INVOCON

[TELEMETRY SYSTEMS]

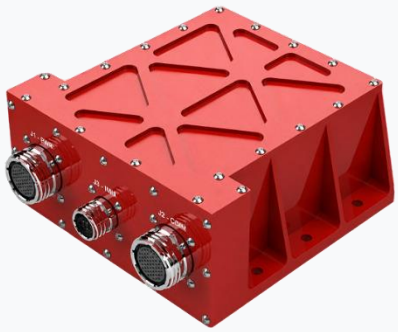
Invocon Flight Computer (IFC)

Customizable Multi-Core Flight Computer

[PRODUCT OVERVIEW]

Invocon Flight Computer (IFC) PRELIMINARY

The Invocon Flight Computer (IFC) is built around Invocon's Next Generation Processing Platform (XGPP), combining multiprocessor performance with programmable logic flexibility in a rugged aircraft-grade aluminum enclosure. The IFC interfaces directly to common launch vehicle subsystems including IMU/INS, GPS/GNSS, Thrust Vector Controller (TVC), Reaction Control System (RCS), engine control, and telemetry through two 66-contact I/O connectors. The design is fully user-programmable and supports multiple real-time operating systems (RTOS).



[CAPABILITIES]

Features & Applications

Key Features

- **High-Performance Multi-Core Processing**
  Quad-core Cortex-A53 application processor and dual-core Cortex-R5F real-time processor provide segregated compute resources for mission-critical and supervisory tasks.
- **User-Programmable Programmable Logic**
  Factory-configured PL fabric with 256K logic cells, 1248 DSP slices, and video codec — fully accessible for customer-defined logic functions.
- **Broad OS Support**
  Runs bare metal, FreeRTOS, Linux, RTEMS, and VxWorks, accommodating a wide range of flight software architectures.
- **Rugged MIL-Grade Packaging**
  Aircraft-grade aluminum enclosure with 38999 connectors and dedicated EMI-filtered power connector for demanding launch environments.
- **Configurable I/O for Launch Vehicle Subsystems**
  Two 66-contact I/O connectors support IMU/INS, GPS/GNSS, TVC, RCS, engine control, and telemetry interfaces in a single unit.
- **Flexible Storage Architecture**
  64 MB QSPI Flash for boot and configuration, plus 16 GB eMMC for OS, customer files, and data recordings.

Typical Applications

- **Engine and Propulsion Control**
  Manages engine ignition sequencing, throttle control, and propulsion system monitoring.
- **Telemetry Management**
  Formats, encodes, and routes vehicle health and mission data to downlink systems.
- **Payload Processing**
  Programmable logic and multi-core architecture support custom payload data processing requirements.

[TECHNICAL DATA]

Key Specifications

SPECIFICATION	VALUE
ELECTRICAL	
Processor (PS) — Application	Quad-core Arm® Cortex®-A53 MPCore™ up to 1333 MHz
Processor (PS) — Real-Time	Dual-core Arm® Cortex®-R5F up to 533 MHz (lockstep capable)
GPU	Mali™-400 MP2 up to 600 MHz
Programmable Logic (PL)	256K Logic Cells, 23.1 Mb Block RAM, 1248 DSP Slices
RAM	4 GB 64-bit DDR4 at 2400 Mbps
Flash (QSPI)	64 MB up to 40 MHz
Flash (eMMC)	16 GB up to 50 MHz
Power Input	15 to 50 Vdc; 0.54 A @ 28 Vdc (15 W) (EMI Filtered)
Supported OS	Bare metal, FreeRTOS, Linux, RTEMS, VxWorks
Ethernet	Dual Gigabit Ethernet
Electrical Standards	RS-232, RS-422, LVDS, Open-Drain, 5V TTL, CMOS
Features (Base)	10 UART 17 GPIO 1 GPS 1PPS Input
Features (Advanced)	1 SDLC Input 1 Dual Output IRIG 106 PCM
MECHANICAL	
Size (L × W × H)	6.2" W x 6.0" L x 2.9" H (excluding connectors)
Weight	3.75 ± 0.25 lbs.
Case Material	Aircraft-grade aluminum with MIL-38999 connectors
ENVIRONMENTAL	
Operating Temperature	-24 to 61 °C