OP5650XG

Real-Time Digital Simulator

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® GOLD 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

CPU	Available with the following configuration: 4 CORES: 1x Intel Xeon Gold 5222 (4 cores - 3.80 GHz) 8 CORES: 2x Intel Xeon Gold 5222 (4 cores - 3.80 GHz) 16 CORES: 2x Xeon Gold 6234 (8 cores - 3.30 GHz) 4 CORES: 1x Xeon Silver 4112 (4 cores - 2.60GHz)
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)

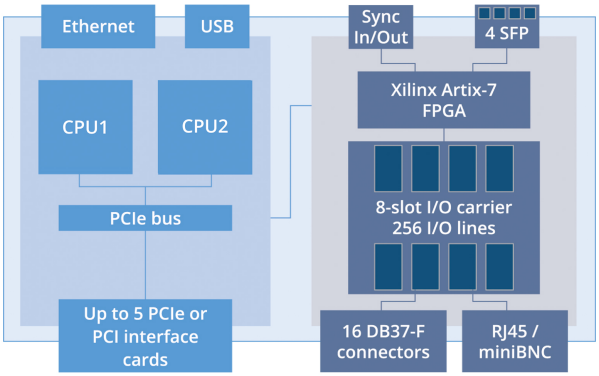
(*) Exact number of PCI/PCIe cards depends on mechanical constraints.

I/O INTERFACES

Standard signal conditioning modules *

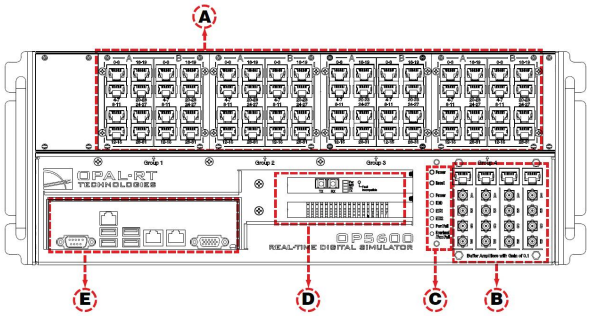
Digital output (OP5360-2)	32 channels, push-pull, 65 ns typical propagation delay, 5v to 30v, adjustable via user-supplied external voltage, 50 mA max, short-circuit protected, galvanic isolation
Digital input (OP5353)	32 channels, 4v to 30v, 3.5mA min, 40 ns typical propa-gation delay, galvanic isolation
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



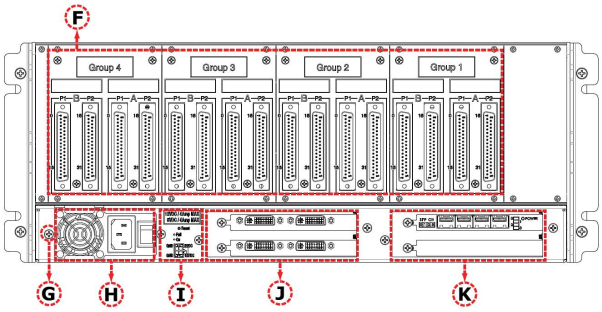
A & B. RJ45 to BNC monitoring interfaces

C. Target computer monitoring interface

D. Fiber optic synchronization board and PCIe connector

E. Standard computer connectors

REAR VIEW



F. DB37F I/O connectors

G. Ground Screw

H. Power connector and switch

I. Power reset and power source connector

J. PCI or PCIe connectors

K. PSFP ports and LEDs status

I/O AND CONNECTORS