LEON3FT MIXED-SIGNAL MICROCONTROLLER

GR716A

The GR716A is a radiation-hardened and fault-tolerant microcontroller featuring a single-core LEON3 SPARC V8 processor. It also includes the LEON-REX instruction set extension to enhance code density. It supports many standard interfaces such as SPI, I2C, SpaceWire,CAN, MIL-STD-1553B and more. Two ADCs and four DACs are available as analog front-ends. On-chip LDO and integrated PLL are also available.

A comprehensive development environment is provided, complete with development boards, a debugger (GRMON3), and a simulator (TSIM3). The software ecosystem includes toolchains and board support packages, including both bare-metal and real-time operating system (RTOS) options.

GR716 MINI Evaluation Board

The GR716 MINI is powered via a micro-USB cable, which also serves as debug link to a development PC.

The evaluation board is ideal for rapid software development.
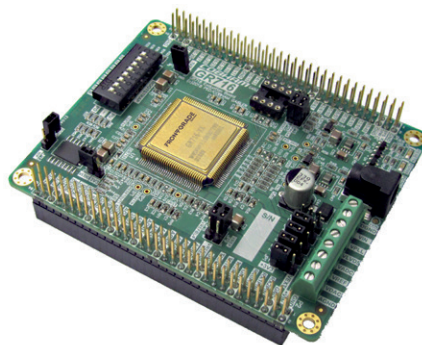
GR716-BOARD-Daughter Development Board

The GR716-BOARD has a 8 cm x 10 cm format and stackable pin headers, providing access to all GR716 features and interfaces.
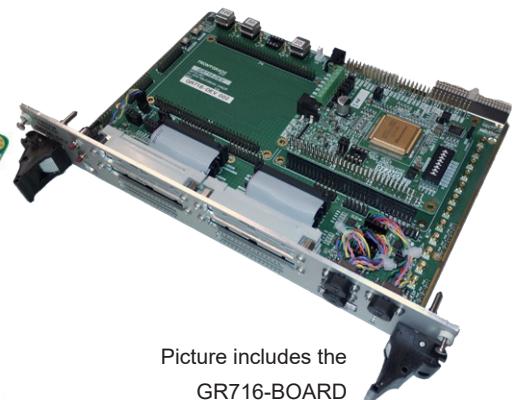
The GR716-BOARD is a daughterboard for the optional GR-CPCI-GR716 board.

GR-CPCI-GR716-DEV-Mother Interface Board

The GR-CPCI-GR716 development board is built using the standard 6U cPCI format with a front panel for connecting external interfaces.

The GR-CPCI-GR716 is the motherboard for the GR716-BOARD.

50 x 35 mm, Scale 1:1

Picture includes the GR716-BOARD

More information about the boards: gaisler.com/GR716-boards

Applications

The GR716A is optimized for high-reliability space applications, including satellite supervision, monitoring, and control, as well as distributed control tasks like sensor bus control.

GR716A

Features

- LEON3FT - Fault-tolerant SPARC V8 32-bit processor, 50 MHz
  - LEON-REX extension: improved code density
  - Floating Point Unit
  - Memory protection units
  - Determinism: Multi-bus, fixed interrupt latency, cache-less architecture
- 192KiB EDAC protected tightly coupled memory
- External EDAC memory: 8-bit PROM/SRAM, SPI, I2C

- Processor boot process supporting dual memory redundancy and remote network boot
- PacketWire with CRC acceleration support
- 2x ADC 11bits resolution @ 200ksps, 4 differential or 8 single channels
- DAC 12bits @ 3Msps, 4 channels
- Power-on-Reset and Brown-out-detection
- Temperature sensor, Integrated PLL

- On-chip regulator for 3.3V single supply
- Radiation performance: TID: 300 krad(Si), SEL: LET>118 MeV-cm²/mg
- Temperature range: -55˚C / +110˚C (case)

More information:
gaisler.com/GR716

Interfaces

- SpaceWire interface with time distribution support, 100 Mbps
- MIL-STD-1553B interface
- 2x CAN 2.0B controller interface
- UARTs, GPIO with pulse features
- I2C
- SPI with SPI-for-Space protocols
- Programmable PWM interface

Package

- 132-Pin Ceramic Quad Flat Pack, Pitch: 0.635mm

Qualification status

- Flight models available. Qualification tests as per PCA defined by ESCC Basic Specification No. 2567000. Screening tests as per ESCC 9000.