



OWL

Orbital Whereabout Locator

The OWL is a tunacan-mounted **plug-and-play device**, that helps to

- keep track of your satellite with a GNSS-based tracker
- monitor key parameters of your satellite
- download data using an omnidirectional antenna in any orientation

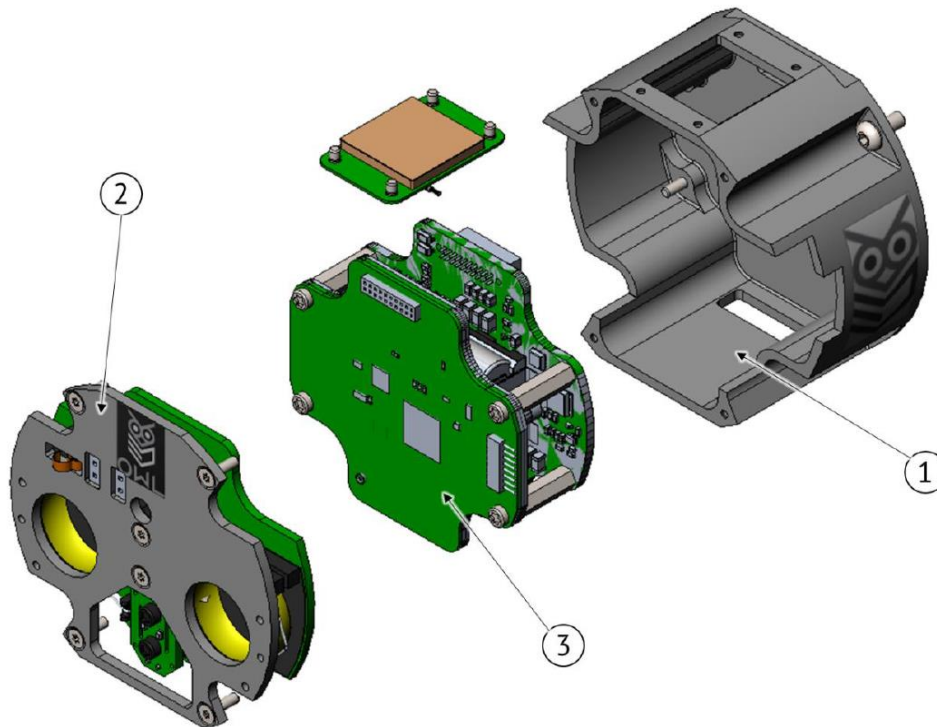
Main features:

- **Independent battery** from the platform
- Wide input voltage range (**Buck-boost architecture for battery charging**)
- Host satellite protection with **input LCL** stage
- **TC/TM towards the satellite** using registers
 - The OWL can be used as a fallback TCTM line
- **Tunacan** mount – your **payload bay is unaffected**
- **Radiation telemetry** using RadNano
- **GNSS-based** position **tracking**
- **1-PPS signal** providing to the satellite
- **Quick and easy mounting** with 4 pcs. Of M3 screws
- **Low risk of corrosion** and **stress corrosion cracking materials**
 - Source: ECSS-E-ST-32-08C
- Deployable **V-dipole antenna**: stable connection even when tumbling
- **Configurable key operational parameters** (fine-tunable up until launch):
 - RF parameters, antenna deployment timing
 - Measurement & Beacon transmission periods
 - Calibration constants for onboard measurements



Further technical information	
Mass	150 g
Dimensions	59 x 64 x 36 mm
Input voltage	3 – 16.8 V
Input power	Average: 215 mW (max: 1.2 W during charging)
Battery operating time	24 h
Telemetry data	<ul style="list-style-type: none"> • Positional data (GNSS) <ul style="list-style-type: none"> • Supported systems: GPS, Beidou, Galileo, GLONASS, QZSS • 2 m position, 0.1 m/s velocity accuracy • 5 ns time accuracy • 1 Hz maximal positional data rate • Rotational data (IMU: 3-axis MEMS gyroscope) • Temperature telemetries • Voltage telemetry <ul style="list-style-type: none"> • Platform bus voltage • OWL battery voltage • Radiation dose suffered by the satellite • Any other satellite platform telemetry <ul style="list-style-type: none"> • Health flags defined by the RILDOS standard • Pre-defined registers
Communication interface (towards platform)	UART
RF parameters	<ul style="list-style-type: none"> • Center frequency: 137.1 – 137.925 MHz (VHF) • Modulation: CSS (LoRa) • Bandwidth: 125 kHz • Transmit power: 20 dBm

