

OP5707 **XG**

RCP/HIL FPGA-Based Real-Time Simulator



Introducing OPAL-RT's flagship real-time simulator: The OP5707XG

The OP5707XG combines the power of a Xilinx® Virtex®-7 FPGA with the latest Intel® Xeon® Scalable Processors - 2nd Generation processing cores to meet the requirements for the most demanding Hardware-in-the-Loop (HIL) and Rapid Control Prototyping (RCP) applications.

The OP5707XG delivers:



Power and Performance

Benefit from parallel processing to perform high-fidelity real-time electromagnetic transient (EMT) simulation of large and complex systems and an FPGA for high-frequency power electronics applications.



Connectivity

Connect your devices and systems without limitation, using up to 256 high-speed digital and analog I/O lines, 16 fiber optic SFP sockets, and an array of communication protocols.



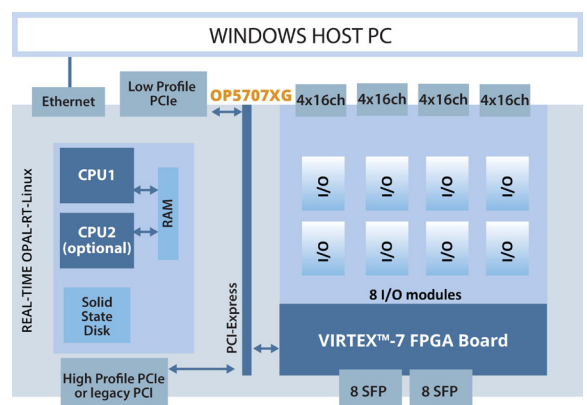
Expandability

Easily expand your simulation and I/O capacity using other OPAL-RT simulators and expansion units, PCI express of high speed SFP link with minimal latency.

PRODUCT HIGHLIGHTS

- Exceptional computing power available in a single chassis with Xilinx® Virtex®-7 FPGA and 4, 8 or 16 Intel® Xeon® processing cores.
- Onboard expansion slots accommodate up to 8 analog and digital I/O modules with signal conditioning to support a combination of up to 128 fast analog or 256 digital channels.
- Supports up to 16 SFP multi-mode fiber optic modules and LVDS/fiber optic synchronization for high-speed communication and synchronization between devices and expansion units.
- Extensive communication protocol support for various industries including: IEC61850, C37.118, DNP3, CAN Bus, ARINC-429 and more.
- Convenient RJ45 and mini-BNC monitoring connectors available at the front, with standard DB37 connectors at the back for simple HIL interfacing.

SIMULATOR ARCHITECTURE



GENERAL SPECIFICATIONS

CPU	Available with the following configuration:
	Intel Xeon 4 cores, 3.8 GHz
	Intel Xeon 8 cores, 3.8 GHz
	Intel Xeon 16 cores, 3.3 GHz
FPGA	Xilinx® Virtex®-7 FPGA, 485T
Software Compatibility	RT-LAB and HYPERSIM
Toolbox Compatibility	ARTEMIS, eHS, ePHASORSIM, EXata CPS, Orchestra, RT-XSG
High speed communication	16 x SFP socket, 1 to 5Gbps, duplex multimode optical fiber 50/125 µm with support for Xilinx® Aurora (1-5Gbps)
Performance	See available benchmarks online: https://opal-rt.atlassian.net/wiki/spaces/PDOCHS/pages/150077666
Dimensions & Weight	WxDxH, 18.8"x19.4"x8.8", 47.7x49.3x22.4 cm, 17kg (37.5lbs)

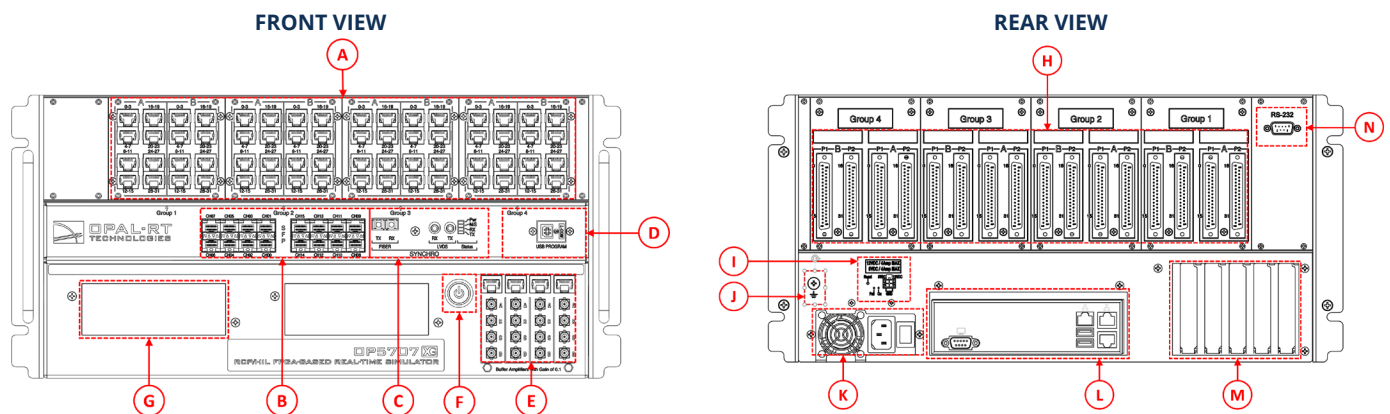
I/O INTERFACES

Standard signal conditioning modules *

Digital output (OP5360-2)	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.
Digital input (OP5353)	32 channels, 4V to 30V, 3.5mA min, 40 ns typical propagation delay, galvanic isolation.
Analog output (OP5330-3)	16 channels analog output, 1MS/s (16 channels) or 2MS/s (8 channels), 16-bit resolution, 15 mA, ±16V
Analog input (OP5342)	16 channels, 16 bits, 2 MS/s simultaneous sampling, ±20V true differential input, 1 MΩ input impedance.
32 Digital I/O (OP5369)	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 <https://opal-rt.atlassian.net/wiki/spaces/PODLP/overview>

I/O AND CONNECTORS



- A & E.** RJ45 to BNC monitoring interfaces
- B.** SFP sockets
- C.** Hardware synchronization connectors
- D.** USB port for JTAG programming
- F.** Power and reset button with LED indicator
- G.** Optional bays for high profile PCIe, or legacy PCI cards

- H.** DB37F I/O connectors
- I.** 5V/12V power connector
- J.** GND screw
- K.** Power plug and on/off switch
- L.** Computer connectors
- M.** Low-profile PCIe slots
- N.** Serial port RS-232



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USER MANUAL

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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