C
Survival temperature			-50 °C to +70 °C
MTBF	400k hours	Design life	7 years
Radiation at the component level			> 6 krad (average enclosure shielding 1.5 g/cm^2)
SEL tolerance			>40 MeV·cm^2/mg
Data interface			LVDS. Four ports with 4 pairs each (primary data/clock, redundant data/clock, spare). Customizable.
Control and telemetry interface			MIL-STD-1553 or CAN-2B (dual redundant buses) Two RS-422 for external devices control

Block diagram
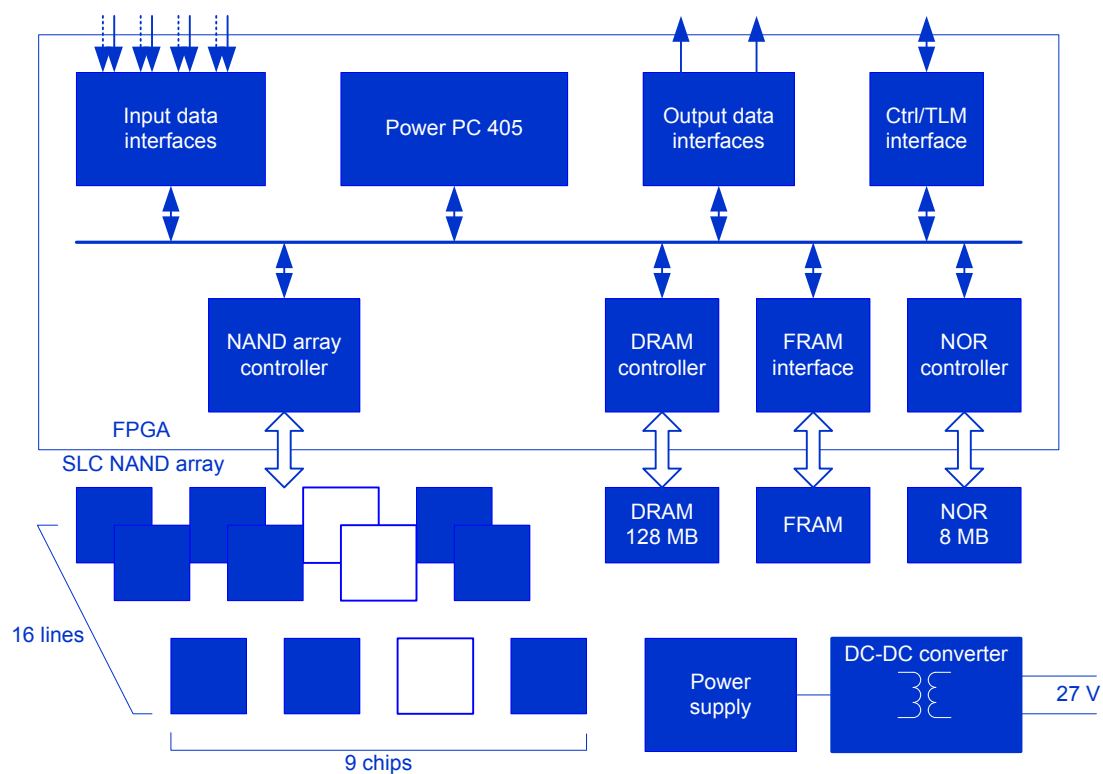
Mechanical outline drawing
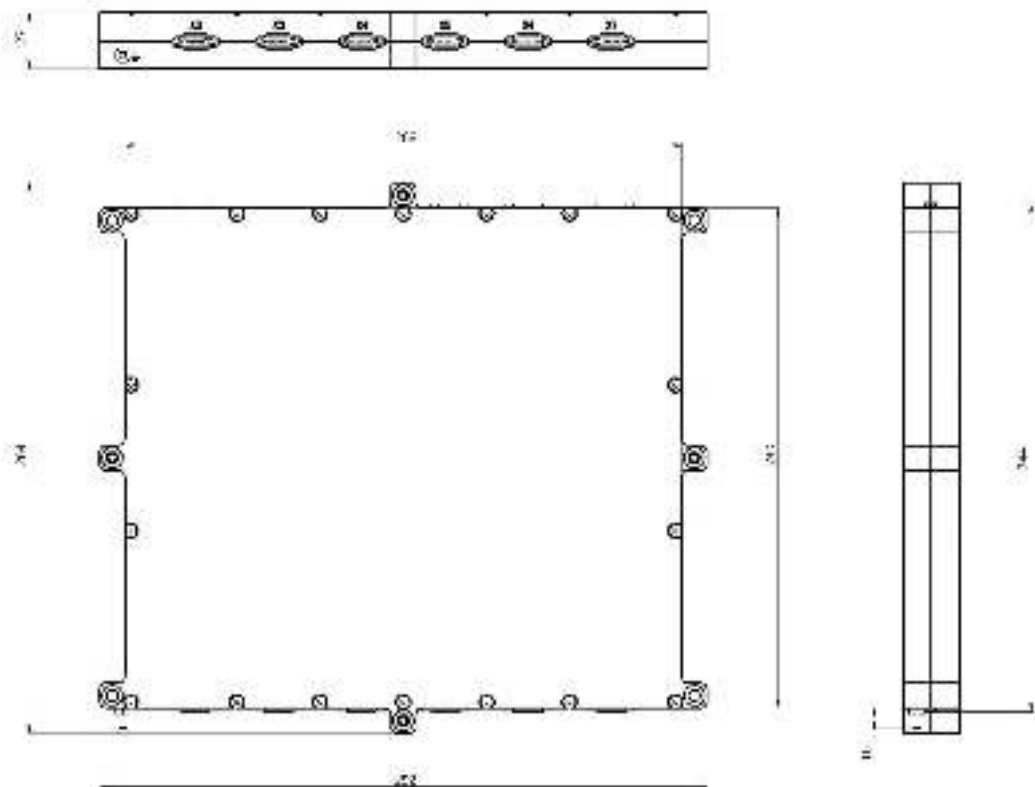
Heritage

The On-board Memory Unit prototype was used with NUCLEON experiment on the Resurs-P satellite (3 years of continuous operation), and on other satellites.