



RIVYERA S6-LX150

128 FPGA Next Generation Reconfigurable Computer

RIVYERA™

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RIVYERA, developed as a direct successor to COPACOBANA, consists of a 16-slot backplane equipped with 16 FPGA-cards. Each of the FPGA-cards carries up to 8 high-performance FPGAs interconnected by a high-throughput bus system.

Using 128 Spartan-6 LX150 FPGAs in its standard configuration, RIVYERA S6-LX150 takes application-specific computing to a new level and provides high-density supercomputing resources to a wide audience. Providing local RAM, RIVYERA offers sufficient memory for all types of computation and data.

Each RIVYERA has an integrated off-the-shelf eATX-based high-performance PC that can be used for heterogenous computing and acts as an interface to the rest of the network. The PC and the FPGA supercomputer can be internally connected through up to four PCI-Express*-based interface cards.

* (optional; further upgrades possible)

*** 128 FPGA setup

**** bto

Key Features

- 8 to 128 Spartan-6 LX150 FPGAs per machine
- up to 30000 CPU cores performance (application-specific)
- up to 65 GB distributed DDR3 memory, 4 TB distributed SDHC
- Gigabit connectivity, unlimited scalability
- Green super-computing at 1280 Watt***, no external cooling necessary
- Service-contracts with up to 7 years duration
- IP-cores and implementation support available
- Mixed FPGA setups are supported; individual addressing of FPGAs as well as broadcasting possible; FPGAs runtime reprogrammable



Application-specific computing for all areas with extraordinary processing requirements.

Full Specification

Processing

- 8 to 128 FPGAs per RIVYERA
- Xilinx Spartan-6 LX150 (XC6SLX150)
- different FPGA models possible as custom development option
- 512 MByte DDR3-333 RAM per FPGA
- optional: 32 GByte SDHC FLASH per FPGA
- 16 slots backplane for cards equipped with SciEngines' high-throughput interface
- 1 one lane PCI-Express Gen-1 based interface card, optional: Up to 4 PCIe interface cards possible

Host PC

- off-the-shelf server-grade PC (e.g. Xeon E5 1620v4 or better, 32GB DDR4 RAM, 1TB SATA hard disk drive)
- 10/100/1000BASE-T (Gigabit) RJ-45 ethernet interface (supporting jumbo frames)
- Integrated IPMI 2.0 and KVM with dedicated LAN (offered interface depends on configuration)

Included Software and API

- Linux based operating system (typically: CentOS 7.2 or later)
- SciEngines API (supports multiple design flows including VHDL and C/C++)
- API compatible with Xilinx ISE and all major synthesis design flows
- Communication Framework
- Communication Test
- Controller IP core
- Application development software
- Optional: Xilinx ISE 14.7 or later (additional license required)

Form Factor, Power and Thermal Technology

- 4 HU (175mm), 19-inch (447mm), full size (840mm)
- Weight: depends on configuration, e.g. 81,7 pounds (37,1 kg)
- Output power: 1280W (redundant power supply)
- optional 3000W power supply available
- Line voltage: Universal input (100V to 240V AC), power factor corrected
- Maximum input current: 32.0A (100V to 120V) or 16.0A (200V to 240V)
- Frequency: 50Hz to 60Hz, single phase
- Fits EIA-310-D-compliant, industry-standard 19-inch four-post racks and cabinets

Environmental

- ROHS compliant
- Cooling: Ventilation
- Operating Temperature: 10° to 35° C (50° to 95°F)
- Non-operating Temperature: 5° to 70° C (41° to 158° F)
- Operating Relative Humidity: 8% to 60% (non-condensing)
- Non-operating Relative Humidity: 5 to 85% (non-condensing)

Ordering, Deliverables and Service

- RIVYERA, incl. integrated PC
- Rack mounting hardware
- Power cords and I/O cable (depends on option)
- Printed and electronic documentation
- API, Examples, Drivers and Utilities CD-ROM
- 30 days product support (technical support, support via phone and mail)
- 1 year warranty
- Optional: Service contracts with up to 7 years duration
- Optional: IP cores

