HUNT ENGINEERING
Chestnut Court, Burton Row,
Brent Knoll, Somerset, TA9 4BP, UK
Tel: (+44) (0)1278 760188,
Fax: (+44) (0)1278 760199,
Email: sales@hunteng.co.uk
http://www.hunteng.co.uk
http://www.hunt-dsp.com

'one of the many tools we have to help us build your system solution'

HERON-FPGA9 Virtex-II Pro FPGA module with DDR SDRAM, Digital I/O, Flash memory and USB

- **Xilinx XC2VP7 Virtex II Pro FPGA with embedded Power PC**
- **256Mbytes of DDR SDRAM connected as 2 banks of 32Mx32 @200Mhz**
- **16Mbytes of FLASH memory for PowerPC code storage**
- **FPGA configuration downloaded using the HERON Serial Bus.**
- **Choice of clocking options**
- **30 bits DIO**
- **USB host or peripheral**
- **Connects to all of the HERON FIFOs, UMI and module ID signals**
- **Flash PROM for storage of FPGA configuration data**

The HERON-FPGA9 provides a user programmable element for a HERON system that combines FPGA hardware and a programmable Power PC. The module offers two banks of DDR SDRAM offering a 3.2Gbyte/sec total memory bandwidth. It also offers 30 bits of digital I/O, a USB controller and FLASH memory intended for PPC code storage. It can be used to process data flows or as a flexible storage module.

Using the HERON serial bus allows the FPGA to be configured with a standard module configuration, or a custom one provided by the user, or HUNT ENGINEERING. After configuration the module can accept user messages over the HERON serial bus allowing registers etc to be programmed. If a more significant programming change is required a complete new FPGA configuration can be downloaded. The FLASH based configuration PROM can load the configuration data into the FPGA when it is used in an embedded system This PROM can be programmed using the standard JTAG cable available from Xilinx (such as Xilinx Parallel cable 4).

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

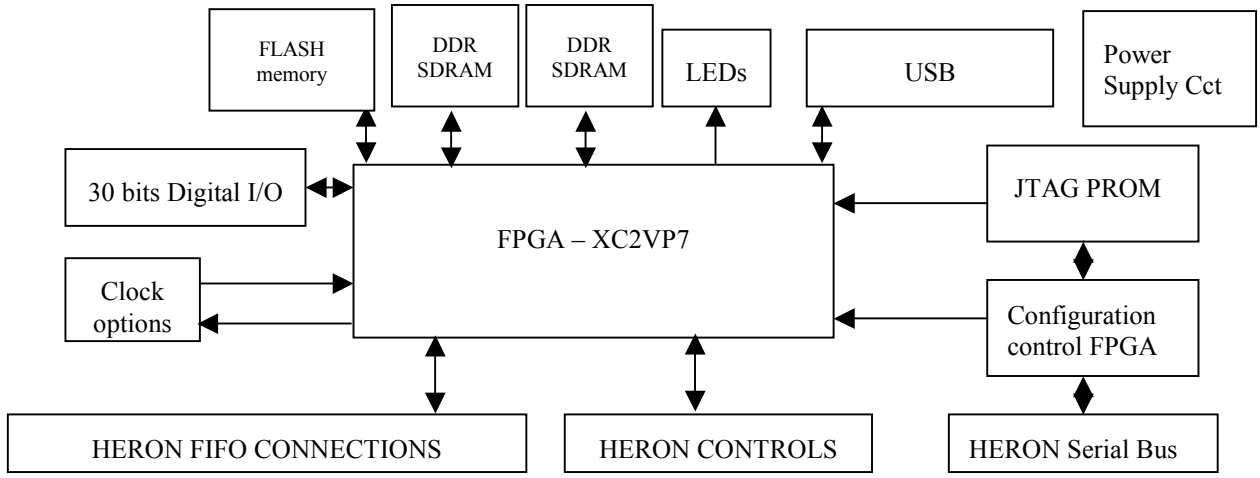
The Digital I/O has a number of voltage formats such as LVTTL or LVDS defined by the combination of a jumper setting and the configuration downloaded to the FPGA. The HERON-FPGA9 has a fast USB interface that can be programmed as a host or a peripheral.

The HERON-FPGA9 can access HERON-FIFOs at a rate of 32 bits per FIFO clock in AND 32 bits per FIFO clock out concurrently. For example with a FIFO clock of 100Mhz this is 400Mbytes/sec in AND 400Mbytes/sec out

The module has a 100Mhz oscillator connected to the FPGA, which can be divided or multiplied using the Digital Clock Managers of the FPGA. Additionally there are sockets where the user can add further Oscillator modules for specialist frequencies or jitter/stability specifications. Of course the digital I/Os and UMIs can be used to provide external clock sources to the FPGA.

NOTE VIRTEX II PRO I/Os are not 5v tolerant!

Block Diagram



Technical Specification

Processor:
Virtex II Pro – FPGA logic and Power PC hard core

Memory:
DDR SDRAM 256Mbytes organised as two banks of 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: 350Mhz (-6 speed grade)
I/O bandwidth:
e.g. HEPC9 400Mb/s in + 400Mb/s out

Software

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-FPGA9 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
HERON2-DSP module
HERON4 – DSP module
HEGD series I/O modules

Ordering Information

HERON-FPGA9
-6 speed grade

Distributor details: