

eHS64 Solver | OP4510

Power electronics HIL simulator



Complete and flexible solution for your HIL simulation needs

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

Evolve from introductory to advanced model simulations using power electronics schematics (designed with MATLAB/Simulink®, PLECS®, PSIM® or NI MULTISIM®) in RT-LAB to run your most innovative HIL tests and validations.

DESCRIPTION

Powered by our respected eHS electrical solver, the OP4510 HIL system offers the best performance at an affordable price. Equipped with four core processors and FPGA, it delivers a scalable solution for your power electronics simulations.

APPLICATIONS

Battery management systems and battery simulation, power electronics converters, electric motors, power grid connected HIL simulation, supervisory control and data acquisition systems, high-and low-level control for microgrid, renewable, sun, wind, battery, energy storage and other.

KEY PERFORMANCE SPECS

- Switching Frequency: up to 200 KHZ
- Control Loop minimum delay: 1.5 μ s
- Model Minimum Time Step: 3 μ s (CPU), 125 ns (FPGA)
- Number of electrical motors on FPGA: 2 motors
- Number of power electronics switches: 72 switches on one FPGA

TYPICAL USE CASE

HIL Process



System Configuration

HARDWARE	Baseline
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 (PWM, TSD, STATIC)	***
RS422 Adapter	***
SOFTWARE	
RT-LAB Real-time Simulation Software	✓
eHS64 power electronics solver provides 72 coupled switches	✓
RT-XSG RT-XSG toolbox for FPGA real-time simulation	***
eMEGASIM Real-time Simulation of up to 75 states (sum of capacitors and inductors)	***
COMMUNICATION PROTOCOLS	
CAN Bus interface board	***