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***HERON-FPGA12 Virtex-4FX12 FPGA module with 128Mbytes DDR SDRAM,
 Flash memory and 60 bits Digital I/O.***

- Xilinx XC4VFX12-11 Virtex 4 FPGA with embedded Power PC
- 128Mbytes of DDR SDRAM connected as 32Mx32 @200Mhz
- 16Mbytes of FLASH memory for PowerPC code storage
- FPGA configuration downloaded using the HERON Serial Bus.
- Choice of clocking options
- 60 bits DIO (can be configured for 5V tolerance)
- Connects to all of the HERON FIFOs, UMI and module ID signals
- Flash PROM for storage of FPGA configuration data

The HERON-FPGA12 provides a user programmable element for a HERON system that combines FPGA hardware and a programmable Power PC. The PowerPC can be connected as part of the FPGA design allowing users to choose the best mix of hardware and software to perform the signal processing that they need.

The module offers 128Mbytes of DDR SDRAM with 1.6Gbyte/sec total memory bandwidth. This off chip memory can be accessed by the PowerPC processor core and also from FPGA logic at the same time (arbitrated). The provided Hardware Interface Layer (HIL) VHDL includes a DDR memory controller that can be connected to user FPGA logic and the PowerPC OPB at the same time.

There is a 16Mbyte FLASH memory connected to the FPGA, which is intended for storing boot code for the PowerPC. There is a Xilinx provided Core that allows this to be connected to the PowerPC directly, but the user can choose to connect their own VHDL to the FLASH memory if their application requires.

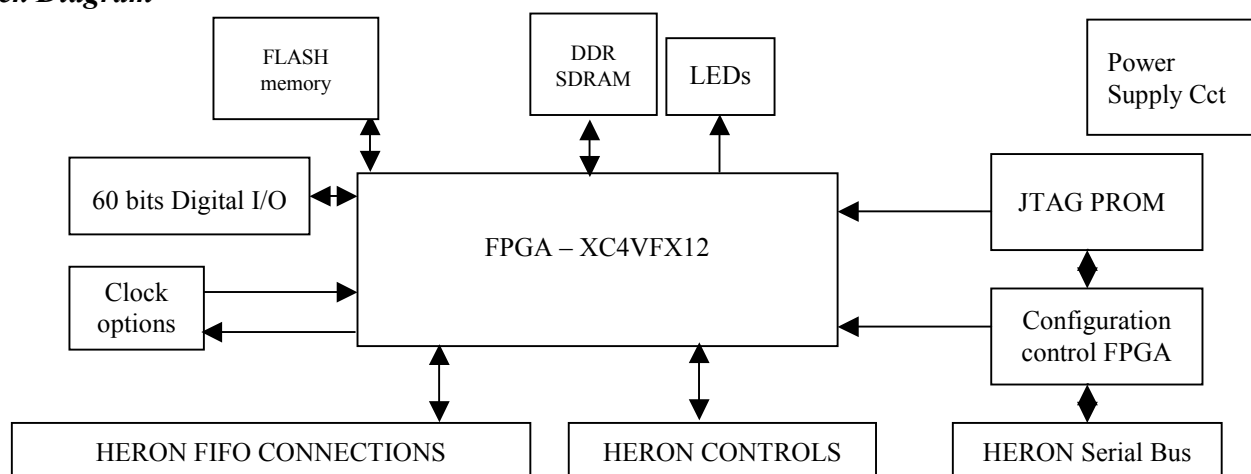
The module offers 60 bits of digital I/O, which can have series resistors fitted at build time to allow 5V tolerance. These I/Os can be configured by the FPGA design to use any Virtex-4 I/O format that uses 3.3V Vcco. It should be noted that this means LVDS inputs are an option but not LVDS outputs.

HERON-FPGA modules must be fitted to a HERON module carrier that provides power and control signals to the module. Most module carriers also offer FIFO based connections between modules and possibly between the modules and a host PC. Normally the configuration program for the FPGA is sent from a host PC via the Heron Serial Bus, allowing fast development, test, debug cycles as well as in-field upgradeability. Alternative ways of configuring the FPGA are the on-board FLASH based configuration PROM, and the JTAG header that accepts standard Xilinx JTAG cables such as Xilinx Parallel cable 4 or USB-JTAG cable.

After configuration the Heron Serial Bus can be used for inter-module messages allowing FPGA registers to be read and written to control the operation of the module as defined in the FPGA design.

The PowerPC program can be downloaded as part of the FPGA design, or after the FPGA configuration using the GNU debugger (via the JTAG cable) using the HERON-FIFOs, or can be loaded from the FLASH memory provided on the module.

Block Diagram



Technical Specification	Software	Ordering Information
Processor: Virtex 4 FX12 – FPGA logic and Power PC hard core Memory: DDR SDRAM 128Mbytes organised as 32M x 32 at 200Mhz FLASH 16 Mbytes - byte wide Host Bus: HERON Maximum Dimensions: 4.0 inches x 2.5inches x 6.5mm high. Power requirements: 5V Max: dependent on FPGA configuration Typ: dependent on FPGA Configuration 12V Max: 0A Typ: 0A -12V Max:0A Typ:0A Clocking Speed: FPGA Max: dependent on your FPGA design PowerPC Max: 400Mhz (-11 speed grade) I/O bandwidth: e.g. HEPC9 400Mb/s in + 400Mb/s out	Xilinx ISE series tools are required to make a new FPGA configuration. HUNT ENGINEERING provides software to download the FPGA configuration file onto the hardware, plus configuration examples. HUNT ENGINEERING may offer to provide your configuration file for you, but this may be chargeable. Applications These fast FPGAs can be used for DSP processing tasks at very high clock rates. Alternatively the HERON-FPGA12 can be used to provide custom digital I/O perhaps combined with signal generation, storage and pre-processing. Related Products HEPC9 – PCI Heron Module carrier HERON-BASE2 – USB module carrier HERON-IO series HEGD series I/O modules	HERON-FPGA12 -11 speed grade FX12 FPGA

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