CubeComputer
General Purpose Onboard Computer

Feature List

Microcontroller:
- High performance, low power 32-bit ARM Cortex-M3 based MCU
- 4-48 MHz @ 1.25 DMIPS/MHz
- Internal & external watchdog for added reliability

Memory & Storage:
- 256 KB EEPROM
- 4 MB flash for code Storage
- 2 x 1 MB external SRAM for data storage
  - SEU protection by means of an FPGA-based EDAC
  - SEL protection by detecting and isolating latchup currents
- MicroSD socket for storage up to 2 GB

Communication:
- 2 x I2C interface with multi-master capabilities
- 1 x Debug UART interface on external header
- 1 x CAN interface up to 1 Mbps

Piggyback Header:
- Design a mission specific piggyback board that can interface directly with CubeComputer
- Includes pin-outs for: 3.3 V, 5 V, battery supply, 4 x PWM, 4 x ADC, UART, SPI, I2C, and more

Software:
- Full compilation of drivers for OBC
- Robust bootloader with the ability to store and load multiple programs in-flight
- Compatible with variety of commercial Real-Time Operating Systems

Application

- Onboard computer suitable for nanosatellite C&DH, TT&C, mass storage and ADCS
- PC/104 form factor, compatible with CubeSat standard

Testing & Heritage

- Successful vibration & heated vacuum tests
- Radiation tests (TID @ 20 krad, SEE @ 60 MeV)
- ADCS OBC on QB50 precursor satellites

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Operating voltage</td>
<td>3.3 V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 200 mW</td>
</tr>
<tr>
<td>I2C bus voltage</td>
<td>3.3 V / 5 V</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10°C to 70°C</td>
</tr>
<tr>
<td>Mass*</td>
<td>50 g – 70 g</td>
</tr>
<tr>
<td>Dimensions*</td>
<td>90 x 96 x 10 mm</td>
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*Depends on configuration options

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