Introducing the OP4200 RCP/HIL System: signature OPAL-RT performance and flexibility at a game-changing price.

The OP4200 offers Hardware-in-the-Loop (HIL), Rapid Control Prototyping (RCP) data acquisition, and I/O expansion capabilities in a desktop-friendly package to support power electronics and electric drive applications across industry and academia. The sleek and intuitive design of the OP4200 gives users the option of simple I/O reconfiguration, including signal format and conditioning to fit their needs.

The OP4200 real-time simulator is a ready-to-use solution that delivers:

**Flexibility**
- Benefit from using OPAL-RT’s state-of-the-art suite of software including RT-LAB, eHS, RT-XSG, and electric drive library on just one system.
- Import models created in MATLAB® / Simulink® / Simscape Power Systems®, PSIM®, PLECS® and MULTISIM®.

**Performance**
Perform closed-loop applications with the same class-leading solution of FPGA-based I/Os and real-time solvers offered across the entire OPAL-RT product line.

**Cost-Effectiveness**
With configurations starting at US$ 7,500* the power of real-time simulation with OPAL-RT has never been more accessible.

* Prices vary per country.

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**PRODUCT HIGHLIGHTS**
- Trademark OPAL-RT performance and solutions now offered on Xilinx Zynq® FPGA and ARM® platform
- Swappable I/Os with optional choice of connector class including DB37, screw terminals, SMA and fiber optic transceivers
- Uncompromised connectivity including standard CAN and SFP interfacing to meet the needs of various industries
- Industrial-grade injection-molded plastic chassis designed with a passive heat sink and no moving parts for enhanced durability

**APPLICATIONS**
- Development and validation of devices and systems through power electronics and electric drive and power system Hardware-in-the-Loop (HIL) simulation
- FPGA and ARM®-based Rapid Control Prototyping (RCP) with Xilinx Zynq®
- Portable and automated test and measurement bench including high-speed data acquisition applications
- Teaching laboratory for power electronics and control
GENERAL SPECIFICATIONS

Power Supply
External power supply of 100-240VAC, 50-60Hz, 60VA, 24V = 10% @ max 2.5A

FPGA
Xilinx Zynq™ XC7Z030 all programmable SoC device with Kintex™-7 FPGA, 125K LUT

CPU
Dual-core ARM® Processor Cortex A9 1GHz with 32GB SD card, 1024MB DDR3L SDRAM running a Linux-based real-time operating system

Interface
The OP4200 comes standard with the interfacing features marked in the diagrams below:
A. 2 SFP, full duplex, with up to 6-Gbit/s high-speed fiber optic connectivity for multi-FPGA applications
B. 1 USB 2.0
C. 1 RJ45 Ethernet port, 10/100/1000 tri-mode IEEE 802.3
D. 1 send (Tx) and receive (Rx) optical synchronization link
E. 1 JTAG
F. 8 user-settable DIP switches
G. 1 power connector
H. 2 CAN Bus, 1Mbps, half duplex per channel
I. 2 RS232, up to 250kbps, full duplex per channel
J. 6 Status LEDs and Push Button

Performance
FPGA timer resolution of 5ns supports model time steps as low as 145ns using eHS

Dimensions & weight
28.5 (W) x 22.1 (D) x 24.7 cm (H) (11.2” x 8.7” x 9.75”) 5 Kg (11 lbs) approx.

OPAL-RT software compatibility
eHS, compilation-free FPGA power electronics solution compatible with Simscape Power Systems, PLECS, PSIM, and Multisim
RT-XSG, for custom firmware solutions compatible with Vivado, Xilinx System Generator
RT-LAB, open real-time simulation environment fully integrated with MATLAB/Simulink®

RECONFIGURABLE I/O SPECIFICATIONS

4 slots are available for swappable I/O cassettes with hot plug protection, for a total of 128 I/O channels

STANDARD I/O BOARDS*
Digital output channels
32 opto-isolated digital output channels, 65 ns typical propagation delay, 5V to 30V adjustable, 50mA max

Digital input channels
32 opto-isolated digital input channels, 4V to 30V, 40 ns typical propagation delay

Analog input channels
16 analog input channels, 16 bits, 2μs conversion time simultaneously, 500 ns optional, +/-20V, adjustable range

Analog output converter
16 analog output channels, 16 bits, 1.0μs update time simultaneously, 200 ns optional, +/-16V, 10mA, opt. module with optional 16 fully isolated channels

* Other I/O boards available on request

STANDARD I/O CASSETTE CONNECTORS
Standard I/O cassette connectors are DB37 (as shown).

ACCESSORY CONNECTORS
Special connector adapters are available, to convert DB37 to the following connector options:
SMA coaxial
Screw terminal

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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