

DEPENDABLE DATA HANDLING



Designed for advanced 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 Command and Data Handling System has a standard single string system that consists of an on-board computer (Sirius OBC) and a combined mass memory with CCSDC stack (Sirius TMC). The OBC runs mission specific software and manages the spacecraft system. The TMC receives and store payload data and platform housekeeping while at the same time distributing telecommands and serving mass memory data to the transceiver.



PERFORMANCE

With 50 MHz LEON3F fault-tolerant soft processor, its RTEMS real-time operating system (RTOS) is compliant to IEEE 1754 SPARCv8. Utilizing SpaceWire on-board the main data bus, the on-board computer is designed to emphasis high performance, resilience and reliability.



RELIABILITY

The development kit includes a Sirius on-board computer with a RTEMS real-time operating system running on a FPGA based soft processor. This combination results in an outstanding on-board computer with high performance, resilience and reliability.



ADAPTABILITY

Easy-to-use interfaces, facilitating the development phase and reducing overall development and project costs. With the ability to unplug the OBC unit and test it on a flat sat environment the Sirius OBC kit is designed for desktop use with flight software environments.

TECHNICAL SPECIFICATIONS

General	
Design Life	5 years in LEO
Processor	32-bit LEON3FT (IEEE-1754 SPARC v8) 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
CAN	Implemented on optional daughter board	2
SpaceWire	Implemented on daughter board	2

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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