

Orderbook for High Frequency Trading (HFT) with FPGA

Orderbook

Orderbook is arguably the most representative of the performance of the high frequency trading (HFT) system. By using RTL design methodology, Logictronix's Orderbook provides a very low latency with highly efficient resource consumption. The maximum latency is less than 42 ns which is many orders of magnitude faster than software alternatives and even many hardware alternatives.

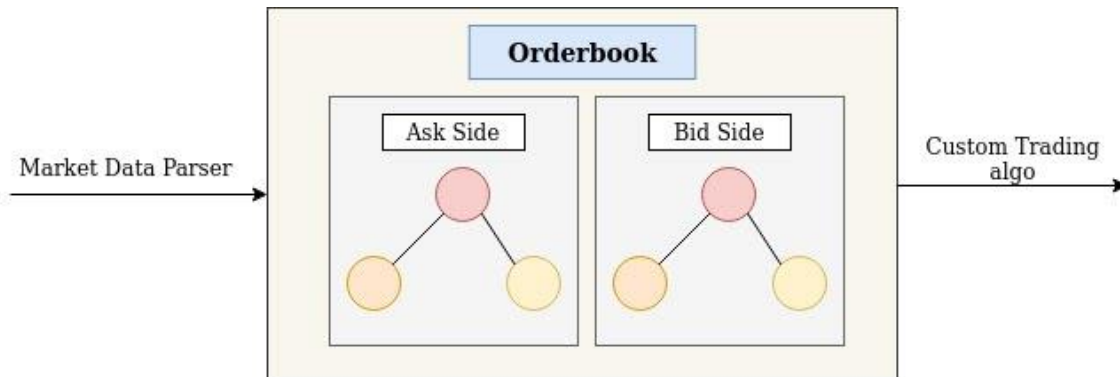


Fig 1. Orderbook

The design is completely based on on-chip memory and thus has a limited number of orders for each orderbook. Currently we have four variants with 4096, 8192, 16382 and 32768 orders for each symbol. The number of maximum orders can be selected appropriately for each instrument depending upon its market status.

With advanced pipelining and proper resource balancing, Logictronix's orderbook supports 27-73 symbols (depending upon configuration) in high end FPGAs.

Key features:

- Customizable price depth
- Customizable number of orders up to 32768 for each instrument
- Top of book reporting with best bid/ask information
- Ultra-low latency of 42 ns for all variants

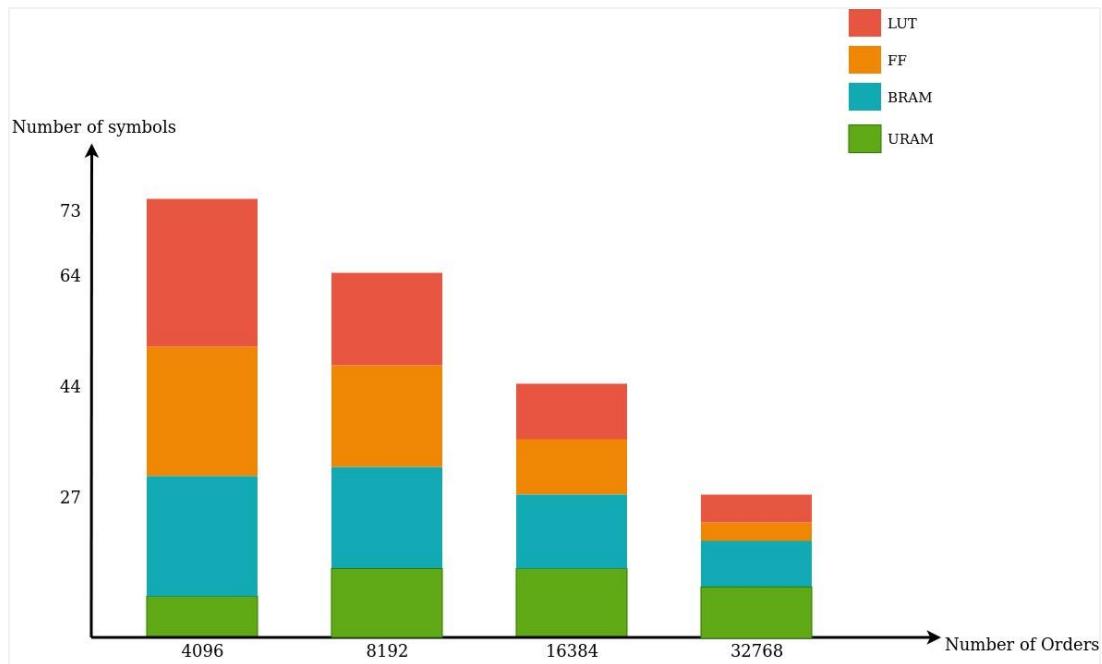


Fig 2. Number of symbols consuming 80% area in VU9P chip for different variants of FPGAs

Specifications for 16Kx2 model:

FPGA used	VU9P
Algorithm used	Price-Time Priority
Minimum Operating Frequency	434 Mhz
Maximum Latency	42 ns
Add order Latency	19 ns
Remove Order Latency	42 ns
Initiation Interval	8 cycles for add, 18 cycles for remove
Throughput for each instrument	52M+ add/sec, 23M+ remove/sec
Number of instruments with 80% area	44
Number of Orders for each instrument	16384 Ask & 16384 Bid
Primary resource consumptions	81% BRAM, 73% URAM
Secondary resource consumption	56% LUT, 57% FF
Scalability	Yes

IP Licensing and Support:



Logictronix Technologies Pvt. Ltd.

FPGA Design and Machine Learning Company

Xilinx Certified Partner

Email: info@logictronix.com , ip-sales@logictronix.com