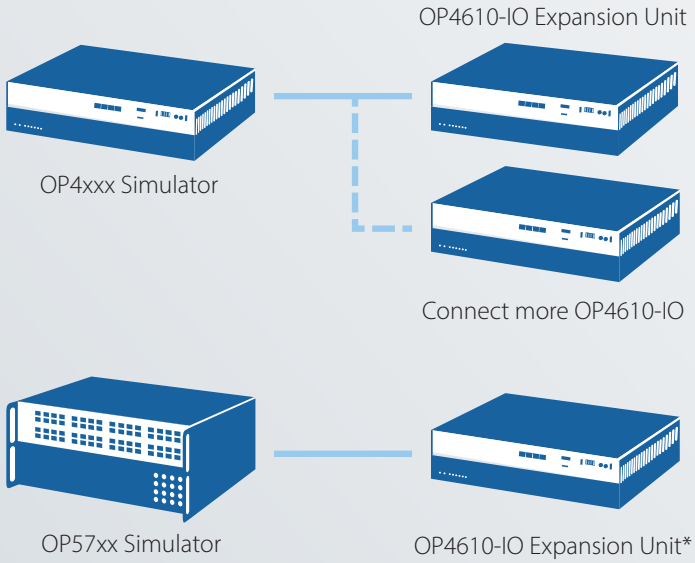
OP4610-IO FPGA Processor and I/O Expansion Unit

The OP4610-IO is an I/O expansion unit within the OP4xxx family that uses the Xilinx Kintex™-7 FPGA to provide additional inputs and outputs for existing OPAL-RT simulators and expansion units. It can provide up to 128 additional I/Os and offers high speed SFP communication or PCI-Express links that can be used to communicate with OPAL-RT simulators in a variety of configurations.

Maximum Compatibility



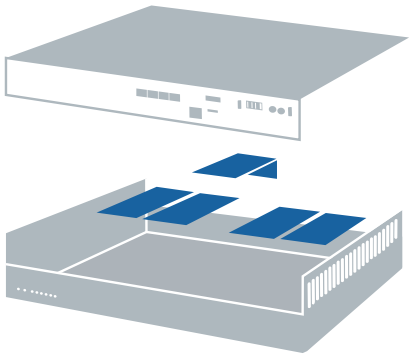
* Up to 7 units if using expansion box

PRODUCT HIGHLIGHTS

- FPGA, Kintex™-7 410T
- 4 SFP ports
- 4 slots for I/O Modules such as DIN, DOUT, AIN and AOUT
- 1 slot for an expansion board for optional Dolphin
- SW-Link adapter or OneStop PCIe Target Cable Adapter

APPLICATIONS

- Allowing you to test deported equipment (Optical fiber links)
- Provides I/O Expansion to the OP4512 and the OP4610XG for high density I/O Controls (e.g. MMC)
- Increase high speed Power electronic simulation capacity by coupling multiple FPGA together (Parallel NPC converter, Electrical Ship, UAV)

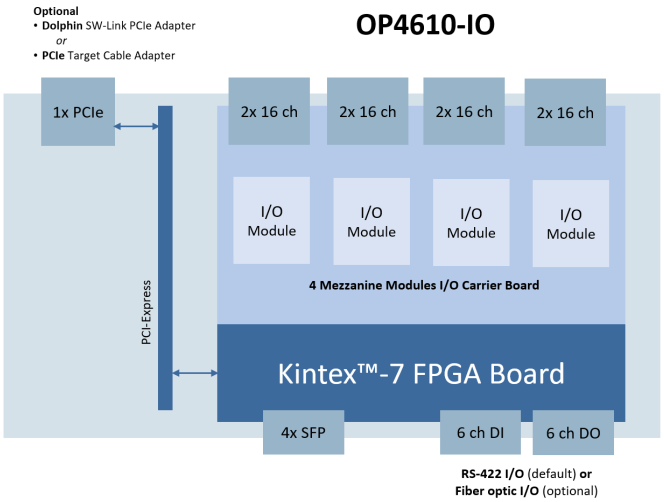


The OP4610-IO accepts any combination of four different I/O modules such as analog in, analog out, digital in and digital out.

GENERAL SPECIFICATIONS

FPGA	Xilinx Kintex™-7 410T
High-Speed Communication	4x SFP socket, 1 to 5 Gbits/s optical fiber
Software Platform Compatibility	RT-LAB and HYPERSIM
Toolbox Compatibility	ARTEMiS, eHS, ePHASORSIM, Orchestra, RT-XSG
Dimensions & weight	3U, 19" rackmount (mounting brackets and hardware included), 48.3 (W) x 28 (D) x 14 cm (H) (19" x 11" x 5.5"), 5 kg (11 lbs.) approx

ARCHITECTURE



The OP4610-IO is a compact device designed as an expansion part of the OP4512 and the OP4610XG; it has 128 fast I/O channels with signal conditioning, 12 RS422 channels (or low-speed fiber optic channels), and 4 high-speed communication ports (SFPs). PCIe connection uses point-to-point standard PCIe interface between the simulator and the expansion unit, similarly to simulators of the OP57xx family. The OP4610-IO offers two types of synchronization, either LVDS or fiber optic, making it easier to synchronize with any OPAL-RT device.

VISIT THE PRODUCT WEB PAGE

READ THE PRODUCT USER MANUAL

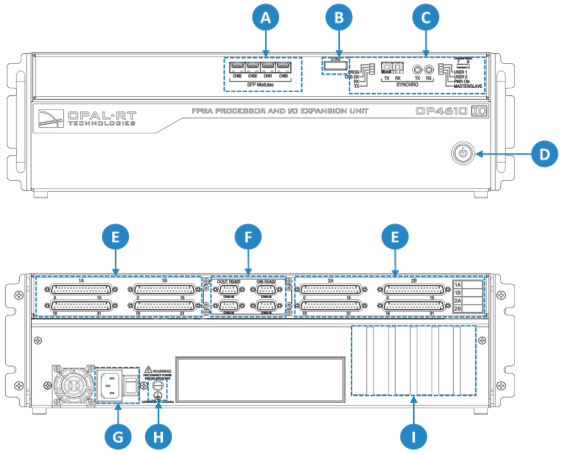
I/O INTERFACES

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
EXPANSION MODULES	
Digital input/ output RS422	2 channels for encoder or 6 PWM in / 6 PWM out or other applications requiring reading or generation of fast differential logic signals, 5V
Optional fiber optic	6Tx / 6Rx 50Mbps channels for digital I/O, and compatible with the ORION protocol developed by OPAL-RT

* 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

- **A** Small Form Factor (SFP) 5Gbits/s optical interface modules connectors
- **B** JTAG Connector (for OPAL-RT technicians' use only)
- **C** Synchronization connectors and status LEDs
- **D** Push button with an integrated LED indicator



- **E** DB37 connectors for digital or analog inputs and outputs
- **F** RS422 differential inputs/outputs or fiber optic and synchronization connectors
- **G** Power connector and main switch
- **H** Ground Screw
- **I** 1x PCIe Slot for Dolphin SW-Link OR PCIe Target adapter

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.

OPAL-RT TECHNOLOGIES

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