Additional information available at

www.SciEngines.com or info@SciEngines.com

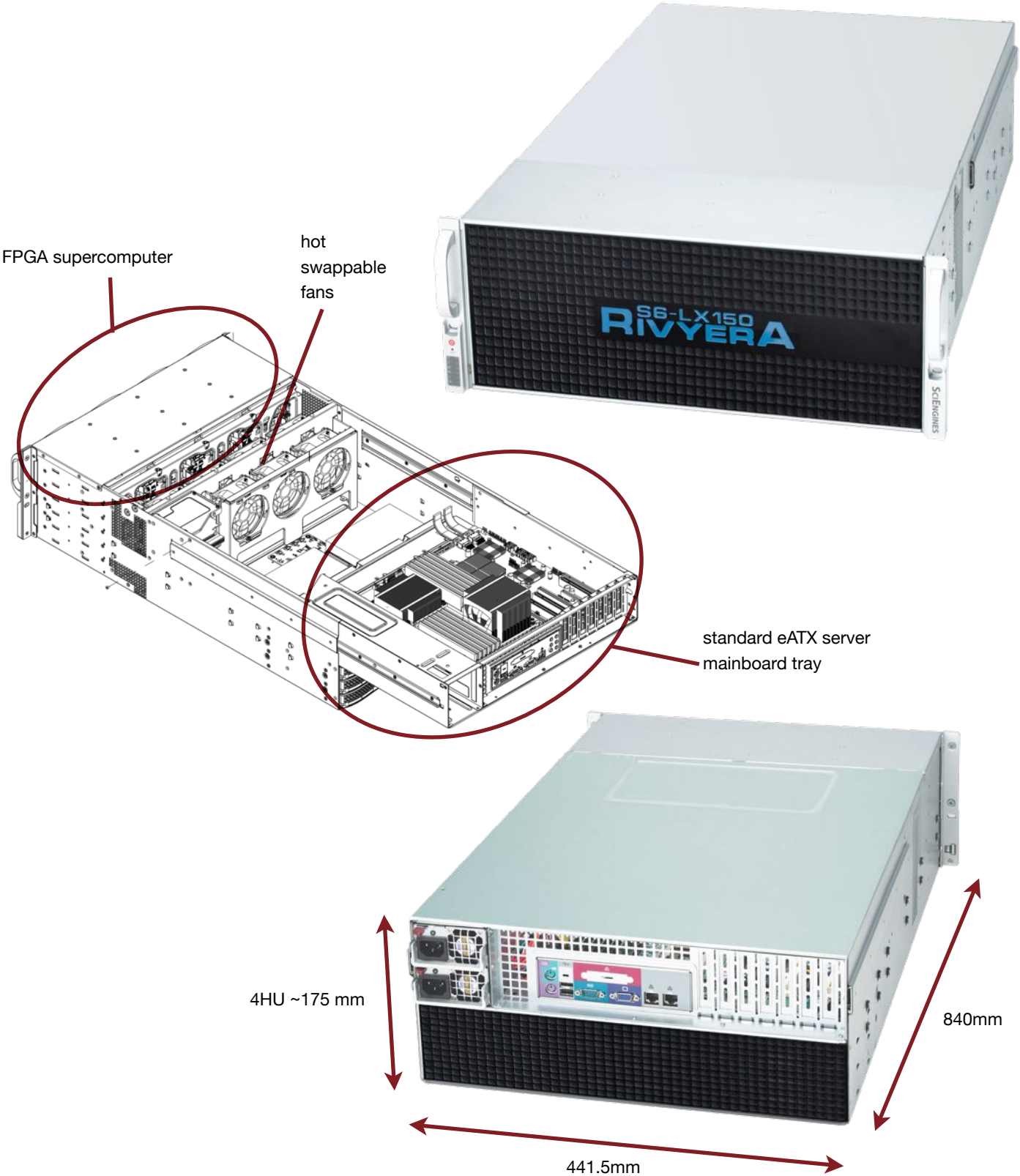


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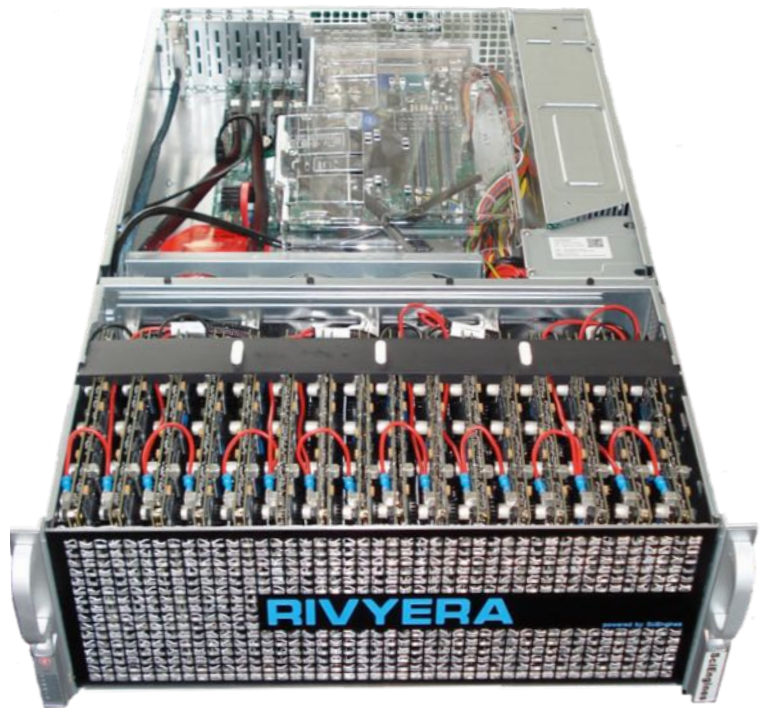
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ABOUT SCIENGINES



Company Background

SciEngines is a young, innovative company located in Kiel, Germany. The company was founded in 2007 on the vision to satisfy the computational requirements in **science** and **engineering**.

We believe that the application of reconfigurable FPGA computing technology to the area of High Performance Computing (HPC) is an attractive alternative to unaffordable, energy-wasting and often inaccessible supercomputers. Our FPGA-based, application-specific HPC solutions are designed to scale-up the advantageous cost-performance ratio and power-performance ratio of FPGAs into the massively parallel level.

Satisfied customers on 4 continents include small and large businesses, academic institutions and government agencies.

FPGA Computers

- New levels of computing capability with thousands of CPU cores performance
- Green supercomputing at 1-2% power-consumption of equivalent CPUs
- Close to linear scalability from 16 FPGAs (computer) to 2304 FPGAs (rack)
- Versatile solutions, offering the type of memory and processing optimal for almost every computing requirement
- Significantly reduced total costs due to 3-10x lower purchase and 10-20x lower running costs, compared to PCs of similar performance

Application Areas

- Bioinformatics
- Cryptanalysis
- Financial mathematics
- Graphics and signal processing
- System modeling

Your Custom Design Provider

