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GE Fanuc
Embedded Systems



Rugged Operational Computer (ROC)

Compact, Lightweight, and Rugged Computer for Vehicle Applications

Features

COTS Rugged Chassis

- Up to 3 system stackable dual PMC carriers
- Up to 5 conduction cooled PMC cards (excluding power supply)

Lightweight and Compact

- 5.75 pounds
- 6.75"W x 4.5"D x 3.25"H

Adaptable

- GE Fanuc Embedded Systems or third party conduction cooled PMC modules can be adapted for use

Power Supply

- Up to 100 Watts
- 18-36 VDC
- Integrated EMI filter with power sensing circuitry
- -40 °C to +85 °C Operating Temperature
- Remote Turn On

Solid State Flash Disk

- Optional, up to 128 Gb

Processor

- PowerPC or Intel-based

Graphics and Video

- Single or dual display versions
- Video capture and overlay options
- RGB and composite output

Inputs and Outputs

- 8 high speed serial channels
- Digital and analog I/O

MIL-STD-1553 Interface

- Two dual redundant channels
- Functions as a BC, RT, or BM

Materials and Finish

- Conduction cooled milled aluminum 6061-T651
- Black anodized external finish
- Chem film interior finish (including mounting surface)

Hardware

- Rugged LEMO™ push-pull circular connectors
- Airborne stacking (RC4) connectors for carrier interconnection
- No internal wiring harness

Benefits

ROC defines the state of the art for deployable embedded computing systems. Leveraged from our I/O and chassis product lines, ROC is the first of a new range of state-of-the-art embedded compact computers. Small, light, rugged, and adaptable, it represents a true "off the shelf" solution to a diverse variety of design requirements.

Originally developed for airborne avionics, the ROC concept has expanded to include ground combat vehicle and personnel applications, where rock-solid performance, reliability, flexibility, physical robustness, weight, power, and space are all critical considerations.

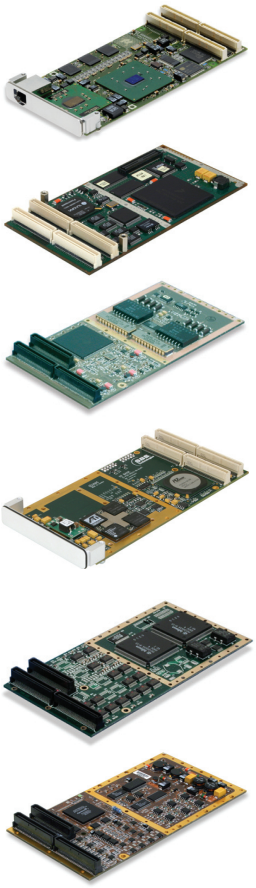
Since program requirements are often diverse, we offer the ROC in multiple configurations to address that diversity. Each configuration addresses common requirements typically seen in flight and mission management, data acquisition processing and storage, situational awareness, and reconnaissance.

We offer the ROC in two general configurations. The first, based upon a 450 MHz PowerPC® processor, focuses on providing a wide variety of serial, analog and discrete inputs and outputs. The second Intel-based configuration features a Pentium® M processor available in speeds ranging from 600 MHz to 1.1 GHz and has been formulated for the capture, processing, and storage of video and other graphical data.

This ruggedized COTS-based system can be ordered already configured for immediate integration into your application, or customized with a wide variety of functional modules to meet your specific requirements, such as an early warning detection and processing system. For even greater adaptability, GE Fanuc Embedded Systems can adapt any existing GE Fanuc Embedded Systems, or third party, conduction cooled PMC module for use in the ROC. Such powerful customization flexibility lets you quickly integrate your products into an overall system, resulting in faster time to market.

GE FANUC

Rugged Operational Computer (ROC)



Specifications

Single Board Computers
PSL09 is a high performance processor PCI mezzanine card (PrPMC) using the low power Intel® Pentium® M processor. It incorporates sophisticated power management technology, eliminating the need for an onboard fan. On request, the PSL09 provides PICMG 2.15 compatibility (configuration 7) with one (optionally two) Fast Ethernet links through the Pn/Jn4 connector. This enables interoperability with CompactPCI 2.16 carrier boards and with ATCA carriers.

Our PowerPC-based SBC offers 4 high speed serial channels, capable of RS232, 422, 485 operation (software selectable), and configurable for synchronous or asynchronous operation. Two channels provide an additional asynchronous capability useful for development debug and deployed operation on lower traffic lines. A single 10/100 BaseT Ethernet channel completes the array of communications options. The 603e core and memory resources ensure that protocol overheads associated with typical serial communication formats can be off-loaded from the host.

1553 Interface
ASF-PMC2CC interface provides two channels of single function, dual redundant MIL-STD-1553. Each channel operates independently as either a Bus Controller, Remote Terminal, or as a dual function Bus Monitor. Other features include 1553A/B selections, pointer-driven transmit and receive buffers, extensive programmable event interrupts, and triggers. The card also supports 33 to 66 MHz speeds with data transfer rates up to 266 MB/s. The ASF-PMC2CC supports external TTL/RS-422 clock inputs. Signals can be controlled via user application, or via data structures.

G2 Graphics PMC
The G2 Graphics Processor PMC family provides the powerful 3D graphics processing power of ATI's popular Mobility Radeon 9000 ('M9') chip, as used in today's highest-end notebook computers, on a PMC module available in three ruggedization levels. The M9's internal processors run at 250 MHz, and provide separate concurrent pipeline engines for 2D processing, 3D processing, output processing, and video capture processing. The M9 provides 64 MBytes of 128-bit wide DDR video memory running at 200 MHz. Combined, this provides graphics power approaching that of high-end desktop workstations, all on a PMC module.

HSS-PMC-CC
HSS-PMC provides eight ports of high-speed serial data communications on a single-wide PMC module. Used for applications such as LAN/WAN networking and telecommunications, it supports data rates up to 10 Mbit/s for synchronous protocols using an external clock, and up to 2 Mbit/s for asynchronous protocols. Popular baud rates of up to 921.6 kbaud are available using the standard 14.7456 MHz oscillator in RS-422 interface mode. Each port is fully programmable to support many high performance serial communications protocols, such as asynchronous, HDLC, and SDLC.

PIO-PMC1
PIO-PMC1 offers a system designer multiple I/O capabilities with functional simplicity on a single PMC card. In today's systems, designers often need to mix and match I/O functionality to meet performance requirements. Since most systems are designed for small footprints, and low weight, one of the significant design constraints is the limited number of PMC slots on a CPU board. The PIO-PMC1 addresses that constraint with its high functionality and low cost. Designing the PIO PMC into your system saves valuable space, reduces inventory, and reduces system cost.

Qualification Analysis Environment
- VITA 47 Compliant
- ECC4: -40 °C to +85 °C Operating
- -55 °C to +105 °C Non-Operating
- Vibration: Level 3: 5 Hz to 100 Hz PSD increasing at 3dB/ octave, 100 Hz to 1000 Hz PSD = 0.1 g2/Hz, 1000 Hz to 2000 Hz PSD decreasing at 6dB/octave.

About GE Fanuc Embedded Systems

GE Fanuc Embedded Systems is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Embedded Systems has the breadth, experience and 24/7 support to deliver what you need. For more information, visit www.gefanucembedded.com.

GE Fanuc Embedded Systems Information Centers

Americas:
1 800 322 3616 or 1 256 880 0444

Asia Pacific:
86 10 6561 1561

Europe, Middle East and Africa:
33 1 4324 6007

Additional Resources

For more information, please visit the GE Fanuc Embedded Systems web site at:

www.gefanucembedded.com

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