



SPACEMANIC

Deep Thought Onboard Computer

OBC-SM-DT-SAMV71

Cubesat Onboard computer module suitable for nanosatellite C&DH, TT&C, mass storage and ADCS.



FEATURES

- Unique Plug&Play Design
- Compatible with CubeSat standard
- Compatible with CubeSat components from other vendors
- Radiation tolerant design
- 32bit Cortex-M7 core
- High reliability & rad. tolerant data storage
- External onboard watchdog
- Onboard gyro/mag/acc sensors
- Onboard temperature sensors
- Robust design with shielding case included

PRODUCT PROPERTIES

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

MICROCONTROLLER

- 32.768kHz ultra low power mode, up to 300MHz standard mode
- Internal & external watchdog for extended reliability

MEMORY & STORAGE

- 2048Kbytes Flash memory
- 384Kbytes Multi-port SRAM
- 128MB Flash storage
- 1MB FRAM storage

INTERFACES

- 2 x I2C and 1 x isolated I2C
- 1 x RS485
- 1 x UART
- 1 x CAN
- 1 x SPI
- 1 x Ethernet RMII
- 22 x IO:
 - 4xADC: 12-bit, 3.3V range
 - 6xPWM
- PPS input
- System clock output
- External reset input (1kHz)
- 1 x USB
- QSPI (for external additional memory)
- 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 RTOS

TESTING & HERITAGE

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