We are your hardware producer and developer of custom optimized solutions. Selling FPGA Computers like RIVYERA is one aspect of our business. Additionally, we are your engineering and development partner and provide customized, massively parallel hardware solutions.

- System architecture
- VHDL Design
- EMC compliant schematic entry and layout
- Rapid Prototyping
- Production

Your Algorithmic Assistant

Creating efficient algorithms - in VHDL or any other programming language - can be a challenge. Therefore, we offer to design, implement and verify customer-specific algorithms in reconfigurable logic. Our designs are typically targeted to FPGAs or CPLDs and aim for a maximum utilization of parallel hardware.

Should you desire external expertise in evaluating or creating software for FPGA-based architectures, we are happy to evaluate the suitability of your application and provide an estimate of implementation effort, as well as likely performance, free of charge.

Your Qualified Consultant

We lend you a helping hand in hardware and software solutions in parallel computing. We are glad to support definition and implementation of your high performance computing strategy and applications. In addition, we are happy to provide access to our network of specialist partners in the community of reconfigurable parallel computing, scientific computing and cryptography.



Imprint

Responsible for content

SciEngines GmbH
Am Kiel-Kanal 2
D-24106 Kiel (Germany)

Phone:	+49(0)431-9086-2000
Fax:	+49(0)431-9086-2009
E-Mail:	info@SciEngines.com
Internet:	www.SciEngines.com

CEO:	Gerd Pfeiffer
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Commercial Register:	Amtsgericht Kiel
Commercial Register No.:	HR B 9565 KI

VAT- Identification Number:	DE 814955925
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