OP5650 XG

Real-Time Digital Simulator

XG series

Introducing OPAL-RT's versatile real-time digital simulator : the OP5650XG

The OP5650XG combines the power and reliability of the latest Intel® Xeon® Scalable Processors - 2nd Generation processing cores with the high-performance latest generation Xilinx® Artix®-7 FPGA to address a wide range of Hardware-in-the-Loop (HIL) and Rapid Control Prototyping (RCP) applications with OPAL-RT's RT-LAB or HYPERSIM software platforms.

The OP5650XG comes in two versions: as a full simulator (OP5650XG) or as an I/O expansion chassis (OP5650V3-IO-REMOTE).

High I/O Density

Benefit from up to 256 I/Os in a compact 4U rackmount platform to perform high-fidelity real-time electromagnetic transient (EMT) simulation of large and complex systems.
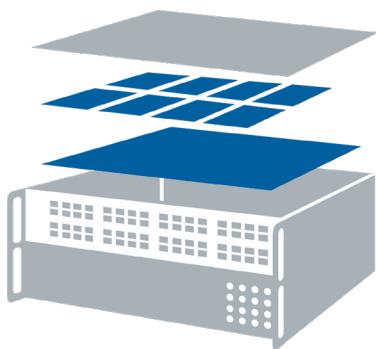
High-Speed Connectivity

Take advantage of the high-speed communication ports to connect your system with Xilinx Aurora-compatible amplifiers or controllers.

Expandability

Easily expand your simulation and I/O capacities using other OPAL-RT simulators and expansion units with minimal latency through OPAL-RT real-time and multi-system expansion links.

PRODUCT HIGHLIGHTS

• **Exceptional computing power** available in a single chassis with 4, 8 or 16 Intel® Xeon® processing cores.

• **High density FPGA-driven I/O carrier board** accommodates 8 analog and digital I/O modules with signal conditioning to support a combination of up to 128 fast analog or 256 digital channels

• **High speed connectivity** via 4 fiber optic SFP ports for 1 to 5 Gbps communication with external devices or I/O expansion units

• **Extensive communication protocol support** for various industries, including: IEC61850, C37.118, DNP3, CAN Bus, ARINC-429 and more, via up to 5 PCI/PCIe interface cards

• **Convenient front-panel RJ45/mini-BNC interface** for monitoring, and standard DB37 connectors on the back panel for robust interfacing with external devices

GENERAL SPECIFICATIONS

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CPU	Available with the following configuration: Intel Xeon 4 cores, 2.6 GHz Intel Xeon 4 cores, 3.8 GHz Intel Xeon 8 cores, 3.8 GHz Intel Xeon 16 cores, 3.3 GHz
FPGA	Xilinx® Artix®-7 FPGA, 200T
Software Compatibility	RT-LAB and HYPERSIM suites RT-XSG support for custom FPGA applications
High speed communications (*)	4x SFP socket, 1 to 5Gbps, duplex multi-mode optical fiber (50/125 or 65/125μm) Xilinx Aurora compatible Up to 5 PCI or PCIe interface cards
Performance	See available benchmarks online: https://wiki.opal-rt.com/display/DOCHS/Performance+Benchmarks
Dimensions (HxWxD) & weight	17.8 x 47.7 x 49.3 cm (7" x 18.8" x 19.4")) Simulator: 9.07 - 15 Kg (20 lbs to 33 lbs) Expansion chassis: 4.54 - 5.9 Kg (10 lbs to 13 lbs)

(*) Exact number of PCI/PCIe cards depends on mechanical constraints.

