QUICKEST AND HIGHLY AFFORDABLE 1G, 10G AND 40G ETHERNET DEVELOPMENT WITH HTG-K816 PCIe MODULE

Extensible FPGA Framework (EFW) empowers FPGA developers with a verified set of productivity solutions, including module targeted physical interface components, device drivers and APIs for the HiTech Global HTG-K816 PCIe module.

Frameworks save months of development and debug time by enabling developers to skip the tedious and time-consuming phase of IP core integration, interface verification and firmware development.

Key Framework Features

- Integrated, hardware verified solutions for 1G/10G/40G Ethernet development
- HTG-K816 module targeted system building blocks of Ethernet MAC and PCS, PCIe application interface, AXI4 Interconnect, DDR4 and Flash Memory controllers
- Frameworks bundled with:
  - **All options:** x8 PCIe Gen3 PCIe application interface, AXI4-Lite master/arbiter for memory mapped interface, Field Upgradeable (FUp) controller for in-system Flash programming and I2C controller
  - **Selected Option Based:** Synthesizable binaries and full simulation libraries for high performance GiGE, Low Latency 10G, Ultra-Low Latency 10G, Extreme-Low Latency 10G or 40G Ethernet
- Linux source code device drivers and APIs for PCIe interface
- Unified GUI for the entire EFW with scripting support
- Lowest startup cost for developing complete 1G, 10G and 40G solutions with Kintex Ultrascale FPGA
- Simplified, single-sourced licensing for all FPGA IP cores and drivers

Frameworks Take Care of the Rest
Just Concentrate on “This” and “This”
Productivity Features

**PCIe Bus Interface and Management:** PCIe solution for the HTG-K816 x8 Gen3 PCIe interface. Framework implements a 32-bit AXI4-Lite compliant register access interface for Non-DMA (single read/write) operations.

**Parameterized AXI4-Lite Inter-connect:** Complete, fully parameterized 32-bit AXI4-Lite inter-connect with Master, Arbiter and Slave in source (Verilog) code for register access.

**Ethernet Solutions from Giga to 40Gbps:** HTG-K816 targeted and fully verified Ethernet interfaces using Gige, Optimal Latency 10Gbps and 40Gbps Ethernet solutions. Ethernet interfaces provided through Hitech Global HTG-ZR-X3SFP+ and HTG-ZR-X2QSFP+ modules. Basic L2 packet generators and checkers (netlist) included for quick interface verification through GUI interface. Gige, 10Gbps and 40Gbps UDP/IP Offload Engine (UOE) IP cores also available for hardware protocol acceleration.

**BPI Flash Upgrade through PCIe:** Program and erase the parallel Flash memory on the HTG-K816 through the PCIe interface at very high speeds. Integrating the FUp controller allows any user design to be field upgradable through PCIe.

**I2C and SPI Controllers:** Flexible I2C and SPI controllers with AXI4-Lite host interface for peripheral device management.

**Device Drivers:** 64-bit Linux device drivers in source code for register access and interrupts.

**APIs:** C (source code) language function libraries and example test register access and interrupts in source code.

**GUI Interface:** GUI application (Linux only) for control and configuration of all EFW components.

Links to IP Core and Module Resources

- 40G Ethernet IP: [http://www.hitechglobal.com/IPCores/40Gig_EthernetMAC.htm](http://www.hitechglobal.com/IPCores/40Gig_EthernetMAC.htm)
- 10G Low Latency Ethernet IP: [http://www.hitechglobal.com/IPCores/10GigEMAC.htm](http://www.hitechglobal.com/IPCores/10GigEMAC.htm)

For more information:

**Phone:** +1-408-781-8043
**Email:** info@hitechglobal.com

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**Product Ordering Codes**

- Base (No Ethernet): HTK-EFW-K816-Base
- Gige Ethernet: HTK-EFW-K816-1G
- Low Latency 10G Ethernet: HTK-EFW-K816-10G
- Ultra-Low-Latency 10G: HTK-EFW-K816-10GU
- Extreme-Low Latency 10G: HTK-EFW-K816-10GEx
- 40G Ethernet: HTK-EFW-K816-40G