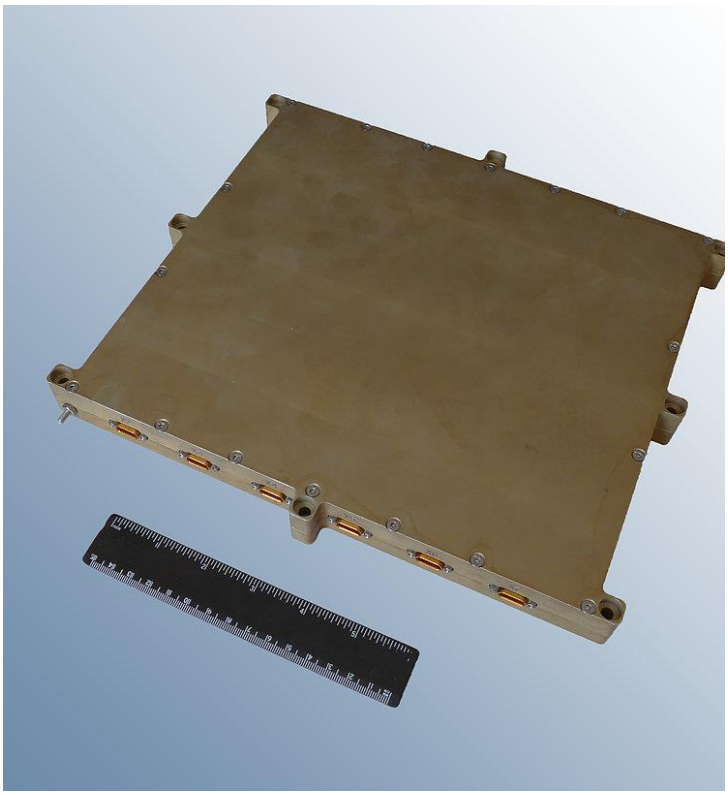
# On-board Memory Unit

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<br>Option 512 GB |
| Sustained write throughput | | | 2.2 Gbps |
| Read throughput | | | 2.2 Gbps |
| Error rate (3 days storage time on LEO) | | | $10^{-12}$ |
| Power consumption write<br>read<br>standby | | | 12 W<br>12 W<br>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<br>(average enclosure shielding 1.5 g/cm$^2$) |
| SEL tolerance | | | >40 MeV·cm$^2$/mg |
| Data interface | | | LVDS. Four ports with 4 pairs each<br>(primary data/clock, redundant data/clock, spare). Customizable. |
| Control and telemetry interface | | | MIL-STD-1553 or CAN-2B (dual redundant buses)<br>Two RS-422 for external devices control |

