PMC Modules

Acromag ®
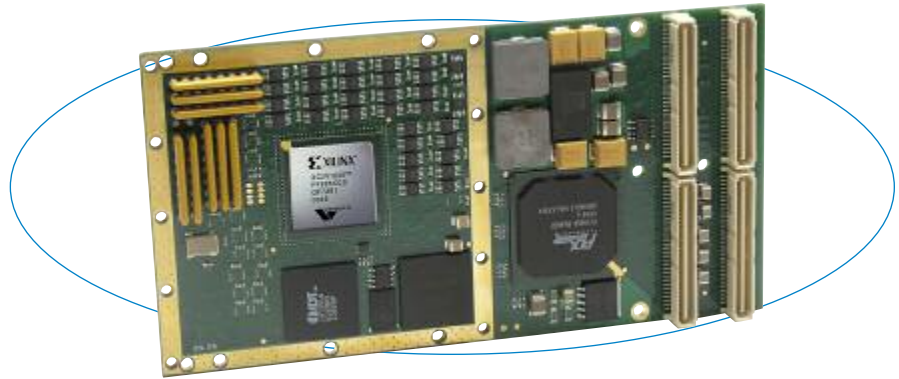THE LEADER IN INDUSTRIAL I/O

PMC-CX1003RE/2003RE Conduction-Cooled Reconfigurable FPGA with CMOS and Differential I/O

Download your own logic programs and algorithms into the on-board user-configured FPGA to quickly create a custom digital I/O module.

- PMC-CX1003RE: 11,500 logic cells
- PMC-CX2003RE: 24,192 logic cells
  (both models have 16 TTL and 24 differential I/O)

These modules provide users with the capability to implement complex, customized digital I/O solutions. Application-specific logic routines and algorithms can be downloaded into the on-board reconfigurable FPGA to control operation of the I/O channels.

Both models are ideal for advanced CMOS and differential RS422/485 I/O functions. Typical uses are hardware simulation, in-circuit diagnostics, and communication processing. Modules are able to generate recipe-based responses to input stimulus and to translate protocols.

Powerful and versatile, these PMC modules are designed around a reconfigurable FPGA, the Xilinx® Virtex®-II. Two versions are available with either 12K or 24K logic cells. Both DSP-capable FPGAs feature adaptable logic resources, large on-chip memories, and a high-speed interface. Dual-port memory is provided for DMA. Conduction cooling or standard -40 to 85°C operating temperatures are supported.

The PCI bus interface is handled by a PLX® PCI 9656 device which provides 32-bit 66MHz bus mastering with dual-channel DMA support.

Features

- 16 bi-directional CMOS I/O lines
  24 bi-directional RS422/485 differential I/O lines

- Rear I/O connection

- Customizable FPGA with 11,500 or 24,192 logic cells
  (Xilinx Virtex-II XC2V1000 or XC2V2000)

- FPGA code loads from PCI bus or flash memory

- 256K x 36-bit dual ported SRAM memory

- Supports dual DMA channel data transfer to CPU

- Supports both 5V and 3.3V signalling

- Extended temperature operation (-40 to 85°C)

Specifications

FPGA
FPGA: Xilinx Virtex-II FPGA
    PMC-CX1003RE: XC2V1000 FPGA with 11,500 logic cells
    PMC-CX2003RE: XC2V2000 FPGA with 24,192 logic cells

FPGA configuration: Downloadable via PCI bus or from flash memory.

Example FPGA program: VHDL provided implements interface to PCI bus IC, interface to SRAM, PLL control, and digital I/O control. Program requires user proficiency with Xilinx software tools. See *Engineering Design Kit.*

Differential Digital I/O
I/O channel configuration: 24 bidirectional differential signals. Direction is controlled independently.

Differential driver output voltage with 50 ohm load: 1.5V minimum, 5V maximum.

Common mode output voltage: 3V maximum:

Minimum input resistance: 96k ohms.

Termination resistors: 120 ohm termination resistor networks are installed in sockets.

CMOS Digital I/O
I/O channel configuration: 16 bidirectional CMOS transceivers with direction controlled as signal pairs.

Reset/power-up condition: All channels default to input.

Digital Input
Input voltage range: 0 to 5V DC.

Input signal threshold, low to high: 3.5V typical.

Input signal threshold, high to low: 1.5V typical.

Input response time: 10 nanoseconds, typical.

Digital Output
Output voltage range: 0 to 5V DC.

Output ON current range: -32 to 32mA.

Output pullups: 4.7K ohm socketed resistors.

Turn on/off time: 10nS.

Input Interrupts
8 channels of interrupts are available for high-to-low, low-to-high, or any change-of-state event type.

Engineering Design Kit
Provides user with basic information required to develop a custom FPGA program. Kit must be ordered with the first purchase of a PMC-CX module. *(see Design Kit for details)*

PMC Compliance
Conforms to PCI Local Bus Specification, Revision 2.2 and CMC/PMC Specification, P1386.1.

Electrical/Mechanical Interface: Single-Width Module.

PCI bus clock frequency: 66MHz.

64-bit PCI Master: Implemented by PLX PCI 9656 device.

Signaling: 5V and 3.3V compliant.

Interrupts (INTA#): Interrupt A is used to request an interrupt.

Environmental
Operating temperature: -40 to 85°C

Storage temperature: -55 to 105°C.

Relative humidity: 5 to 95% non-condensing.

Power: Consult factory. Operates from 3.3V supply.

MTBF: MIL-HDBK-217F, Notice 2
    PMC-CX1003RE: 969,218 hours at 25°C
    PMC-CX2003RE: 973,956 hours at 25°C

Ordering Information

PMC FPGA Modules
PMC-CX1003RE: TTL & differential I/O, 11,500 logic cells

PMC-CX2003RE: TTL & differential I/O, 24,192 logic cells

PMC-CX-EDK: Engineering Design Kit (one kit required)

Software *(see software documentation for details)*
PMCSW-API-VXW: VxWorks® software support package
PCISW-API-QNX: QNX® software support package
PCISW-API-WIN: Windows® DLL software support
PCISW-LINUX: Linux™ support (website download only)

Accessories *(see accessories documentation for details)*
5025-288: Termination panel, SCSI-3 connector, 68 screw terminals
5028-432: Cable, shielded, SCSI-3 connector both ends