

DEPENDABLE DATA HANDLING



Designed for advanced nano-satellite constellations in LEO and deep space exploration missions the readily available Sirius OBC with LEON3FT delivers 'always-on' reliable operations that work every time on time with precision performance. With enhanced error detection and correction, the Sirius OBC is tolerant to Single-Event-Effects (SEE) in logic and data storage. Fault tolerance is secured through TMR (Triple-Modular Redundancy) on all FPGA flip-flops and through boot flash and EDAC (error detection and correction) on memories. The development kit is powered through a mains 12V adaptor, eliminating the need for specialised power supplies or other laboratory equipment.

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 guarantee realtime-on-time operations. Designed and qualified for five years in LEO.



ADAPTABILITY

Easy-to-use interfaces, facilitating the development phase and reducing overall development and project costs. 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

General	
Design Life	5 years in LEO
Processor	32-bit OpenRISC fault-tolerant processor
Processor Clock	50 MHz
SCET	15.25 μ s accuracy
SDRAM	64 MB (post-EDAC)
Instruction Cache	8 kB
Data Cache	8 kB
NVRAM	16 kB (post-EDAC)
Operating Temperature	+10°C to +30°C
Boot Image Storage	2 GB (post-EDAC)
Power Supply Input	9V to 15V using power supply, 12V wall socket plug included

Interfaces		
SpaceWire	50 Mbps, RMAP support	2
Serial Ports	RS422 / RS485 UARTs	6
Serial Ports	RS485-only UARTs	2
PSS Interface	RS485 PPS input / output	2/1
Analog Input Buffered	24 bit, up to 31250 SPS	8
GPIO*	3.3 V logic	16
Debugging	JTAG port for CPU OpenOCD (real-time debug interface) with debug UART	1

Dimensions	
Length	230 mm
Width	155 mm
Height*	37 mm

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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