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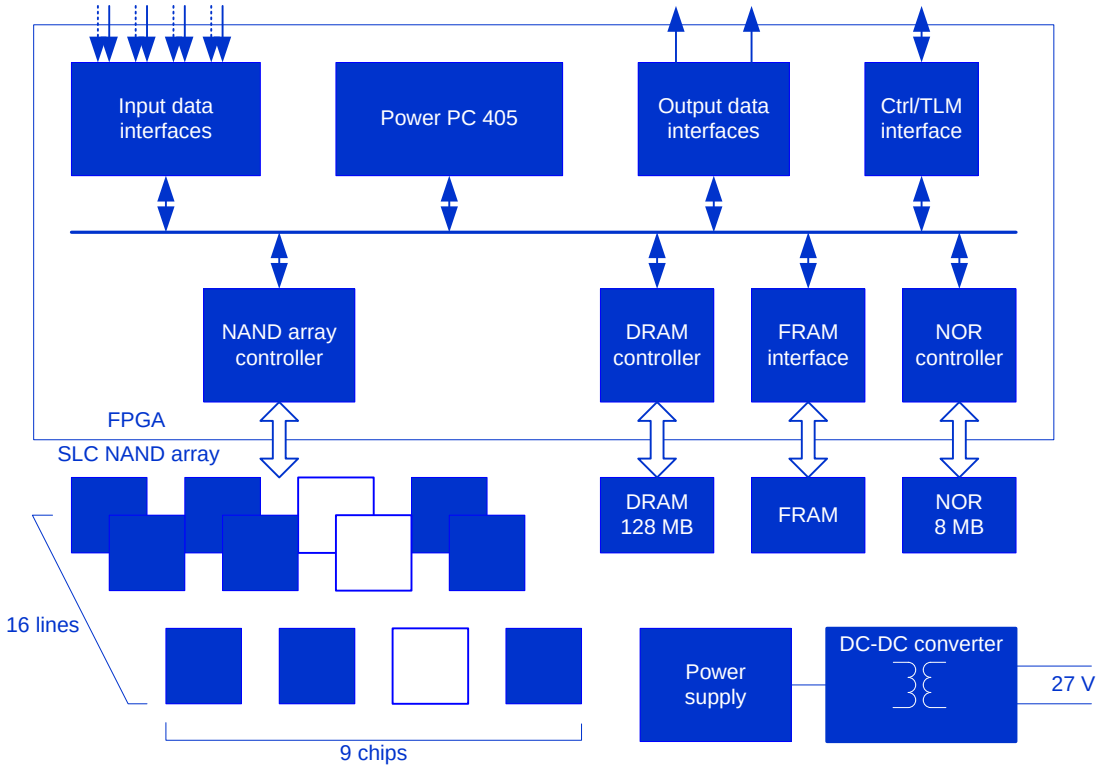
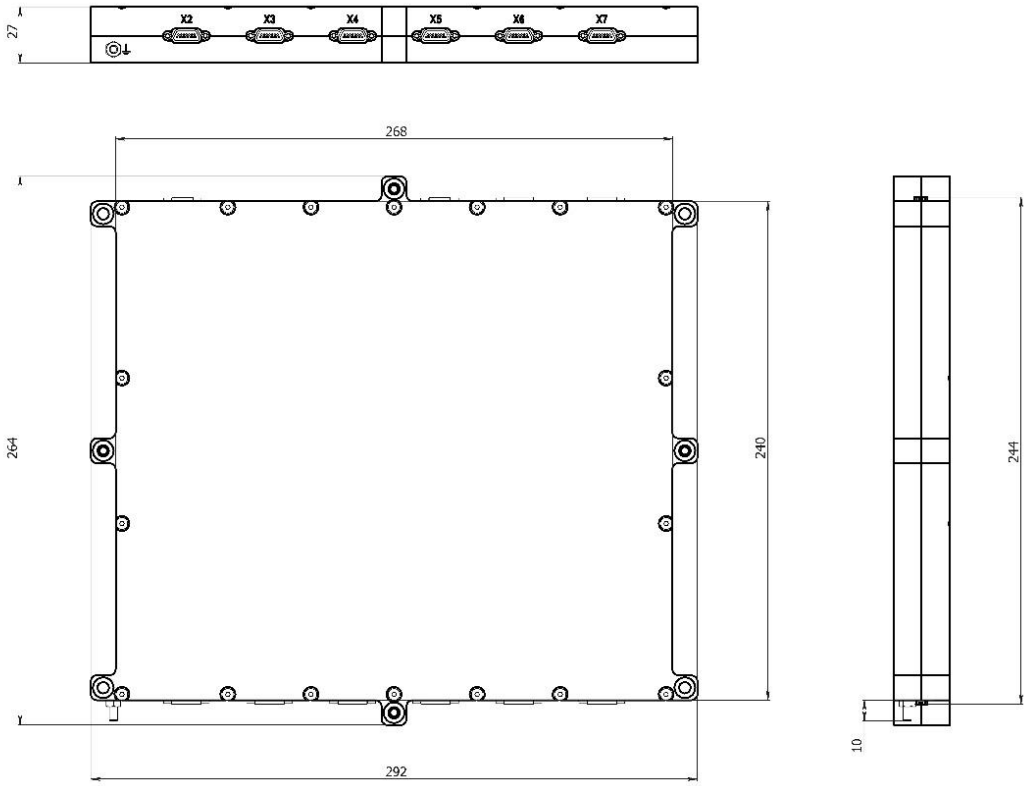
## Block diagram




## 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.