TAKE ME 2 SPACE

# ZeroCube

## Technical Specifications



**Description:**

**ZeroCube** is a CubeSat Onboard Computer (OBC) powered by Raspberry Pi and integrated with NASA's cFS framework. It provides efficient and versatile computing for CubeSats, allowing easy extension of both software and hardware capabilities. With its modular software design, users can add mission-specific apps without compromising OBC performance, and it supports multiple I2C sensors. The built-in hardware watchdog ensures reliability during long-duration missions.

**Specifications:**

| | Parameter | Value |
|---|---|---|
| Compute | Processor Type | Quad-core 64-bit Arm Cortex-A53 CPU |
| | Processor Clock Speed | 1GHz |
| | RAM Size | 512MB SDRAM |
| | Real-Time Clock (RTC) | TCXO based RTC with Battery Backup |
| | Data Retention | 10 Years with < 10% of Rated P/E Cycles |
| | Rated P/E Cycle | 60,000 Cycles |
| | Clock Synchronization | RTC and External GPS Synchronisation |
| | Fault Tolerance | External Watchdog Timer(configurable) |
| Power | Power Consumption (Idle) | 1.6W |
| | Power Consumption (Nominal) | 2W |
| | Power Consumption (Peak) | 4W |
| Interfaces | Interfaces Supported | 2 X Multiplexed UART, 6 X Multiplexed I2C, 1 X HS-CAN, 1 X RS-485, 1 X MicroUSB(Data), 1 X MIPI-CSI Camera Connector |
| | GPIO Pins | 8 X GPIO |
| | External Watchdog Timer | Can be configured as option |
| Mechanical | Dimensions | 90.1mm x 95.6mm x 20.2mm |
| | Weight | 250g* |
| | Form factor | PC104 compliant with stackable connector |
| | Material | Hard anodised Al 6061 T6 |
| | Temperature Range | -40 C to 85 C |
| | Storage Temperature | -55C to + 85C |
| | Connectors | 1 x 6 pin Harwin Gecko SL Connector for Power Input<br>1 x 6 pin Harwin Gecko SL Connector for RS485<br>1 x 6 pin Harwin Gecko SL Connector for |

| | | |
|---|---|---|
| | | CAN<br>1 x 10 pin Harwin Gecko SL Connector for UART over RS422<br>1 x 6 pin Harwin Gecko SL Connector for UART<br>6 x 4 pin Molex Pico-lock Connectors for I2C<br>1 x 10 pin Harwin Gecko SL Connector for GPIO<br>1 x 22 pin CSI Connector for Camera |
| Software | Software Development Kit (SDK) | OrbitOS , a fork of NASA cFS , implemented on 32 Bit raspbian bullseye |
| | Supported Languages for SDK | C - Language |
| | Firmware Update Mechanism | SD Card |
| | CCSDS Compliance | Compliant with ground stations following ccsds v2 protocol |
| | Boot Time | 75 Seconds |
| | Debug Interface | MicroUSB |
| Testing & compliance | ETL: TVAC, EMI/EMC, Vibration and Shock Tolerance | ETL complete for ISRO PSLV profile. Individual modules can be tested based on customer requirements. |
| | | Tested for 13g (vibration), 1500g (shock) ISRO PSLV profile |
| | Mission Life Expectancy | 5 Years |
| | Radiation Tolerance | Radshield protection with proprietary Ta-tape for upto 10x reduction in TID for LEO |

Questions? Queries? Contact us at info@tm2.space