OP4200

RCP/HIL System

OPAL-RT TECHNOLOGIES

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.

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 (Optional FPGA upgrades: XCZ7035 and XCZ7045)
CPU	Dual-core ARM® Processor Cortex A9 667MHz (1000MHz optional) 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 5-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® RT-EVENTS, Simulink toolbox for events-based modeling

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, 2.5 µs conversion time simultaneously, 500 ns optional, +/-20V, adjustable range
Analog output converter	16 analog output channels, 16bits, 1.0 µs update time simultaneously, 200 ns optional, +/-16V, 10mA, opt. module with optional 16 fully isolated channels

* Other I/O boards available on request

I/O CASSETTE CONNECTORS

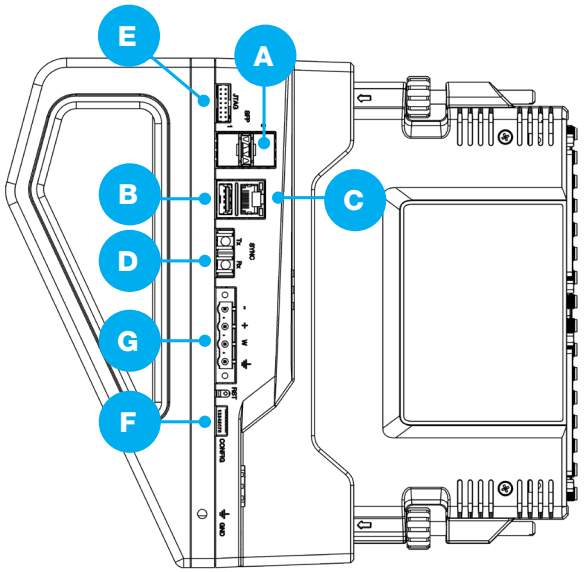
I/O cassettes can be ordered with the following connector types as shown in the diagram below:

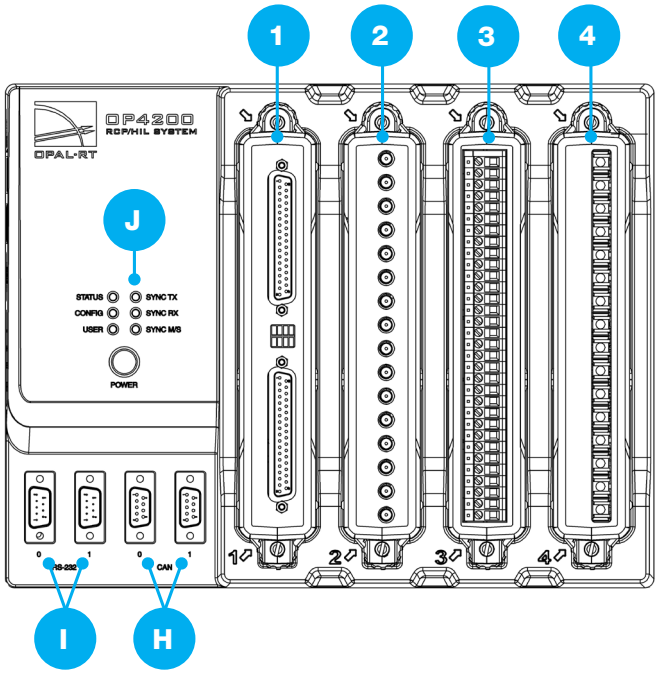
1. DB-37 Female

2. SMA coaxial

3. Screw terminal

4. Fiber optic communication, up to 250Mbps





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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