

SB-801

HPC Blade Server with Hybrid Memory Cube

OVERVIEW

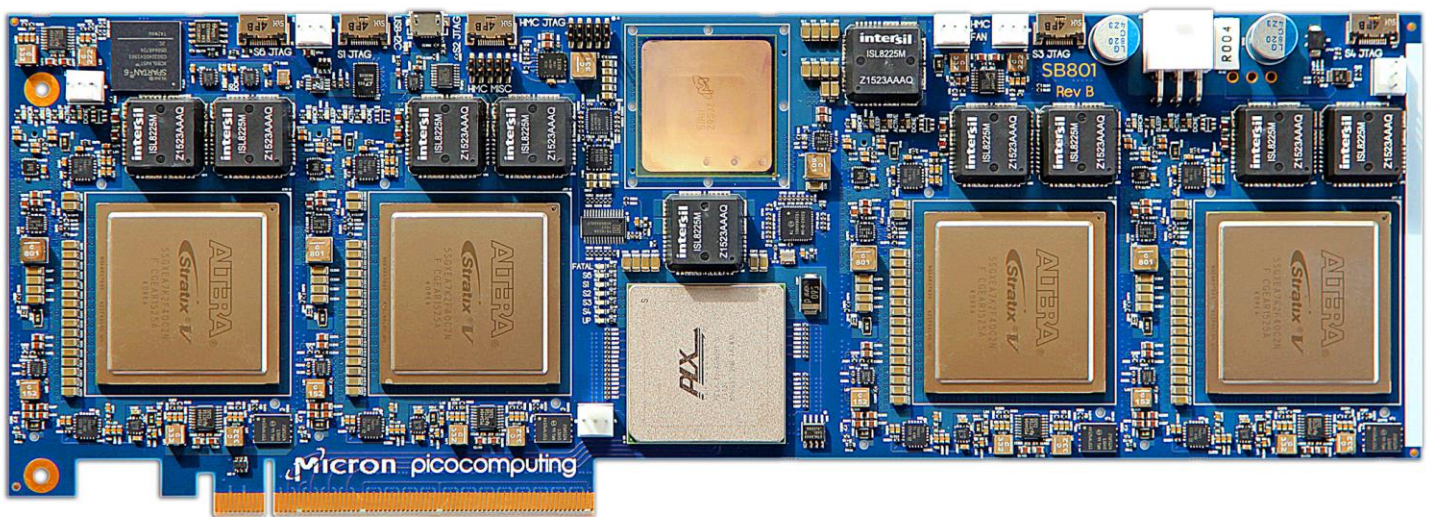
The SB-801 is a full height, full length, PCI Express board featuring an array of four Stratix V devices, each sharing a link of the 4G Hybrid Memory Cube (HMC). Each Stratix V device has a x8 PCI Express link to an onboard PCI Express switch. The upstream connection of the switch is a x16 PCI Express edge connector. In addition to the HMC, the SB-801 features a total of 16GB of DDR3L SDRAM, high-speed FPGA-to-FPGA interconnect, and easy configuration of the Stratix V devices with automatic configuration download via PCIe.

The SB-801 provides high-bandwidth performance sufficient to run the HMC at full speed—far surpassing the computing limitations presented by serial processors. In other words, while the Micron HMC has knocked down the memory wall, with the SB-801, Pico Computing has knocked down the CPU wall.

Configure a single 4U chassis with eight SB-801 boards to yield the highest bandwidth FPGA-accelerated system in existence within a PCI Express framework.

