

# OP5705 XG

## Real-Time Simulator



### Introducing OPAL-RT's versatile real-time simulator: the OP5705XG

The OP5705XG 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 OP5705XG comes in two versions: as a full simulator (OP5705XG) or as an I/O expansion unit (OP5705-IO).



### The OP5705XG delivers:



#### High I/O Density

Benefit from up to 256 I/Os in a compact 5U rackmount platform to perform high-fidelity real-time electromagnetic transient (EMT) simulation of large and complex systems.



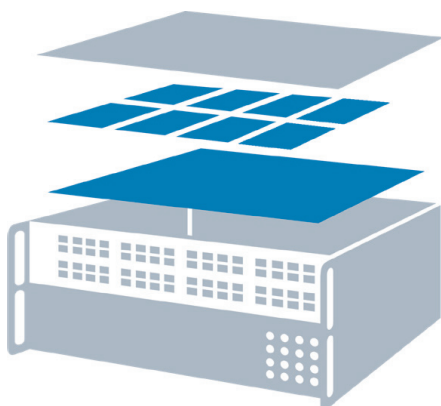
#### High-Speed Connectivity

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



#### Expandability

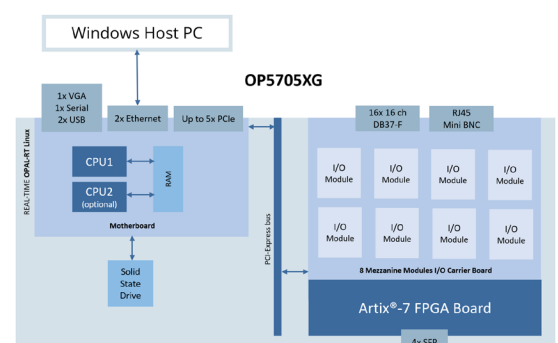
Easily expand your simulation and I/O capacities using other OPAL-RT simulators and expansion units with minimal latency through OPAL-RT real-time and multi-system expansion links (MuSE).



### 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.

### SIMULATOR ARCHITECTURE



## GENERAL SPECIFICATIONS

<b>CPU</b>	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
<b>FPGA</b>	Xilinx® Artix®-7 FPGA, 200T
<b>Software Platform Compatibility</b>	RT-LAB and HYPERSIM
<b>Toolbox Compatibility</b>	ARTEMiS, ePHASORSIM, EXata CPS, Orchestra, RT-XSG
<b>High speed communications</b>	4x SFP socket, 1 to 5Gbps, duplex multi-mode optical fiber (50/125 or 65/125µm) Xilinx Aurora compatible, up to 5 PCIe interface cards
<b>Performance</b>	See available benchmarks online: <a href="https://wiki.opal-rt.com/display/DOCHS/Performance+Benchmarks">https://wiki.opal-rt.com/display/DOCHS/Performance+Benchmarks</a> .
<b>Dimensions &amp; weight:</b>	5U rack unit, (W x D x H) 18.8" x 19.4" x 8.8", 47.7 x 49.3 x 22.4 cm, 17kg (37.5lbs)

## I/O INTERFACES

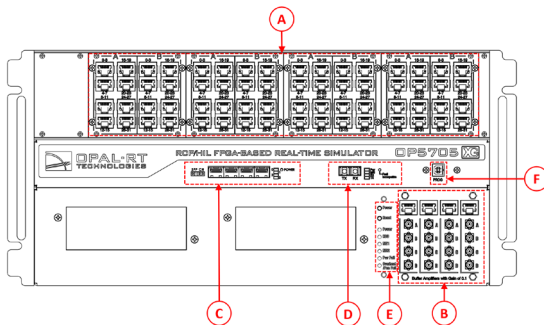
Standard signal conditioning modules \*

<b>Digital output (OP5360-2)</b>	32 channels, push-pull, 65 ns typical propagation delay, 5V to 30V, adjustable by user supplied external voltage, 50 mA max, short-circuit protected, galvanic isolation.
<b>Digital input (OP5353)</b>	32 channels, 4V to 30V, 3.5mA min, 40 ns typical propagation delay, galvanic isolation.
<b>Analog output (OP5330-3)</b>	16 channels analog output, 1MS/s (16 channels) or 2MS/s (8 channels), 16-bit resolution, 15 mA, ±16V.
<b>Analog input (OP5342)</b>	16 channels, 16 bits, 2 MS/s simultaneous sampling, ±20V true differential input, 1 MΩ input impedance.
<b>32 Digital I/O (OP5369)</b>	32 channels high range digital input output, Digital out: 50 mA per channel, 5-24 V pushpull FET, Digital in: 0-30 V, DIO selectable per group of 8 channels, 32 static digital.

\* Other I/O modules and configurations are available. For compatible I/O modules, search "OP5300 Hardware Platforms Compatibility" in OPAL-RT's Documentation Hub at [wiki.opal-rt.com](http://wiki.opal-rt.com).

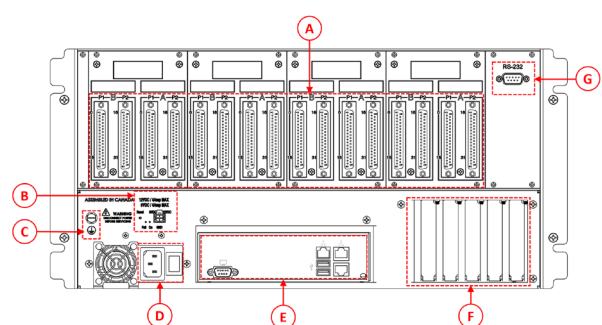
## I/O AND CONNECTORS

FRONT VIEW



- A & B.** RJ45 to BNC monitoring interfaces
- C.** SFP sockets and LEDs status
- D.** Fiber optic synchronization board and PCIe connector
- E.** Target computer monitoring interface
- F.** USB connector for JTAG programming (for OPAL-RT technicians' use)

REAR VIEW



- A.** DB37F I/O connectors
- B.** Power reset and power source connector
- C.** Ground screw
- D.** Power connector and switch
- E.** Standard computer ports
- F.** Low-profile PCIe slots
- G.** Serial port RS-232



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## 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.



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