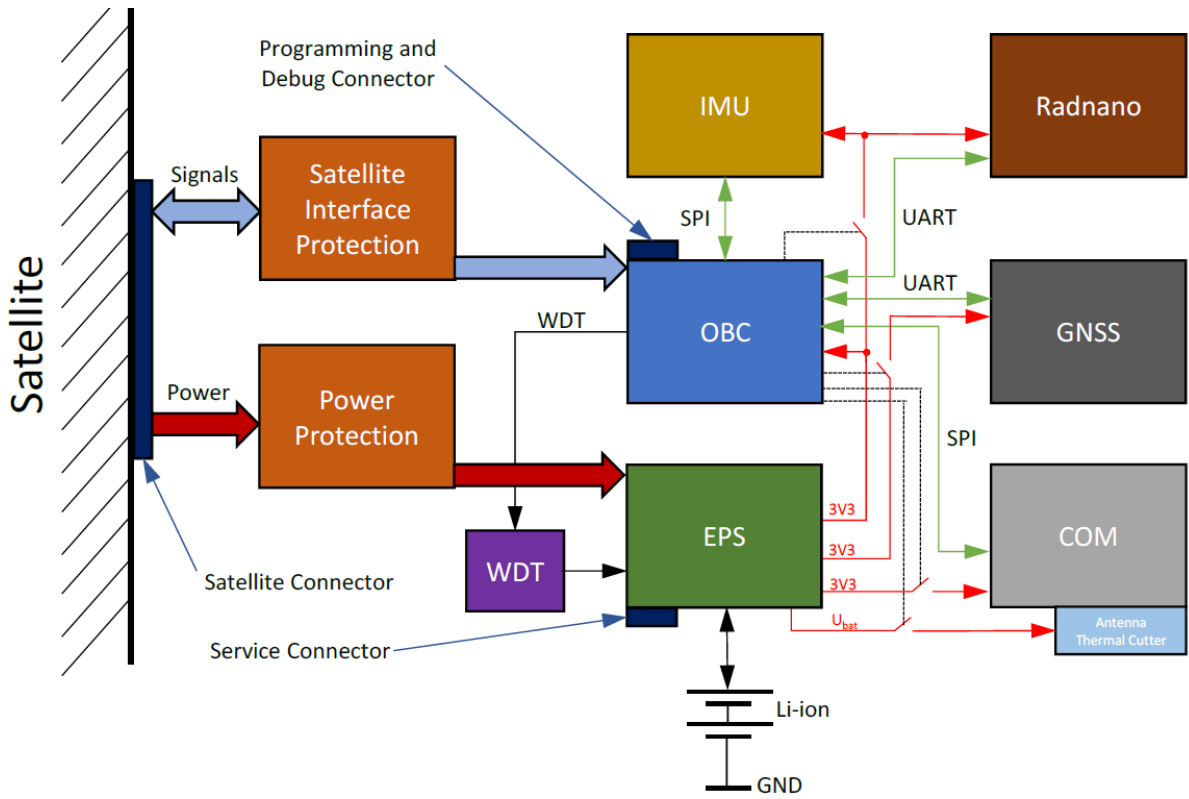
Subsystems and mechanical configuration



The unit includes the following subsystems:

1. **Structure:** The frame of the unit providing the necessary mechanical interface and structural rigidity
2. **Antenna module (ANT):** Contains means for communications towards Ground Station, as well as deployment switch for determining deployment from POD.
3. **On-Board Electronics (OBE):** main electronic board, containing:
 - **Electrical Power Supply (EPS):** Energy storage (batteries) and distribution (DCDC converters and LCLs)
 - **Global Navigation Satellite Systems module (GNSS):** Position determination & communication with ANT module.
 - **OWL-Satellite interface connector:** connection towards the hosting satellite. Type: SFC-110-T1-F-D-A
 - **Debugging connector:** Test capabilities even after integration
 - **COM:** Highly integrated satellite transceiver with a TXCO
 - **OBC:** Microcontroller-based central intelligence of the OWL
 - **IMU:** MEMS 3-axis gyroscope for rotational speed measurements
 - **RadNano:** Electrical dosimeter module to measure radiation.

System block diagram



PFM (with stowed antenna)