I/O INTERFACES

Standard signal conditioning modules *

Digital output (OP5360-2)	32 channels, push-pull, 65 ns typical propagation delay, 5v to 30v, adjustable via user-supplied external voltage, 50 mA max, short-circuit protected, galvanic isolation
Digital input (OP5353)	32 channels, 4v to 30v, 3.5mA min, 40 ns typical propa-gation delay, galvanic isolation
Analog input (OP5340)	16 channels, 16 bits, 400kS/s /ch simultaneous sampling, ±20V true differential input, 400 kOhms input impedance.
Analog output (OP5330)	16 channels, 16 bits, 1MS/s/ch simultaneous output, ±16V, 10 mA (20 mA with optional fast driver), short-circuit protected
Analog input (OP5342)	16 channels, 16 bits, 2 MS/s simultaneous sampling, ±20V true differential input, 1 MΩ input impedance.
Analog output (OP5332)	16 channels, 16 bits, 2MS/s/ch simultaneous output, ±16V, 10 mA, short-circuit protected

* Additional modules available, including TTL or LVDS Digital I/O and high speed Analog Input/Output modules.
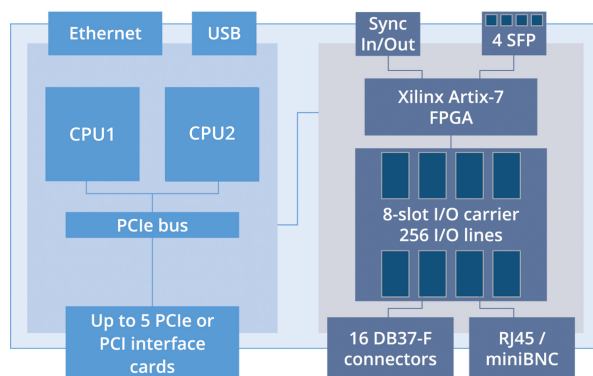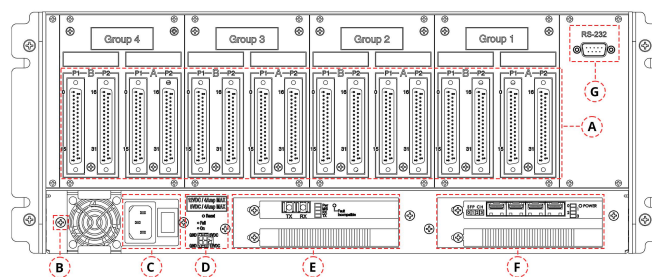

OP5650XG SIMULATOR

FRONT VIEW
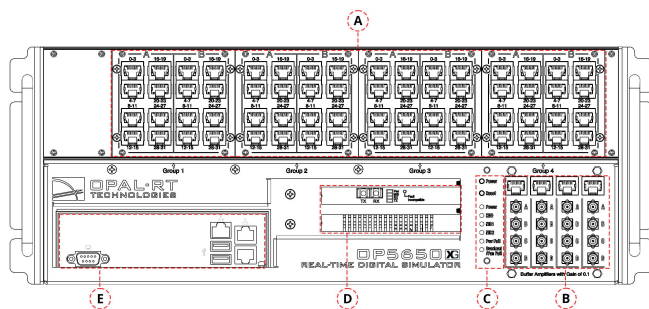
A & B. RJ45 to BNC monitoring interfaces
C. Target computer monitoring interface
D. Fiber optic synchronization board and PCIe connector
E. Standard computer connectors

REAR VIEW

A. DB37F I/O connectors
B. Ground Screw
C. Power connector and switch
D. Power reset and power source connector
E. PCI or PCIe connectors
F. PSFP ports and LEDs status
G. Serial port RS-232

I/O AND CONNECTORS

ABOUT OPAL-RT TECHNOLOGIES

OPAL-RT is the world leader in the development of PC/FPGA Based Real-Time Digital Simulator, Hardware-In-the-Loop (HIL) testing equipment and Rapid Control Prototyping (RCP) systems to design, test and optimize control and protection systems. used in power grids, power electronics, motor drives, automotive industry, trains, aircraft and various industries, as well as R&D centers and universities.

OPAL-RT
TECHNOLOGIES

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