TAKE ME 2 SPACE

CMCube

Technical Specifications



Description:

CMCube is a CubeSat Onboard Computer (OBC) powered by Raspberry Pi CM4 integrated with NASA's cFS framework that runs on Linux. 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 RS485, CAN, I2C, UART interfaces. On-board power isolation.

Specifications:

	Parameter	Value
Compute	Processor Type	Quad-core 64-bit Arm Cortex-A72
	Processor Clock Speed	Main - 1.5 GHz
	RAM Size	8GB SDRAM
	Non-volatile Memory	32GB eMMC (Boot), 2TB NVMe SSD (Storage optional)
	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)	3 W
	Power Consumption (Nominal)	6 W
	Power Consumption (Peak)	9 W
Interfaces	Interfaces Supported	14x GPIO 1x Gig Ethernet 2x UART 4x I2C 1x CAN 3x Full Duplex RS-485 1x MIPI-CSI Camera Connector
Mechanical	Dimensions	90.6 x 99.85 x 25.1
	Weight	230 gm
	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	1x 6 pin Harwin Gecko screw lock for 5V power input 1x 6 pin Harwin Gecko screw lock for

		UARTs 3x 6 pin Harwin Gecko screw lock for Full Duplex RS-485 1x 6 pin Harwin Gecko screw lock for CAN 1x 104 pin Samtec header (PC104 header) 1x 16 pin Harwin Gecko latching connector for GPIO 1x 10 pin Harwin Gecko latching connector for Gigabit Ethernet
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	eMMC Flash
	CCSDS Compliance	Compliant with ground stations following CCSDS 1v2 protocol
	Boot Time	75 Seconds

Environmental Test Specifications:

	Parameter	Value
Testing & compliance	T-Vac	2 Cycles with temperature range of +60℃ to -25℃
	Vibration	Random vibration acceptance test levels 20 - 2000 Hz at 4.47grms for 60 seconds
	Shock	100 Hz at 30g 1000 Hz at 1500g 5000 Hz at 1500g
	Mission Life Expectancy	5 Years
	Radiation Tolerance	RadShield protection with proprietary Ta-tape for up to 10x reduction in TID for LEO

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