

### OVERVIEW

Hybrid Memory Cube (HMC) is a high-performance memory solution that delivers an unprecedented combination of bandwidth, random access performance, power efficiency, and reliability. And now the breakthrough memory technology is available in the SB-850, a single-board supercomputer/blade server.

The SB-850 is a full height, GPU-length, PCI Express board featuring up to eight HMC devices and a single high-performance Xilinx UltraScale FPGA. To provide for maximum flexibility, the HMCs can be configured (and reconfigured) for multiple use cases—whether used independently or in daisy-chain fashion. These 2-link 4GB HMC chains are configured as follows:

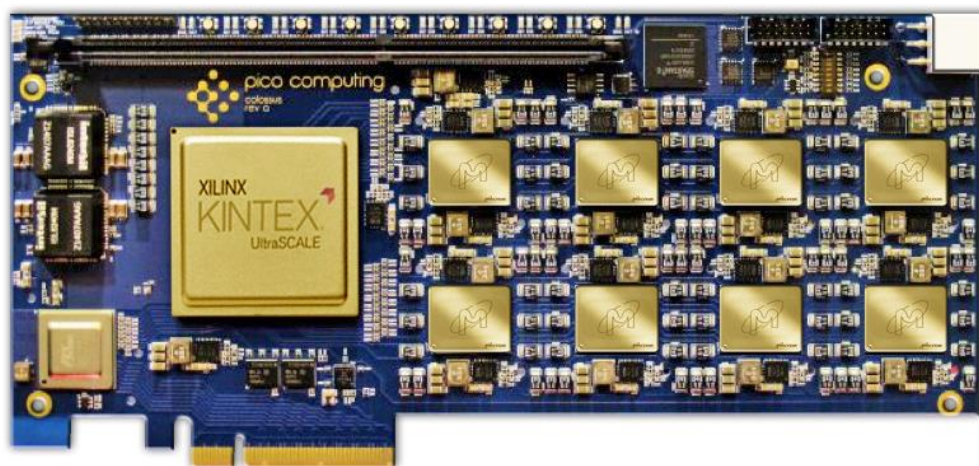
- One x16 lane (full width) with up to four HMCs chained.
- Two x8 lanes (half-width) with two HMCs accessed independently or chained, with the option to chain up to four HMCs.

The fully-integrated HMC controller IP (residing on the SB-850's FPGA) unlocks the HMC's power, providing tremendous benefits for memory-bound applications, and particularly those that require high bandwidth and fast random access.

The SB-850 is not only easy to use, it's scalable, too: configure a single SC6/4U chassis with up to eight SB-850 boards to yield the best-performing, massively parallel, high bandwidth FPGA-accelerated system available in a PCI Express framework.

### SPECIFICATION SUMMARY

- GPU-sized PCI Express board
- Features Micron's Hybrid Memory Cube
- Up to eight 2-link 4GB HMC devices
- Configured as independent memory devices and/or daisy-chained
- Integrated full-feature HMC controller
- 120 GB/s of memory bandwidth
- Xilinx UltraScale Kintex KU115 FPGA with 15G high-speed transceivers
- Simple FPGA bitstream loading from host via PCI Express
- Up to 16GB DDR3 dual-rank DIMM
- Complete development environment (HMC controller, Linux drivers, Framework, DMA engine, PCIe, APIs, test apps)
- Low power, high performance, and scalable



## Specifications

### FORM FACTOR

- Standard height, GPU length PCIe Card
  - Length: 9.5"
  - Height = 4.37"
- Double-slot width with heat sink
- x8 or x16 PCIe mechanical slot required

### HOST INTERFACE

- 8-Lane PCIe Gen 3 from Host to FPGA

### FPGA

- Xilinx UltraScale Kintex KU115

### HMC MEMORY

Up to eight 4GB 2-link devices

### DDR3 MEMORY

- Up to 16GB dual-rank DIMM

### ELECTRICAL

- x8 PCI Express Gen 3
- Input Power: 12.0V 8-pin PCIe power connector & PCIe slot
- FPGA power dissipation dependent upon user application

### ENVIRONMENTAL

- Storage Temperature: -20°C — 100°C
- Operating Temperature: 0 — 70°C (commercial grade)

### STATUS LEDS

- HMC link state
- FPGA configuration
- RGB user LED
- PCI Express link states

### SYSTEM MONITORING

- Temperature
- Voltage

### QUALITY

- Manufactured to IPC610-Class 2 standard
- Manufactured in ISO9001 facilities
- RoHS compliant

### COOLING

- Natural convection/fansinks

## Ordering & Deliverables

### ORDERING

For more information, to request a quote or place an order, please contact Pico Computing.

### DELIVERABLES

- SB-850
- Design Framework
- Interface to memory
- Design samples/examples

### CONTACT

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