

RT-LAB | OP4510

Power electronics Rapid Control Prototyping (RCP) system



Specialized power electronics RCP simulator

HIGHLIGHTS

- Optimal power/speed ratio with a powerful combination of CPU/FPGA
- Fast optimized I/Os and a comprehensive library for power electronics applications
- High precision three-phase PWM capture and generation, and other timed signals (Encoder, Resolver, Hall Effect)

PURPOSE

Equipped with the latest generation of Intel Xeon four-core processors and a powerful Xilinx Kintex 7 FPGA, the OP4510 delivers raw simulation power for both CPU-based real-time simulation and sub-microsecond time step power electronics simulation. This system delivers the fastest and most versatile RCP application for power electronics.

DESCRIPTION

The OP4510 RCP system offers Rapid Control Prototyping (RCP), and provides advanced control systems features, compatible with widely-used communication protocols. With this solution, you can bring your power electronics control design testing to the next level.

APPLICATIONS

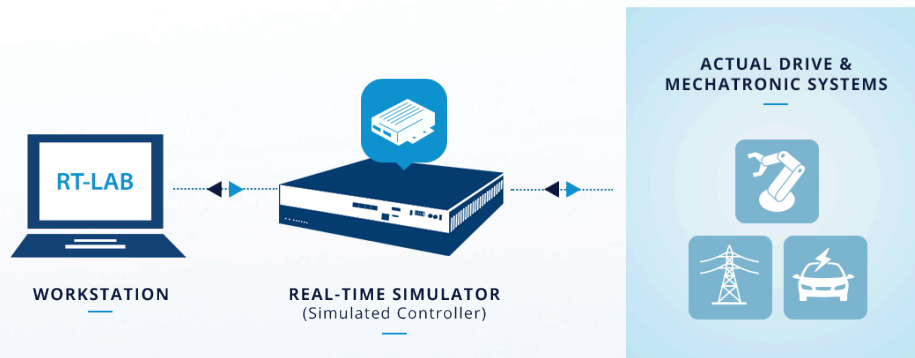
Converter and inverter control, motor drive control, microgrid agent control, generator control, multidrive systems control, Modular Multilevel Converters (MMC) control, power electronics classroom experiments and more.

KEY PERFORMANCE SPECS

- Outer Control Loop Frequency (CPU): < 100 kHz
- Fast control loop Frequency (FPGA): < 1 MHz (option)
- Advanced PWM generation: up to 200 kHz, resolution 5 ns

TYPICAL USE CASE

RCP Process



System Configuration

HARDWARE

OP4510 Simulator

Intel Xeon CPU - 4 cores - 3.5 GHz, Xilinx FPGA Kintex™-7 325T
Connectivity - Ethernet port 10/100/1000 Mbps (2x RJ45).
RS232 (DB9), USB2.0, 5-Gbit/s high-speed fiber optic link (4x SFP)

Digital Input | 32 channels, 4.5V to 50V, 40 ns high-speed digital I/O

Digital Output | 32 channels, 5V to 30V, 200 ns to 65 ns

Analog Input | 16 channels, 16 bits, 500 kS/s, +-20V

Analog Output | 16 channels, 16 bits, 1MS/s, +-16V

Analog Input | 16 channels, 2MS/s, 16bits, +-20V

Timed Generation and Measurement Firmware | Selectable 32 timed digital inputs and 32 timed digital outputs

RS422 Adapter

SOFTWARE

RT-LAB | Real-time Simulation Software

RT-XSG | RT-XSG toolbox for FPGA real-time simulation

COMMUNICATION PROTOCOLS

CAN Bus interface board

Baseline

✓

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