eHS FPGA-based Power Electronics Toolbox Comparison Charts

eHS Standard

Features	eHSx32	eHSx64	eHSx128
Targeted platforms	OP4200 (Zynq™ 7030)[1] OP4512 (Kintex™ 7 410T)	OP4510 (Kintex™ 7 325T) OP4512/OP4610XG/OP4610-IO (Kintex™ 7 410T) OP5607/OP5700/OP5707XG/ OP5707-IO (Virtex™ 7 485T)	OP4510 (Kintex™ 7 325T) OP4512/OP4610XG/OP4610-IO (Kintex™ 7 410T) OP5607/OP5700/OP5707XG/ OP5707-IO (Virtex™ 7 485T)
Number of inputs	32	64	128
Number of outputs	32	64	128
Number of switches	48	72	144
Number of Non-Linear/ Variable components	64		
LCA capability[2]	Yes		
Maximum number of states[3]	112	168	344
Number of resistors	Unlimited		
Switches type supported	IGBT/Diode, Diode, Breaker, Thyristor, Ideal Switch, FET, 2-Lvl Half- Bridge, 3-lvl NPC		
Non-switching devices supported	Resistor, Inductor, Capacitor, Ideal Transformer, Mutual inductance, Serial and Parallel RLC, PI Line, Surge arrester, Variable Serial RL and Parallel RC, Saturable Inductor		
Calculation power	12.8 GFLOPS	25.6 GFLOPS	51.2 GFLOPS
Maximum number of parameter sets	From FPGA: Up to 512 scenarios[4] From CPU: Unlimited[5]		
Compatible circuit editors	OPAL-RT Schematic Editor, SPS Simulink toolbox		

[1] This is the last RT-LAB/eHS version that supports the OP4200.
[2] LCA stands for Loss Compensation Algorithm. This feature optimizes losses for standard topologies such as the two-level and the three-level NPC arm converters.
[3] Estimated values. The maximum number of states depends on the number of inputs and outputs that needs to be computed as well. There is no hard coded limit. If the time step required exceeds the solver's limit (4.8us), a compilation error will occur due to overpassing the circuit size limit.
[4] The number of scenarios on FPGA available for a given circuit depends on the circuit complexity. Scenarios are not supported on the OP4200 target.
[5] The number of scenarios on CPU available only depends on your memory allocated to MATLAB.

eHS FPGA-based Power Electronics Toolbox Comparison Charts

eHS High Performance Add-on

Features	eHSx32	eHSx64	eHSx128
Targeted platforms	OP4512/OP4610XG/OP4610-IO (Kintex™ 7 410T) OP5607/OP5700/OP5707XG/OP5707-IO (Virtex™ 7 485T)		
Number of inputs	32	64	128
Number of outputs	32	64	128
Number of switches	48	72	128
Number of Non-Linear/ Variable components	16	32	64
LCA capability[1]	Yes		
Maximum number of states[2]	344		
Number of resistors	Unlimited		
Switches type supported	IGBT/Diode, Diode, Breaker, Thyristor, Ideal Switch, FET, Cyclo Converter, 2-Lvl Half-Bridge		
Non-switching devices supported	Resistor, Inductor, Capacitor, Ideal Transformer, Mutual inductance, Serial and Parallel RLC, PI Line, Surge arrester, Variable Serial RL and Parallel RC, Saturable Inductor		
Calculation power	limited by time step		102.4 GFLOPS
Maximum number of parameter sets	From FPGA: Up to 512 scenarios[3] From CPU: Unlimited[4]		
Compatible circuit editors	OPAL-RT Schematic Editor		

[1] LCA stands for Loss Compensation Algorithm. This feature optimizes losses for standard topologies such as the two-level and the three-level NPC arm converters.
[2] Estimated values. The maximum number of states depends on the number of inputs and outputs that needs to be computed as well. There is no hard coded limit. If the time step required exceeds the solver's limit (4.8us), a compilation error will occur due to overpassing the circuit size limit.
[3] The number of scenarios on FPGA available for a given circuit depends on the circuit complexity.
[4] The number of scenarios on CPU available only depends on your memory allocated to MATLAB.