**Overview**

The ISIS OBC is a flight proven, low power nanosatellite processing unit based around an ARM9 processor with a speed of 400 MHz, making it one of the most capable on-board low-cost computer currently available on the market. Its pluggable daughter board offers additional flexibility and customizability by providing a wide range of extra interfaces for payloads, sensors or actuators in a compact form factor.

**Features**

- 400 MHz, power efficient ARM9 processor
- FreeRTOS operating system for simple and lightweight cooperative multitasking
- 64 MByte SDRAM
- Data Storage:
  - Redundant SD Card storage (2x 8 GB) with FailSafe FAT journalling file system
  - 256kB FRAM: reliable non-volatile Storage
- 2x redundant Real Time Clocks
- Temperature, current, and voltage measurements with over current protection
- External on-board watchdog and power-controller
- Robust design
- Includes Hardware Abstraction Layer (HAL) software

**Available Configurations**

Main board with:

- EM daughter board (easy to use connectors)
- FM daughter board (compact high reliability flight connectors)
- No daughter board (Main board only)

Additional Software on demand:

- ISIS Subsystems Software Library
- ISIS Mission Support Software

**Compatibility**

- Compatible with standard CubeSat components available from ISIS
- Compatible with Gomspace EPS
- Compliant with CubeSat standard

**Flight Heritage**

- Flight Heritage since June 2014 on the QB50 precursors
### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>400MHz 32-bit ARM9 processor (AT91SAM9G20)</td>
</tr>
<tr>
<td>Volatile Memory</td>
<td>64 MB SDRAM</td>
</tr>
<tr>
<td>Data Storage</td>
<td>2 x 8 GB High Reliability SD Cards or 2 x any size standard SD Cards</td>
</tr>
<tr>
<td>Code Storage</td>
<td>1 MB NOR Flash</td>
</tr>
<tr>
<td>FRAM</td>
<td>256 KB</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-25°C to +65°C</td>
</tr>
<tr>
<td>Power consumption</td>
<td>400 mW typical, 550 mW max @ 3.3V supply</td>
</tr>
<tr>
<td>Power supply</td>
<td>3.3V</td>
</tr>
<tr>
<td>Dimension</td>
<td>96 x 90 x 12.4 [mm] (including FM daughter board)</td>
</tr>
<tr>
<td>Mass</td>
<td>94g (including FM daughter board)</td>
</tr>
</tbody>
</table>

### Interfaces supported in the HAL software:

- I2C: master or slave Fast mode (≤400kbit/s)
- SPI: Up-to 8 slaves (≤10Mbit/s)
- UART: 2x RS232 / 1x RS232 + 1x RS485
- ADC: 8-Channel, 10-bit
- PWM: 6-Channels
- GPIO: Up-to 27

### Additional interfaces available on the board:

- USB: 1x Host and 1x Device (≤12Mbit/s)
- Image Sensor Interface for interfacing CMOS Image Sensors

### Additional interfaces for test and debug:

- JTAG for programming and debugging
- Debug port: UART for console user-interface
- 4x LEDs (Engineering Model only) to support testing and debugging

### Qualification and Acceptance Testing

<table>
<thead>
<tr>
<th>Test</th>
<th>QT</th>
<th>AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vibration</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Mechanical Shock</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Thermal Cycling</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Thermal Vacuum</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Total Ionizing Dose</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

QT is performed on the design/qualification model  
AT is performed on the unit to be shipped

This document is subject to change without notice. The latest technical information and price information is available on www.cubesatshop.com