SPECIFICATION SUMMARY

- *Features Micron's Hybrid Memory Cube*
- *240 GB/s of memory bandwidth*
- *16 full-duplex lane connections from the HMC to each of the four Stratix V FPGAs*
- *15 Gb/s transceivers*
- *4GB Micron DDR3L SODIMM dedicated to each of the four FPGAs (32GB total)*
- *PCI Express Gen 3 full duplex switch*
 - *x16 Gen3 PCI Express to the host*
 - *x8 Gen3 PCI Express link to each Stratix V FPGA*
- *Side-band high-speed FPGA-to-FPGA interconnect*
- *Simple FPGA bitstream loading from Host*



Specifications

FORM FACTOR

- Standard height, full length PCIe Card
 - 4.383 x 12.289 (inches)
 - 111.315 x 312.128 (mm)
- Double-slot width with heatsink
- x16 PCIe slot required

HOST INTERFACE

- 16-Lane PCIe Gen 3 to Host
- 8-Lane PCIe Gen 3 to each FPGA

FPGA

- Four (4) Altera Stratix V A7 FPGAs

DDR3 COMPONENT MEMORY (Backside)

- Four (4) DDR3L SDRAM SODIMMs (x72, ECC):
 - 4GB density each SODIMM (16GB total)
 - 51.2GB/s total DDR3L bandwidth

ELECTRICAL

- x16 PCIeExpress 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 – 85°C for commercial grade -40°C – 100°C for industrial grade

STATUS LEDS

- HMC link state
- FPGA configuration
- USB to I2C power
- PCI Express link states

SYSTEM MONITORING

- Stratix V die temperature
- HMC die temperature
- Total system power
- HMC power
- Stratix V power
- DDR3L power

QUALITY

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

COOLING

- Natural convection/fansinks

Ordering & Deliverables

ORDERING

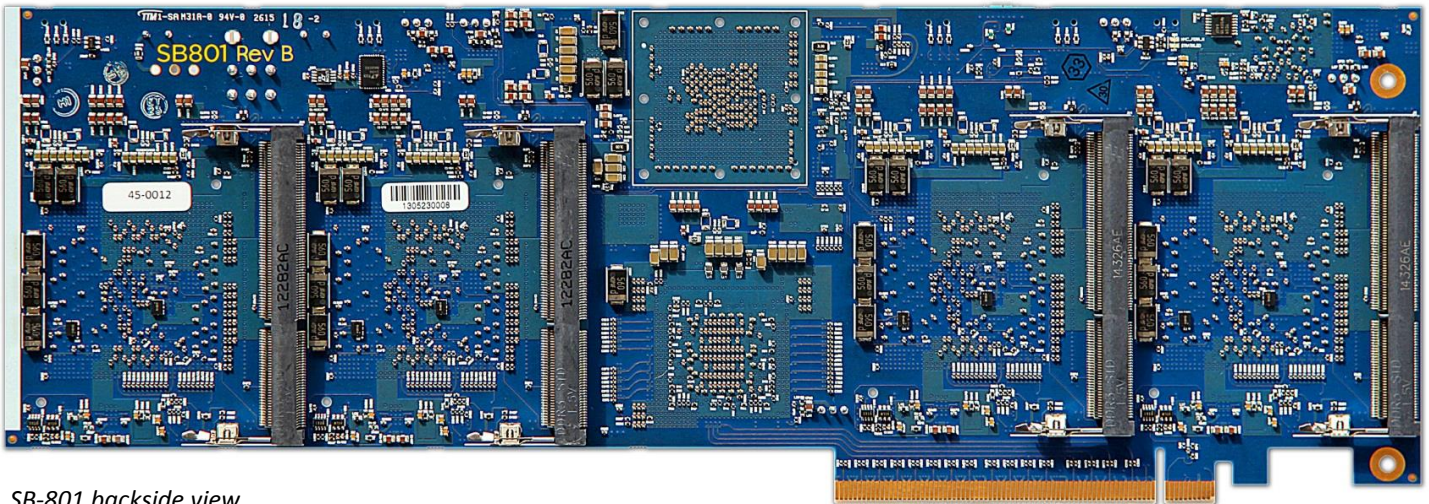
For more information, to request a quote or place an order, please contact Pico Computing.

DELIVERABLES

- SB-801
- Design Framework
- Interface to memory
- Design samples/examples

CONTACT

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SB-801 backside view