AAC CLYDE SPACE

Command and data handling

KRYTEN-M3

Our flight-proven, robust OBC is developed to deliver 'always-on' operation and is flexible across multiple mission applications and customer requirements. Incorporating a Cortex-M3 processor and innovative hardware/firmware recovery mechanisms, our highly miniaturized OBC delivers high-performance computing for the most demanding nanosatellite missions. Requiring <1W during operations, it is one of the most power efficient COTS OBCs available on the market.

Main Features

- SmartFusion 2 SoC including Cortex-M3 processor @ 50 MHz delivering 62.5 DMIPS
- Integrated cache and Memory Protection Unit
- 8 MB MRAM for code storage and execution
- 4 GB flash memory for bulk data storage
- Autonomous single event latch-up protection
- EDAC protected memories and FIFOs
- JTAG with ETM support for programming and debugging
- Cryptographic Accelerator
- Reed Solomon Accelerator
- GPS available on KRYTEN-M3-PLUS



Dependable Technologies

The MRAM and Flash memories are protected via an EDAC mechanism to guard against radiation effects. This mechanism provides protection, not only against data modifications, but also against errors in the address decode logic. Non-volatile MRAM memory provides zero-boot and zero-sleep times which facilitate further energy savings. The inclusion of 4 GB of SLC flash memory provides ample space for mission data storage. Additionally, a microSD card slot is available for further memory expansion.

Software

The OBC is supplied with a BSP including bare drivers and a FreeRTOS port. The OBC is compatible with Gen1 and software support from Bright Ascension Limited (BAL) is available. The highly configurable software combines a component based OBSW framework and flight-proven software solutions to meet all the command and data handling needs of the next generation of highly-capable CubeSats. Provided with comprehensive API reference documentation, a full user manual and thoroughly documented source code.

Technical Specifications

General

Design Life	5 years in LEO
Processor	Smart Fusion 2 SoC including an ARM Cortex-M3 processor delivering 62.5 DMIPS
Processor Clock	50 MHz
SCET	Real time counter (w/40mins. Backup Power)
MRAM	8 MB
Operating Temperature Range	-40°C to +80°C
Boot Image Storage	256 kB eNVM + 8MB MRAM
Radiation (TiD)	20 kRAD
Typical Energy Usage	6.4 mJ/DM
GPS (PLUS model only)	<10m RMS position accuracy <1m/s RMS velocity accuracy

Interfaces

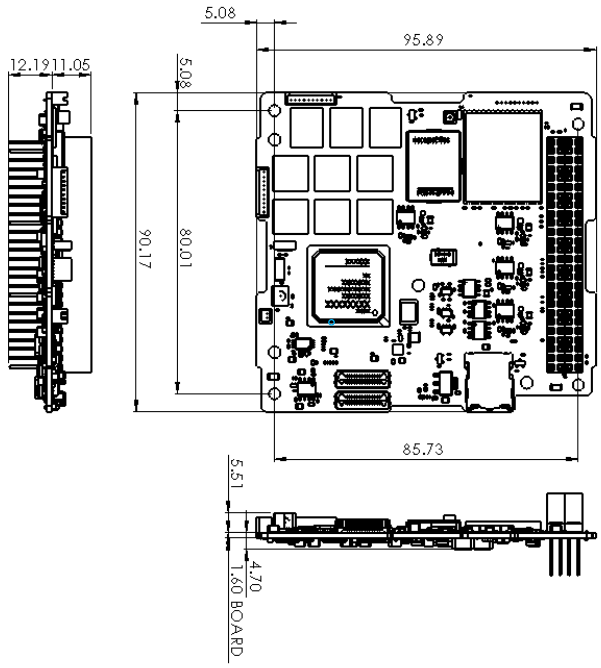
I2C		2
SPI	7 Chip Select Lines	1
UART	3.3 V Logic	8
RS422	(can be used as 2xRS485)	1
CAN		1
DTMF		1
	JTAG w/ETM Support + 1 Serial	
Debugging	Debug	1
LVDS	20x Lines, Expansion	1
QSPI	(2x LVDS, 1x 3V3 Logic)	3
GPIO	3.3 V Logic	17

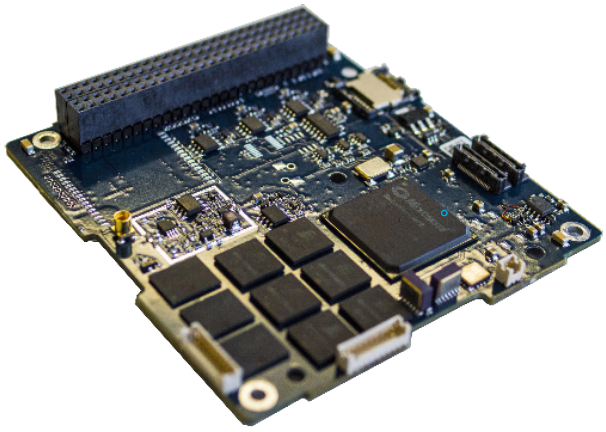
** Not all interfaces available simultaneously*

Size, Weight and Power

Nominal Power Consumption	400 mW (typ), 1 W max
Mass	61.9 g
Length	95.89 mm
Width	90.17 mm
Height*	5.51 mm

** Height from top PCB to lowest component*





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