

PowerBlock 50

Ultra-Compact Embedded Computing Chassis

- Full-size chassis performance in 1/9 the volume of full ATR, 1/6 the volume of short ATR for SWaP-constrained applications
- Six processing slots supporting up to 700 GFLOPS per system
- State-of-the-art liquid or conduction cooling for up to 300W power
- Designed for ruggedized deployments in harsh environments



The PowerBlock® 50 Ultra-Compact Embedded Computing Chassis from Mercury Computer Systems is designed for systems delivering maximum performance in minimal size. It provides full ATR chassis performance in 1/9 the volume, deployable in even the most space-constrained aerospace/defense and commercial applications.

Highly Configurable

The PowerBlock 50 can be configured with a combination of modules supporting Intel® x86 processors, field-programmable gate arrays (FPGAs), and graphics processing units (GPUs). Fully loaded, it can deliver up to 700 GFLOPS of compute performance. The chassis is ultra-compact, measuring only 4.7" x 5.8" x 5.8" (120 mm x 149 mm x 148 mm). It is designed throughout to isolate its internal electronics from all external environmental and physical conditions, allowing deployments in harsh environments.

The switched backplane provides four lanes of PCI Express® bandwidth to each of up to six plug-in modules, including:

- Single-board computing modules, coupled with dedicated I/O daughtercards, which monitor and manage the system and interface to external equipment over serial protocols and/or Ethernet
- High-performance computing modules featuring the latest FPGAs, designed to meet the most demanding application requirements for data processing and I/O
- GPU modules that give Intel processors access to hundreds of GFLOPS of stream computing power across the PCI Express switch fabric
- SATA hard disk or solid state storage drives providing ample, expandable storage for the system

The high-performance any-to-any PCI Express switch fabric delivers high-throughput, non-blocking, serial switching between processing and I/O nodes. External I/O can be customized to accommodate virtually any type of digital or analog I/O.

Rugged Design

The PowerBlock 50 chassis is designed for rugged deployments, with features including o-ring sealing for pressure, humidity and EMI isolation, high-reliability connectors, extended temperature ranges, and module wedge locks for shock and vibration immunity.

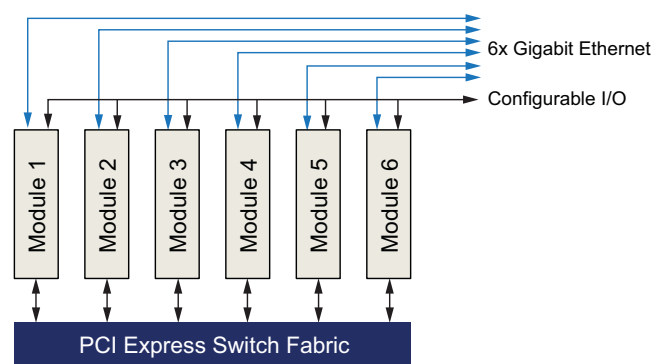


Figure 1. PowerBlock 50 configuration capability

Specifications

Physical

Size (excluding connectors)	120 mm x 149 mm x 148 mm (4.7" x 5.8" x 5.8")
Weight (excluding connectors)	
No slots populated	~2.5 kg (5.5 lb)
6 slots populated, maximum	~4.6 kg (10 lb)

Available Processor Modules

Intel® x86 architecture (SBC1101)	
Intel EP80579 SoC at 1.20 GHz, IA-32 core	
512-MB DDR2 SDRAM and 2-GB flash	
Graphics coprocessor (GPM1100)	
AMD M96 GPU at 550 MHz	
1-GB DDR2 SDRAM	
PowerQUICC III MPC8548E SoC at 1.33 GHz (SBC1100)	
256-MB DDR2 SDRAM and 32-MB flash	

Available FPGA Modules

Xilinx Virtex-4 FX60 (SCFE1100)	
256-MB DDR2 SDRAM and 32-MB flash	
Xilinx Virtex-4 FX100 (SCFE1101)	
512-MB DDR2 SDRAM and 64-MB flash	
Xilinx® Virtex™-5 XC5VLX30T (SCFE1102)	
256-MB DDR2 SDRAM and 32-MB flash	
Custom engineering available on request.	

Available External I/O

Ethernet I/O interface	Gigabit Ethernet
Serial I/O interface	USB, RS-232, RS-422, RS-485
Video I/O interface	DVI-D, VGA
Analog I/O interface	14-bit quad ADC/DAC
General-purpose I/O interface	LVDS, LVTTTL
Custom engineering	
I/O daughtercard design kit available on request.	
Custom services available on request.	

Available Internal Storage

Standard 2.5" SATA hard-disk compatible	
Hard-disk drive (HDD)	250-GB (HDD1250)
Solid-state disk (SSD)	250-GB (SSD1250)

Internal Communications

PCIe x4 switch fabric	8 Gbps full-duplex per card
Processor and I/O interconnect	Module-dependent

Environmental

Temperature	
Operating	-30°C to +50°C
Storage	-40°C to +85°C
Humidity	15-90% RH non-condensing
Cooling	
Liquid cooling	Up to 300W heat dissipation
	Quick disconnect, dripless connectors
Operating temperature range stated is for the liquid-cooled chassis.	

Power

Power and I/O connectors	
Ultra-miniature with MIL-STD-38999 performance	
Power supply unit	360W
Electrical	28V DC input

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2210.00E-0609-DS-pb50chassis



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