PMC-VLX85/110/155
User-Configurable Virtex-5 FPGA Modules with Plug-In I/O

- PMC-VLX85: 82,944 logic cells (XC5VLX85T)
- PMC-VLX110: 110,592 logic cells (XC5VLX110T)
- PMC-VLX155: 155,648 logic cells (XC5VLX155T)

Description
Acromag’s PMC-VLX boards feature a reconfigurable Xilinx Virtex-5 FPGA enhanced with multiple high-speed memory buffers and a high-throughput PCI-X interface. Field I/O interfaces to the FPGA via the rear J4/P4 connector and/or with optional front mezzanine plug-in I/O modules. The result is a powerful and flexible I/O processor module that is capable of executing your custom instruction sets and algorithms.

Three models provide a choice of logic-optimized FPGAs to match your performance requirements. Although there is no limit to the uses for these boards, several applications are ideal. Typical uses include hardware simulation, communications, military servers, in-circuit diagnostics, signal intelligence, and image processing.

64 I/O lines are provided via the rear (J4) connector. Additional I/O processing is supported on a separate mezzanine card that plugs into the FPGA base board. A variety of these external I/O cards offer an interface for your analog and digital I/O signals. See the AXM I/O Card data sheet for more details.

Large, high-speed memory banks provide efficient data handling. Generous DDR2 SDRAM buffers store captured data prior to FPGA processing. Afterward, data is moved to dual-port SRAM for high-speed DMA transfer to the bus or CPU. Our high-bandwidth PCI-X interface ensures fast data throughput.

Take advantage of conduction cooling for use in hostile environments. Conduction efficiently dissipates heat in environments with inadequate cooling air flow. Optional extended temperature models operate from -40 to 85°C.

Acromag’s Engineering Design Kit provides software utilities and example VHDL code to simplify your program development and get you running quickly. A JTAG interface enables on-board VHDL simulation.

Features
- Reconfigurable Xilinx Virtex-5 FPGA
- PCI-X bus 100MHz 64-bit interface
- Supports both front and rear I/O connections
- 64 I/O or 32 LVDS lines direct to FPGA via rear (J4)
- Plug-in I/O modules are available for front mezzanine
- FPGA code loads from PCI bus or flash memory
- Two banks of 256Kb x 32-bit dual-ported SRAM
- Two banks of 32Mb x 16-bit DDR2 SDRAM
- Other memory options available (contact factory)
- Supports dual DMA channel data transfer to CPU/bus
- Supports 3.3V signalling
- Support for Xilinx ChipScope Pro interface
- Conduction-cooled or -40 to 85°C operating range

Specifications

FPGA
- FPGA: Xilinx Virtex-5 FPGA
- PMC-VLX85: XC5VLX85T FPGA with 82,944 logic cells and 48 DSP48E slices
- PMC-VLX110: XC5VLX110T FPGA with 110,592 logic cells and 64 DSP48E slices
- PMC-VLX155: XC5VLX155T FPGA with 155,648 logic cells and 128 DSP48E slices

FPGA configuration: Download via PCI bus or flash memory. Example FPGA program: VHDL provided for local bus interface, control of front & rear I/O, SRAM read/write interface logic, and SDRAM memory interface controller. See EDK kit.

I/O Processing
Acromag AXM I/O modules for front mezzanine: AXM modules attach to the board for additional I/O lines. Analog and digital I/O AXM modules are sold separately.

Rear I/O:
- 64 I/O (32 LVDS) lines supported with a direct connection between the FPGA and the rear I/O connector (J4).

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-VLX module.

PMC Compliance
Conforms to PCI Local Bus Specification, Revision 3.0 and CMC/PMC Specification, P1386.1.

Electrical/Mechanical Interface: Single-Width Module.

PCI Bus Modes: Supports PCI-X at 100MHz, 66MHz and Standard PCI at 66MHz and 33MHz

PCI-X Master/Target: 32-bit or 64-bit interface

Signaling: 3.3V compliant

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

Environmental
Operating temperature: 0 to 70°C or -40 to 85°C (E versions)

Storage temperature: -55 to 105°C

Relative humidity: 5 to 95% non-condensing

Power: Consult factory. Operates from 3.3V supply.

MTBF: Hours at 25°C, MIL-HDBK-217F, Notice 2


Download your own programs into the reconfigurable FPGA to quickly create custom I/O module. Optional I/O modules plug into the front mezzanine.
PMC Modules

Ordering Information

PMC Modules
- **PMC-VLX85**
  - User-configurable Virtex-5 FPGA with 82,944 logic cells
- **PMC-VLX85E**
  - Same as PMC-VLX85 with extended temperature range
- **PMC-VLX110**
  - User-configurable Virtex-5 FPGA with 110,592 logic cells
- **PMC-VLX110E**
  - Same as PMC-VLX110 with extended temperature range
- **PMC-VLX155**
  - User-configurable Virtex-5 FPGA with 155,648 logic cells
- **PMC-VLX155-1M**
  - Same as PMC-VLX155 plus 1MB x 64 dual port SRAM
- **PMC-VLX155E**
  - Same as PMC-VLX155 with extended temperature range

- **PMC-VLX-EDK**
  - Engineering Design Kit (one kit required)

AXM Plug-In I/O Extension Modules
- For more information, see [AXM data sheet](#).
- **AXM-A30**
  - 2 analog input 100MHz 16-bit A/D channels
- **AXM-D02**
  - 30 RS485 differential I/O channels
- **AXM-D03**
  - 16 CMOS and 22 RS485 differential I/O channels
- **AXM-D04**
  - 30 LVDS I/O channels
- **AXM-??**
  - Custom I/O configurations available, call factory.

Software
- (see [software documentation](#) for details)
- **PMCSW-API-VXW**
  - VxWorks® software support package
- **PCISW-API-WIN32**
  - 32-bit Windows driver software package with DLLs and demonstration programs for PMC, XMC, PCI, and cPCI products. Supplied on CD-ROM. Windows® DLL software support
- **PCISW-API-WIN64**
  - 64-bit Windows driver software package with DLLs and demonstration programs for PMC, XMC, PCI, and cPCI products. Supplied on CD-ROM. Windows® DLL software support
- **PCISW-API-LNX**
  - Linux® support (website download only)