PERUN
PROCESSING PLATFORM

INFINITY AVIONICS

Infinity Avionics Perun processor is a reconfigurable processing platform for nanosatellites. It can be used as an on-board computer as well as a payload processor. Unique FPGA based architecture enables reconfiguring communication interfaces and GPIOs based on system requirements and avoids hardware obsolescence due to changing engineering requirements throughout missions.

FPGA SoC based processor comes in a small form factor and enhances its flexibility as a platform/payload processor.

In-orbit re-programmability of the Perun processor enables the ability to rectify hardware/software faults during missions. Additionally, the feature enables the utilization of different firmware based on mission stages and power requirements.

Perun processor comes with a range of data storage options including SEU tolerant MRAM and Flash memory.

Perun is an evolution of MiniVolkh-2.0 processor which is qualified to NASA GEVS standard and has flight heritage since 2020. In addition to all the features of MiniVolkh-2.0, Perun has greater number of user-configurable GPIOs to further enable complex nanosatellite missions.

MAIN FEATURES

- SmartFusion 2 SoC with Cortex M3 Processor
- SEU Immune 256kB internal e-NVM and 64kB internal SRAM
- 4 Mbit SEU immune SPI MRAM
- 1 Gbit SPI Flash as reconfiguration memory and general-purpose store
- Latch-up protection on all power supplies
- 20 MHz external oscillator, 32kHz RTC oscillator plus 2 internal clock sources
- On-orbit reprogrammable
- 36 user configurable GPIOs at 3V3
- 34 user configurable GPIOs at 2V5
- Form factor: 55mm x 40mm card with high density interconnect (HDI)
- MiniVolkh-2.0 is Space qualified to NASA GEVS standard
- MiniVolkh-2.0 has Flight heritage since 2020

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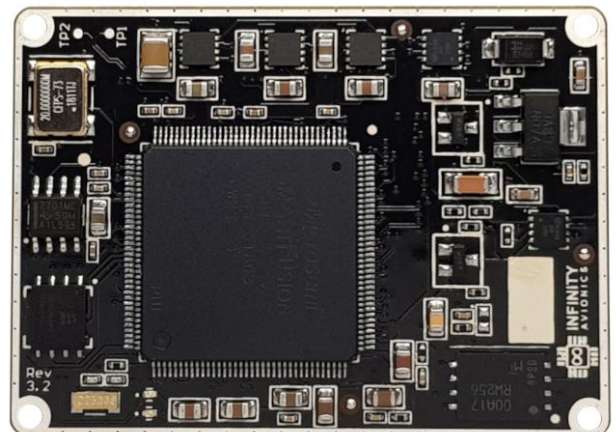
General Specifications

| Processor	SmartFusion 2 SoC
Memory Options	
MRAM	4 Mbit
Flash	1 Gbit
Processor Clock Options	
External	20 MHz
RTC	32 kHz
Internal	Configurable
Input Voltage	5V to 18 V
Input Power	5 W max at 5V
Typical Power Use	500 mW at 5V
Operating Temperature Range	–40° C to 100° C

Interfaces and Drivers

Interfaces*	UART I2C SPI LVDS CAN USB ULPI CUSTOM
Operating Systems	FreeRTOS
Programming/ Debug	JTAG

* interfaces are reconfigurable, and number of available interfaces are only limited by available interfacing pins

Size and Weight

Mass	21 g
Length	55 mm
Width	40 mm
Total Height	5.5 mm

All Dimensions are in mm
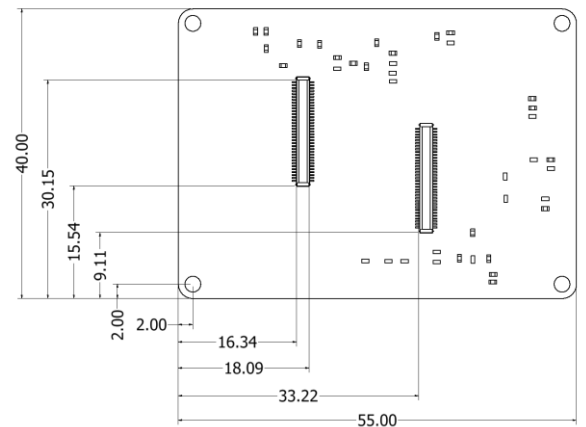
Space Qualification (MiniVolkh– 2.0)

Vibration	GEVS standard
Thermal Vacuum Cycling	–20° C to 75° C
Flight Heritage	Since 2020 Q1

Perun Processing Platform is made under license from UNSW

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