

PC104C31 DSP Module Specification Sheet

Arius, Inc. provides embedded signal processing solutions to commercial and industrial users.

The PC104C31 uses the TMS320C31 floating point DSP and reconfigurable FPGA technology to provide a powerful and flexible signal processing platform on a PC/104 board.

Booting from Flash memory, the PC104C31 can run standalone. The PC104C31 supports bus mastering of the PC/104 bus or 16550 UART emulation permits operation under any operating system using standard serial port drivers.

Modular AIO daughter boards support analog and digital IO through two AIO sites. AIO modules can be swapped in the field for maximum flexibility.



Key Features

- TMS320C31 processor running at 80 MHz (40 MIPS, 80 MFLOPS)
- 256 K words no wait state SRAM and 2 MB of Flash memory
- AIO daughter boards for I/O expansion - Quad 16 bit analog I/O up to 48 KSPS
2 wire telephone line interface
Custom designs to your specifications
- Dual serial port 85230; RS-232, RS-422, RS-485, Async or Sync operation
- High speed 16550 UART emulation for slave interface on PC/104 bus
- Bus master interface on PC/104 bus allows PC104C31 to be bus controller
- SRAM based FPGAs provide flexibility in interfaces and processing
- Digital I/O through reconfigurable FPGA
- All I/O can be handled by DMA engine in reconfigurable FPGA
- FPGAs can be configured for custom DSP functions by user
- XDS-510 compatible emulator port supports software development

Description

The PC104C31 is a high density DSP board on the PC/104 form factor. It uses a TMS320C31 DSP running at speeds up to 80 MHz (40 MIPS, 80 MFLOPS) to process data from multiple I/O sources. The PC104C31 has up to 256 Kwords (32 bit) of no wait state SRAM memory for data and program. Non-volatile storage for program and data is provided by 2 MB of Flash memory. The Flash memory has a protected boot block that can only be altered when a jumper is changed. The remainder of the Flash is written under software protection.

An ID chip provides a unique serial number for each PC104C31 board. The serial number supports communications across multiple boards or software licensing to a particular board. The ID chip stores hardware configuration information in ROM to support power up detection of speed and capabilities of the PC104C31. Non-volatile, rewritable storage supplements the Flash by storing configuration information that can be updated by software. An onboard temperature sensor provides protection from cooling failures.

The main FPGA provides a PC/104 interface with a choice of 16550 UART emulation for the slave interface or a master interface for control of the PC/104 bus. When there is no CPU in

the system, the PC104C31 board uses the master interface to control other PC/104 cards. As a slave board in a system with software support of a standard PC serial port, the PC104C31 uses 16550 UART emulation. The main FPGA is loaded with a customer design for unique processing of data or signals.

An 85230 USART provides two serial ports in synchronous or asynchronous modes at data rates up to 4 Mbps or 384 Kbps respectively. Each channel is separately configured by software for RS-232 or RS-422/RS-485 operation. A local loop back feature allows testing of all components without jumpers.

General digital I/O uses the IDE/SCC FPGA and a 44 pin 2 mm connector with an IDE compatible pinout. This interface is configured at a bit level for IO of control or data. IDE supports ATA mass storage devices such as Flash disk or rotating media.

Other I/O is handled through two AIO daughter board sites. The AIO modules provide a variety of analog and digital I/O capabilities. All module types support operation via DMA

through custom circuits in the AIO FPGA. The module type is read from an electronic ID code on the AIO module and selects the appropriate interface circuit for the AIO FPGA.

Current AIO Products:

Octal 16 bit codec AIO module with sample rates up to 96 KSPS provides analog input and output for audio signals. Programmable gain and power down is supported.

2-wire telephone interface AIO module provides operation with the PSTN. This module is designed to meet world wide telephony standards under software control.

Planned AIO Products:

High speed analog I/O is supported with a 14 bit, 10 MSPS ADC/DAC AIO module.

E1-T1 AIO module provides access to all channels via high speed DMA data transfers.

MultiMediaCard AIO module provides mass storage to 64 MB of Flash memory with no external components.

01-02-05

Block Diagram

