HiprAcc™ NC100

Intel Agilex Low Profile PCIe Card
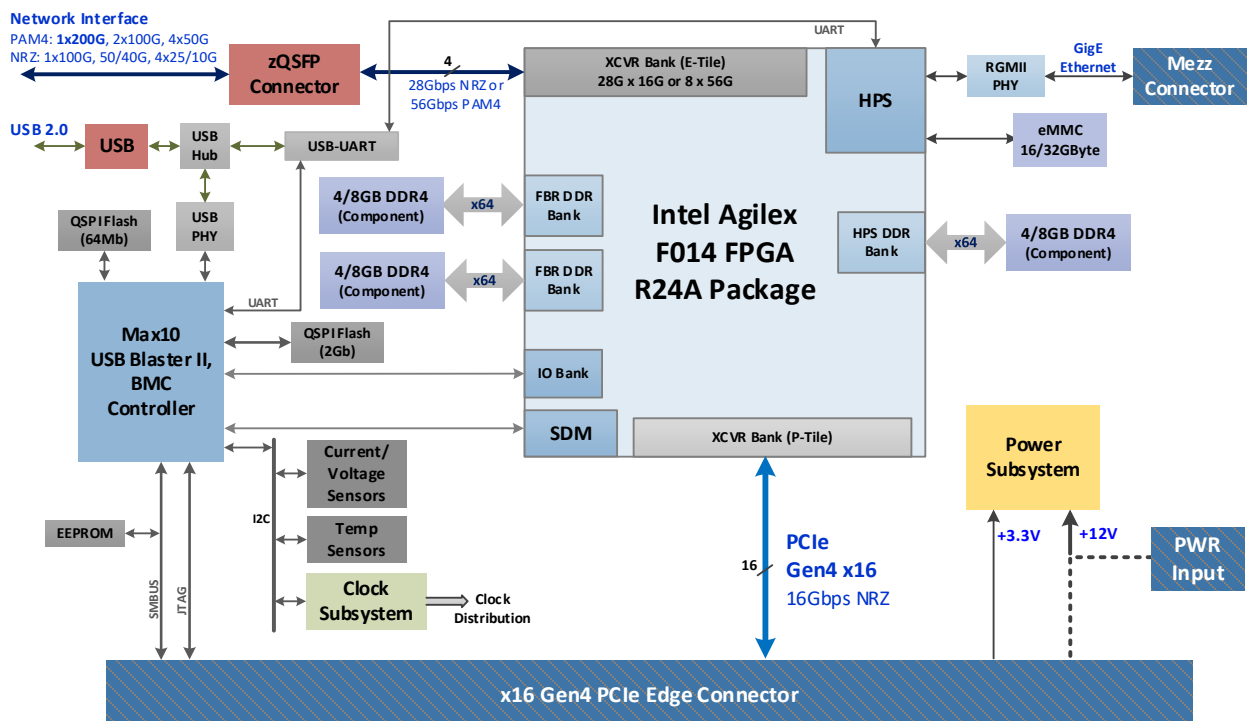## Product Brief (HTK-AGFxx-LP-PCIe)

Key Features

- PCIe low profile (half-length, half-height) form factor (6.6" x 2.46")
- Available with single-slot and double-slot passive and active cooling configurations
- Agilex AGF014 and AGF012 device support
- 16x PCIe Gen4 (256Gbps) host interface
- Up to 200Gbps network interface via single zQSFP 56Gbps PAM4 and 28Gbps NRZ
- 3 banks of 64-bit DDR4 memory (12GB/24GB)
- Agilex ARM HPS support with 16/32GByte eMMC and option for direct GigE network interface to HPS (requires full-height bracket with RJ-45 adapter)
- Up to 75W card load with edge power and up to 125W card load with 6-pin PCIe power connector
- Integrated USB Blaster II, Agilex debug and module monitor interfaces through a single micro-USB connector on PCIe bracket
- Flexible clocking architecture with support for external synchronization/clock interface
- Extensive power, voltage and temperature telemetry with SMBus based access for host server board management controller (BMC)
- Intel OFS, OpenCL and oneAPI support for high level abstracted development flow

Highest network and PCIe performance low profile PCIe Data Center accelerator card with Intel's 10nm Agilex FPGA. Only module with 200Gbps (4x56Gbps PAM-4) Ethernet interface and 16x PCIe Gen4 support.

Target Applications

- Designed for Data Center workloads and scale out architectures
- Machine learning, network, compute and storage acceleration
- Bump-in-Wire networking and high-performance computing

Interfaces

- x16 Gen4 PCIe card edge Interface
    - Backwards compatible with Gen3
    - Supports bifurcation as two x8 Gen4/Gen3
    - Gen2 and Gen1 supported via link down-training
- zQSFP+ (QSFP56) Network interface port
    - PAM4: 1x 200G (Soft IP, 4 lanes)
    - PAM4: 2x 100G (E-Tile hard IP, 2 lanes per port)
    - PAM4: 4x 50G (Soft IP, 1 lane per port)
    - NRZ: 1x 100G (Soft IP, 4 lanes)
    - NRZ: 2x 50G (Soft IP, 2 lanes per port)
    - NRZ: 1x 50G (Soft IP, 4 lanes)
    - NRZ: 1x 40G (Soft IP, 4 lanes)
    - NRZ: 4x 25G/10G (E-Tile hard IP)

    Hardware verified 200G/100G/50G/40G Soft IP Cores available from Hitek Systems

- Unified micro-USB 2.0 interface with on-board USB hub for:
    - Integrated USB Blaster II
    - UART interface to HPS or FPGA fabric (DIP switch selectable)
    - UART interface to module control CPLD for card monitor and control
- 14-pin header for HPS GigE network interface (requires full-height bracket with RJ-45 adapter)

Product Ordering Codes

AGF-NC100-B34-00: F014 FPGA, w/ HPS, -2 XVRs, -2 Core, 12GB, 16GB eMMC, passive SW heatsink

AGF-NC100-B34-01: F014 FPGA, w/ HPS, -2 XVRs, -2 Core, 24GB, 32GB eMMC, passive SW heatsink

For sales or more information:

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Memory, Storage and Configuration Interfaces

- Three 64-Bit DDR4 interfaces, 4GB or 8GB each component memory
- One DDR4 port routed to HPS accessible banks
- 16/32GByte eMMC storage device for HPS
- 2Gbit QSPI flash for FPGA configuration connected to the module control CPLD
- x8 AVST configuration interface from module control CPLD
- 64Mbit QSPI flash for module control CPLD processor

On-board Development and Debug Support

- Integrated USB Blaster II
- UART access to the FPGA and module control CPLD
- Temperature, voltage and current monitoring sensors to module control CPLD
- Module input power measurement for profiling and verification in target servers/environment
- Automatic over-temp FPGA de-configuration
- Support for server Board management controller (BMC) with MTCP protocol support via SMBus through integrated module control CPLD processor *(Planned)*
- 4 bi-color LEDs for network port interface status
- Tri-color module status LED at PCIe bracket edge
- Multiple on-board diagnostic and status LEDs

Power and Heatsink Options

- Options for edge power or 6-Pin PCIe connector power input
- 75W single slot (PCIe edge powered) option with passive heat sink
- 125W double slot (6-pin PCIe connector powered) option with passive or active (dual fan) heat sink