

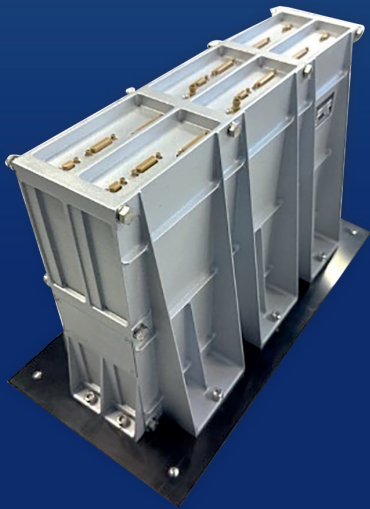
DEFENCE AND SPACE  
Space Products

# OBCU-500-NS

Mission agility  
Scale with precision,  
adapt with ease



A v i o n i c s



**The OBCU-500-NS is a high-performance On-Board Computer, developed by Airbus Defence and Space to serve the next generation of LEO constellations and beyond.**

As part of Airbus' Unified Avionics Strategy, we seamlessly bridge the gap between the dynamic New Space and the stringent Hi-Rel markets, delivering cutting-edge solutions for the future of space exploration.

## Applications

- LEO constellations
- Earth observation missions
- Navigation & telecom platform
- Science & technology demonstration missions
- Institutional or commercial New Space platforms

Our advanced avionics system, built upon the heritage of Pureline Amethyst OBC and NG-Ultra technology, features an impressive flight heritage, having successfully powered over 630 OneWeb satellites.

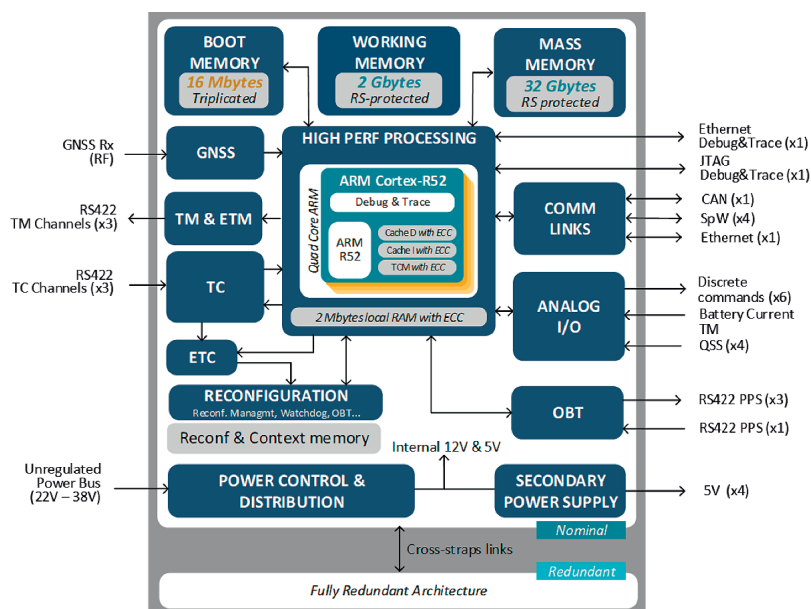
Leveraging the proven in-flight heritage of our predecessor system, which has accumulated more than 2500 years in orbit, our technology combines high reliability, a compact form factor, and a reconfigurable architecture. This makes it perfectly suited for New Space missions like IRIS<sup>2</sup> and future constellations.

**AIRBUS**

## Technical Specifications (with default mezzanine)

- Processor ARM Cortex-R52 (quad-core)  
NG-Ultra SoC
- Frequency 600 MHz
- Performance 4 × 1250 DMIPS
- Volatile memory 2 GB DDR4 ECC  
(93.5 Gbps bandwidth)
- Non volatile memory 32 GB NAND Flash  
RS protected
- Non volatile memory 256kB MRAM triplicated
- Bus Voltage 22 V – 38 V unregulated
- Interfaces:
  - 4x SpW (each 100Mbps)
  - 1x Ethernet (1 Gbps)
  - 1x CAN (1Mbps)
  - GNSS GPS / Galileo (E1/L1): 10 channels  
(10 m 3D rms)
  - TM: 20 Mbps
  - TC: 10 Mbps
- Redundancy Dual hot-redundant channels
- Delivered with BSP and Boot SW

## Functional overview



## Extensions & Options

The OBCU-500-NS platform calculator is designed for scalability to meet evolving constellation and mission requirements, and thanks to the VITA FMC standard interface for the mezzanine and the FPGA capabilities can be modified to propose different options:

- Additional I/O and discrete command handling
- Extended GNSS (>30 channels)
- Mezzanine boards for 1553 bus or mass-memory expansion
- PQC security and hybrid encryption capabilities

## Architecture Overview

Each OBCU-500-NS channel operates in hot redundancy and includes three main functional modules:

- Digital Module:** Processing, reconfiguration, TM/TC handling, OBT, GNSS and communication interfaces.
- Analog Module:** Power conversion and distribution to external units, current monitoring and acquisition.

## Characteristics

Dimensions	380*250*120 (mm)
Mass	<6kg
TID	35 krad
Lifetime	10 years in LEO

## Industrialization & Roadmap

- Airbus Space Electronics clean-room automated production line
- Fully automated batch production with 24 units/month capacity
- Tin-Lead & Lead-free assembly
- Scalable to high-volume constellations
- Next evolution: High Reliability OBCU-500-HR (LEO-GEO), reusing OBCU-500-NS building blocks

## Qualification & Standards

- Compliant with ECSS and ESA Category-B SW; BSP & Boot SW
- Production line certified by CNES / ESA
- SpaceWire: ECSS-E-ST-50-12C,
- CCSDS for TM/TC
- Ethernet 1000BASE-T: standard IEEE 802.3ab-1999

## Planned qualification milestones:

- EQM - 2026
- FM - 2027
- EM - 2028

With the OBCU-500-NS, Airbus aims at providing the Constellation market with a high-performance equipment compatible with strategic needs. For this new product, Airbus can rely on its know-how built through the One-Web experience: OBC-Amethyst design legacy and mass production capacity, thus allowing an optimized non-recurrent and recurrent cost while ensuring a high quality of the equipment.