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### *HERON-FPGA4V FPGA module with Digital I/O*

- **Xilinx Virtex II FPGA with 3M 6M or 8M gates**
- **FPGA configuration downloaded using the HERON Serial Bus or from on board FLASH PROM.**
- **Choice of clocking options**
- **90 user defined Digital I/Os**
- **Several serial I/O options possible -- configured by the FPGA.**
- **Connects to all of the HERON FIFOs, UMI and module ID signals**

The HERON-FPGA4 provides a user programmable FPGA element for a HERON system. This can be used to process data flows or as a flexible digital I/O 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 or USB-JTAG cable).

The Digital I/O has a number of voltage formats such as LVTTL or LVCMOS defined by the combination of a jumper setting and the configuration downloaded to the FPGA. In addition it is possible for the HERON-FPGA4 to be used as a choice of RS232, RS485 and Differential ECL serial interfaces.
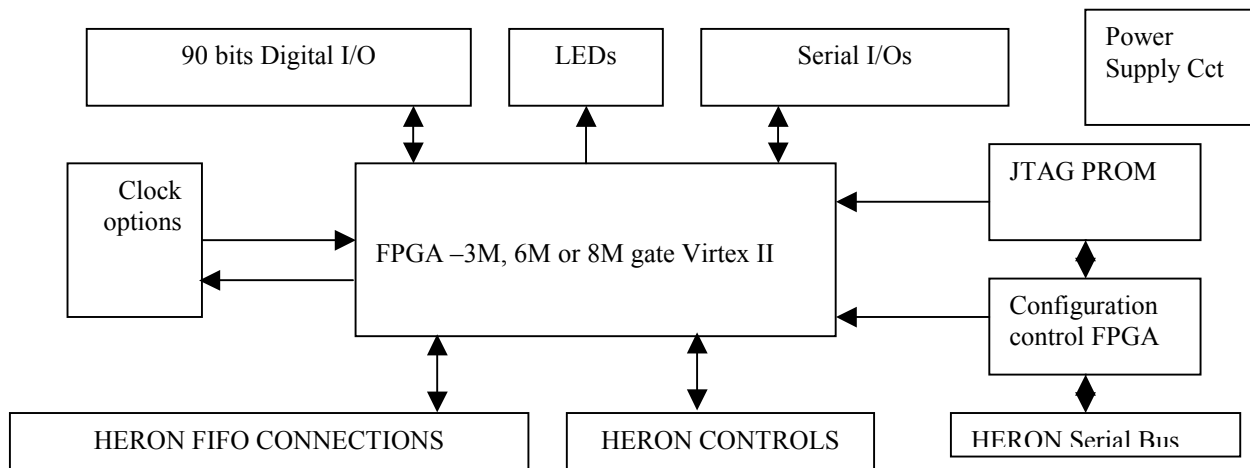
The HERON-FPGA4 can access HERON-FIFOs at a rate of 32 bits per FIFO clock in AND 32 bits per FIFO clock out concurrently. For example with a FIFO clock of 100Mhz this is 400Mbytes/sec in AND 400Mbytes/sec out.

The use of a Virtex II XC2V*000-*ff1152 part allows clock rates of up to 365Mhz, and also provides hard coded multipliers and extended I/O formats such as Low Voltage Differential Signalling (LVDS)
NOTE VIRTEX II I/Os are not 5v tolerant! Optional 100R series resistors can be fitted to make inputs 5V tolerant.

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## Block Diagram

| 90 bits Digital I/O | LEDs | Serial I/Os | Power Supply Cct |

Clock options

FPGA –3M, 6M or 8M gate Virtex II

JTAG PROM

Configuration control FPGA

| HERON FIFO CONNECTIONS | HERON CONTROLS | HERON Serial Bus |

| **Technical Specification** | **Software** | **Ordering Information** |
|---|---|---|
| **Processor**:<br>Virtex II FPGA<br><br>**Memory**:<br>None external to FPGA<br><br>**Host Bus:**<br>HERON<br><br>**Maximum Dimensions**:<br>4.0 inches x 2.5inches x 6.5mm high.<br><br>**Power requirements:**<br>5V    dependent on FPGA configuration<br>12V      Max: 0A<br>          Typ: 0A<br>-12V     Max:0A<br>          Typ:0A<br><br>**FPGA Power Consumption/Dissipation**<br>Max Bare FPGA package dissipation: 4.5W<br><br>From 5V supply: up to 17.8 with heatsink and fan options<br>FPGA PSU power can source 18.39W<br>Rest of logic uses 0.8W<br><br>**Clocking Speed:**<br>Max HERON-FPGA4      365Mhz<br><br>**I/O bandwidth:**<br>e.g. HEPC9 400Mb/s in + 400Mb/s out | Xilinx Foundation series tools are required to make a new FPGA configuration.<br>HUNT ENGINEERING provides software to download the FPGA configuration file onto the hardware, plus configuration examples.<br>HUNT ENGINEERING may offer to provide your configuration file for you, but this may be chargeable.<br><br>**Applications**<br>These fast FPGAs can be used for DSP processing tasks at very high clock rates.<br>Alternatively the HERON-FPGA4 can be used to provide custom digital I/O perhaps combined with signal generation of pre-processing.<br><br>**Related Products**<br>HEPC9 – PCI Heron Module carrier<br>HERON4 – DSP module<br>HEGD series I/O modules | HERON-FPGA4V3000-5 = 3M gates, speed grade 5<br>HERON-FPGA4V6000-4 = 6M gates, speed grade 4<br>HERON-FPGA4V6000-5 = 6M gates, speed grade 5<br>HERON-FPGA4V8000-5 = 8M gates, speed grade 5 |

Distributor details: