



SPACEMANIC

Eddie The Computer

OBC-MSP430

Cubesat On-board computer module
suitable for nano-satellite C&DH, TT&C,
mass storage and ADCS

FEATURES

- Unique Plug&Play Design
- Compatible with CubeSat standard
- Compatible with CubeSat components from other vendors
- High reliability & rad tolerant data storage
- External on-board watchdog
- On-board gyro/mag/acc sensors
- On-board temperature sensors
- Robust design

PRODUCT PROPERTIES

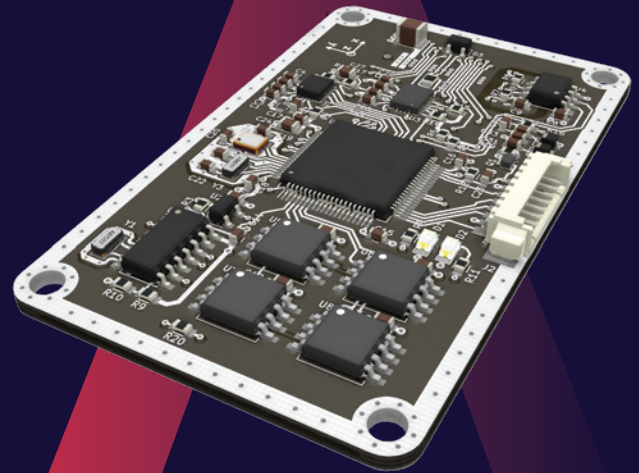
- Operating temperature: -40 °C to +85 °C
- Power Supply: 3.3V, 5V, 3.3V isolated
- 65x40 mm size module compatible with Spacemanic motherboard (PC/104 form factor)
- Mass: 25g
- Power consumption: $\pm 100\text{mW}$ average

MICROCONTROLLER

- Mixed-signal, FRAM memory, ultra low power 16-bit RISC based MCU
- 32.768kHz ultra low power mode, up to 16MHz standard mode
- Internal & external watchdog for added reliability

MEMORY & STORAGE

- 256 Kb internal FRAM code memory
- Up to 16Mbit external FRAM for data storage



INTERFACES

- 1 x I2C and 1 x isolated I2C
- 2 x UART
- 1 x CAN
- 1 x SPI
- 3 x PWM
- 8 x IO (4 x ADC: 12-bit, 3.3V range)
- PPS input
- System clock output
- External reset input
- JTAG on separated connector
- Debug LEDs

SOFTWARE

- FreeRTOS based operating system
- Cubesat Space Protocol / AX.25 / KISS
- Full compilation of drivers for OBC
- Compatible with variety of commercial Real-Time Operating Systems

TESTING & HERITAGE

- Based on Flight Heritage Hardware
- Successful vibration & heated vacuum tests
- Radiation tests (TID @ 20 krad, SEE @ 60 MeV)