

OP4512

RCP/HIL FPGA-Based Real-Time Simulator



Introducing OPAL-RT's entry-level real-time simulator: The OP4512

The OP4512 is the evolution of the popular OP4510 OPAL-RT's compact entry-level simulator.

It comes with a powerful Intel® Xeon® CPU, a Kintex®-7 410T FPGA, and the new OPAL-RTLlinux 3 for stunning fast processing. It offers very good connectivity, expandability, and versatility. Benefit from an unmatched performance to develop, test, and validate your products and solutions without breaking the bank.

The OP4512 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 140 high-speed digital and analog I/O lines, 4 fiber-optic SFP sockets, and an array of communication protocols.



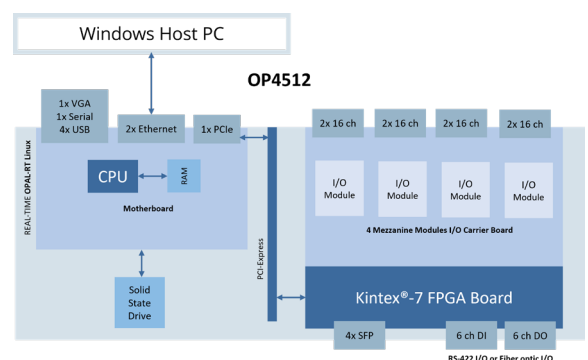
Expandability

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

- Low-cost powerful entry-level simulator.
- Lots of computing power available in a single compact chassis with Xilinx® Kintex®-7 410T FPGA and Intel® Xeon® E3, 4 cores, 3.7 GHz CPU.
- Onboard expansion slots accommodate up to 4 analog and digital I/O modules with signal conditioning to support a combination of up to 64 fast analog or 128 digital channels.
- 4 DB9 RS422 ports for an additional 12 I/Os
- Supports up to 4 SFP multi-mode fiber-optic modules and LVDS/fiber-optic synchronization for high-speed communication and synchronization between devices and expansion units.
- 1 PCIe expansion slot.
- Extensive communication protocol support for various industries including IEC61850, C37.118, DNP3, CAN Bus, MODBUS, EtherCAT, and more.

SIMULATOR ARCHITECTURE



GENERAL SPECIFICATIONS

Computer	Intel® Xeon® E3 4 cores, 3.7 GHz or equivalent, 16 GB RAM, 250 GB SSD
FPGA	Xilinx® Kintex®-7 410T
Software Platform Compatibility	RT-LAB and HYPERSIM
Toolbox Compatibility	ARTEMiS, eHS, ePHASORSIM Orchestra, RT-XSG
High-Speed Communication	4x SFP socket, 1 to 5 Gbits/s optical fiber
Dimensions & Weight	2U, 19" rackmount (mounting brackets and hardware included), 43.2 (W) x 28 (D) x 8.9 cm (H) (17" x 11" x 3.5"), 5 kg (11 lbs.) approx.

I/O INTERFACES

Default I/O module configuration suggested*

32 Digital I/O (OP5369)

32 channels high range digital input output, Digital out: 50 mA per channel, 5-24 V push-pull FET, Digital in: 0-30 V, DIO selectable per group of 8 channels, 32 static digital

2x 16 Analog Output (OP5330-3)

16 channels analog output, 1 MS/s (16 channels) or 2 MS/s (8 channels), 16-bit resolution, 15 mA, ±16 V

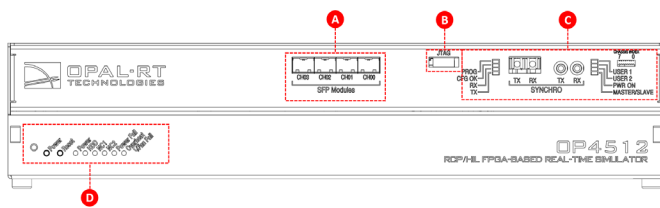
16 Analog Input (OP5342)

16 channels analog input, 1 MS/s, 16-bit resolution, 500 ns, ±20 V

* Other modules for any configurations are available. For compatible I/O modules, search "OP5300 Hardware Platforms Compatibility" in OPAL-RT's Documentation Hub at wiki.opal-rt.com

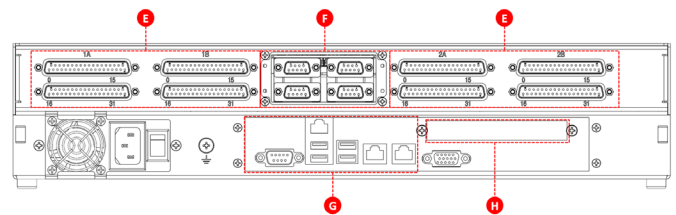
I/O AND CONNECTORS

FRONT VIEW



- A.** Small Form Factor (SFP) 5Gbits/s optical interface modules connectors
- B.** JTAG connector (for OPAL-RT technicians' use)
- C.** Synchronization connectors and status LEDs
- D.** Target computer status LEDs

REAR VIEW



- E.** DB37 connectors for digital and analog inputs and outputs
- F.** RS422 differential inputs/outputs or fiber optic and synchronization connectors
- G.** Standard micro ATX computer connectors: 1 VGA port, 4 USB ports, 2 network ports, 1 serial port
- H.** 1 free PCIe slot. This space may not be available if optional I/Os other than RS422 are selected by the customer (see point F)



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WEB PAGE



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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.



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