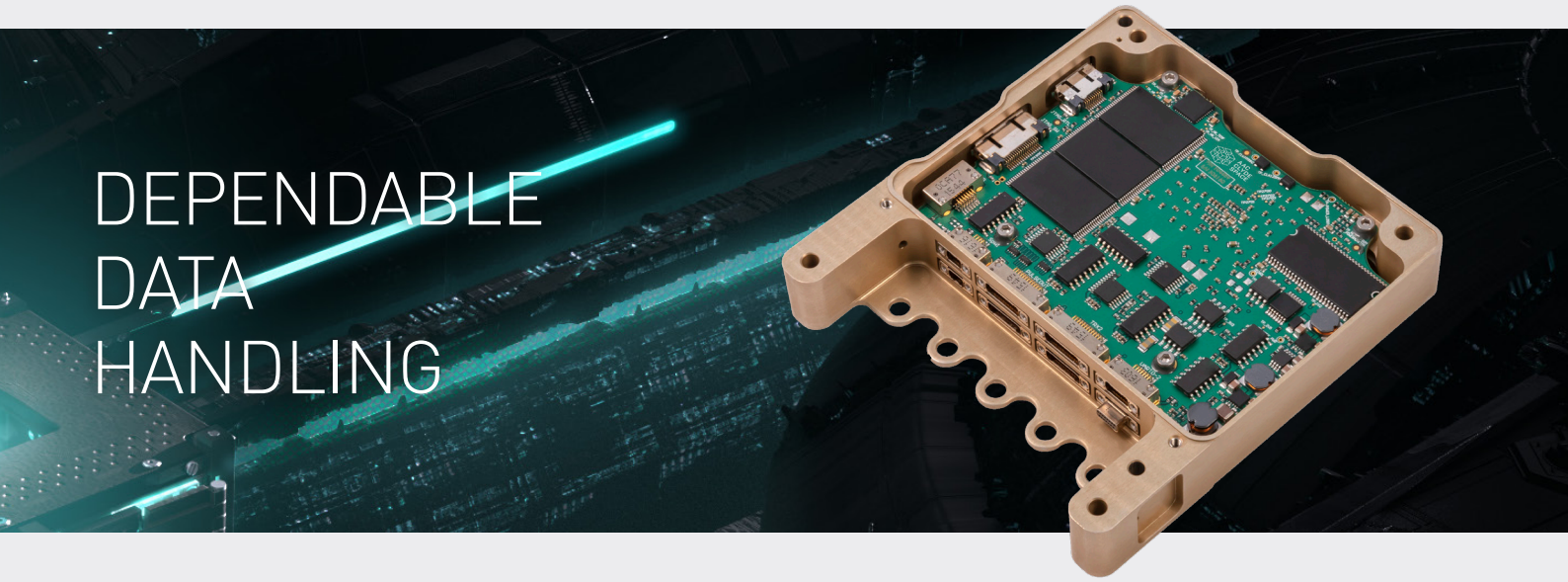
AAC CLYDE SPACE

Command & Data Handling

SIRIUS TCM LEON3FT



Flight proven across multiple mission applications for a range of customer requirements, this readily available solution has a reputation for reliability and performance for advanced small and nano-satellite missions.
The Sirius TCM LEON3FT has inherited advanced error detection and correction in it's design. The real-time operating system runs on a LEON3FT fault-tolerant soft processor, compliant to IEEE 1754 SPARC v8, and fault tolerance is secured by using triple-modular redundancy on FPGA and memory scrubbing.

Sirius spacecraft avionics are modular in design. Modules can be combined to offer redundant configurations or to simply accommodate mission specific requirements. The Sirius TCM LEON3FT has a standard single string system that consists of an on-board computer (Sirius OBC) and a combined mass memory with CCSDS stack (Sirius TCM). The OBC runs mission specific software and manage the spacecraft system. The TCM receives and stores payload data and platform housekeeping data, while at the same time distributing telecommands and serving mass memory data to the transceiver.

PERFORMANCE

With 50 MHz LEON3FT soft processor, RTEMS real-time operating system (RTOS) and 32 GB mass storage capacity delivering high-performance computing. Utilizing SpaceWire onboard the main data bus for high bandwidth and on-board data transfer. The transceiver interface uses CCSDS encoding standards for satellite link services, compatible with leading ground station networks.

RELIABILITY

Sirius TCM solutions have autonomous single event latch-up protection in logic and data storage. Our inbuilt protections are based on over a decade of design heritage and guarantee realtime-on-time operations. Designed and qualified for five years in LEO.

ADAPTIVE

Designed for the most demanding missions, the Sirius TCM comes with S-band and X-band transceiver interfaces and offers the ability to update software on orbit via telecommands. With pulse commands for low level, basic commanding.

TECHNICAL SPECIFICATIONS

User Friendly

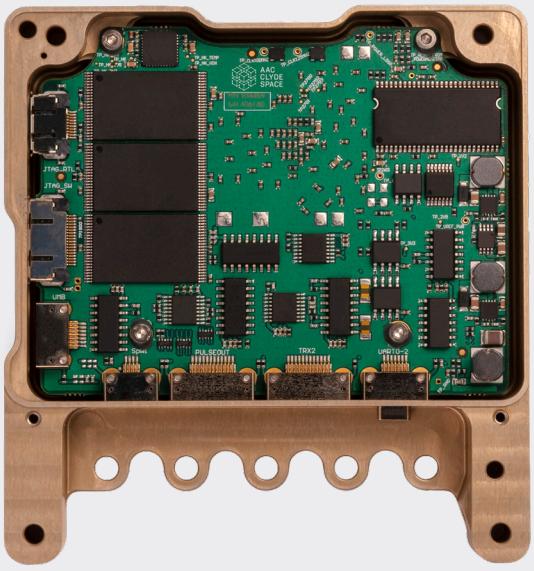
A desktop development kit is available for rapid design and integration to new spacecraft platforms. Supplied with user friendly application software for management of on-board services, to make it ready for integration out of the box, or board support package for custom software development.

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 1	(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

Size, Weight & 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



To make an enquiry, request a quotation or learn about AAC Clyde Space's other products and services, please contact:
enquiries@aac-clydespace.com

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