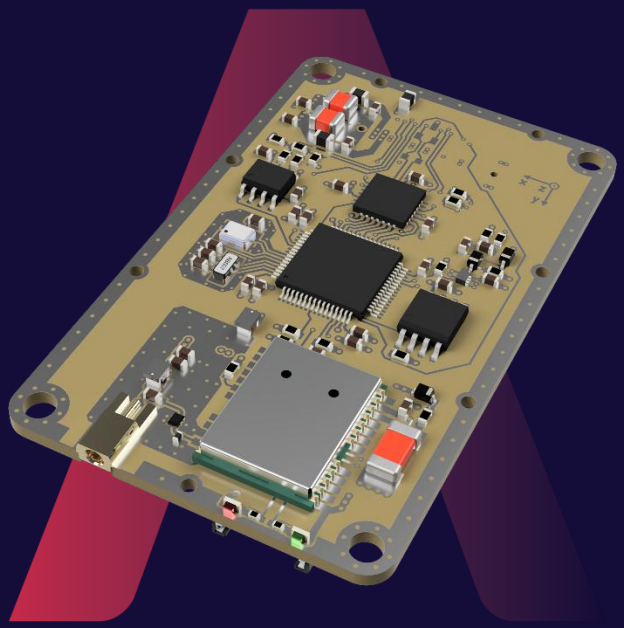
SPACEMANIC

Celeste
The GNSS receiver



Multi-GNSS receiver module suitable for position acqusition and determination in space

FEATURES

- Robust Plug&Play design
- GPS: L1/Galileo: E1/BeiDou: B1/ GLONASS: G1
- Supports Cubesat Space Protocol v1
- Supports active antennas

PRODUCT PROPERTIES

- Operating temperature: -40° C to +85° C
- Dimensions: 67x42x7.5 mm
- Power supply:
  - 3.3 V
  - 5 V (if CAN required)
- Mass: 25 g
- Power consumption: < 250 mW average

SOFTWARE

- Cubesat Space Protocol v1
- Command line interface

HERITAGE

- GRBAlpha (4.5 years in LEO)
- GRBBeta (launched July 2024)
- Veronika (launched Dec 2024)
- CroCube (launched Dec 2024)
- 3+ External customer missions
- 2+ Launch vehicles

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FUNCTIONAL CHARACTERISTICS

- Maximum velocity 10 km/s
- -148 dBm cold start sensitivity
- -165 dBm tracking sensitivity
- 29 seconds cold start TTFF
- 1 second hot start
- 2 m CEP accuracy

INTERFACES

- 1 x I2C (CSP v1)
- 1 x RS485 (CSP v1)
- 1 x CAN (CSP v1)
- 2 x UART
  - 1 x Command Line Interface
  - 1 x direct access to GNSS receiver IC
- PPS output
- System clock output
- External reset input
- MMCX antenna connector
- Debug LEDs

TESTING & HERITAGE

- Flight Heritage Hardware
- Successful vibration & termal vacuum tests

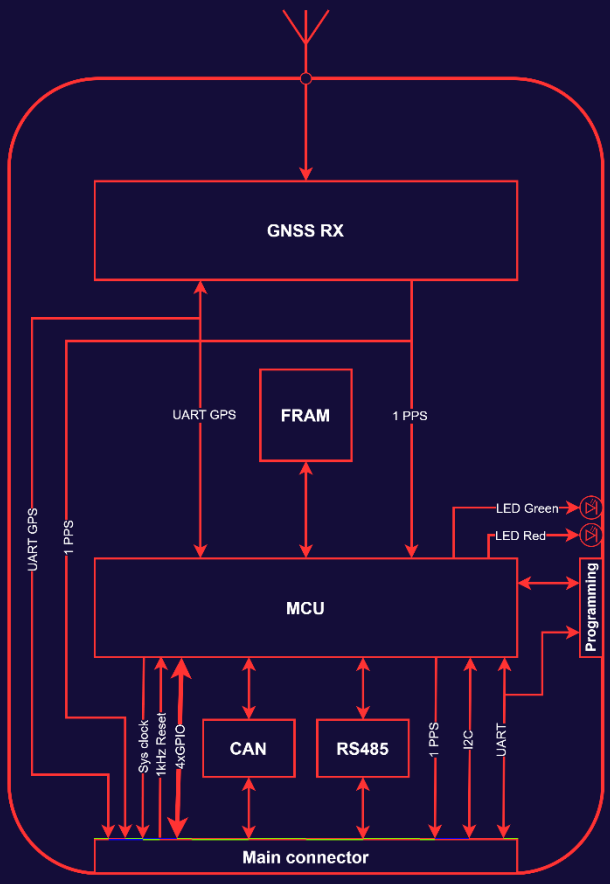

TABLE OF PARAMETERS

Parameter	Condition	Min.	Typ	Max.	Unit
Mass			25		g
Dimensions	x*y*z		67*42*7.5		mm
	x*y*z		2.64*1.65*0.30		In
Operating Temperature		-40		85	°C
Storage Temperature					°C
Rad tolerance			LEO		
Power Consumption			250		mW
Current Consumption	3.3 V		70	130	mA
Startup peak Current	3.3 V			300	mA
Supply voltage	3.3 V IN		3.3	3.6	V
	5 V IN		5	5.5	V
Startup time	Hot		1		s
	Warm		28		s
	Cold		29		s
Update rate		1	1	25	Hz
Time to first fix (TTFF)			29		s
Time Accuarcy			5		ns
Velocity			8	10	Km/s
Altitude			LEO		Km
Velocity Accuracy			0.1		m/s
Position Accuracy	CEP		2		m
Sensitivity	Cold-Start		-148		dBm
	Re-acquisition		-160		dBm
	Tracking		-165		dBm
Reacquisition			1		s