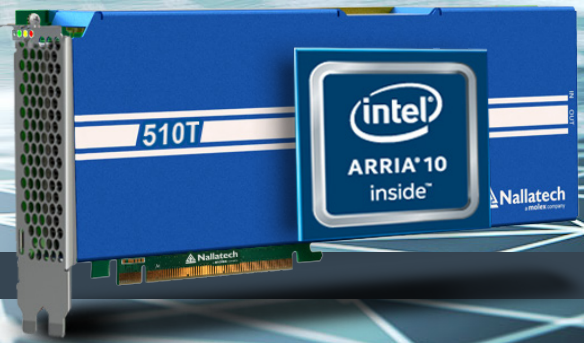# Nallatech 510T
## Compute Acceleration Card

Introducing ground-breaking single precision floating point performance of up to 1.5 TFLOPS per device, the OpenCL-programmable 510T features an Intel Arria 10 FPGA, along with eight banks of DDR4 external memory per FPGA.

- **Up to 3 TFLOPS of peak single precision performance**

- **Up to 150 GBytes/s Peak Aggregate Memory Bandwidth**

- **Two Arria 10 1150 GX FPGAs**

- **75GB/s Peak DDR4 Memory Bandwidth per FPGA (4 Banks per FPGA)**

The Nallatech 510T Datacenter Co-Processor is designed to deliver fast and efficient  performance per watt.

FPGA computational acceleration has increasingly improved performance in the following markets:

- Compute, Network & Storage
- Finance & Risk Analysis
- Datacenter
- HPC

- Communications
- Industrial, Broadcast
- Medical
- Automotive

## OpenCL-programmable FPGA co-processor for ultimate application performance

OpenCL

### » Intel FPGA OpenCL Software Development Kit (SDK)
- Abstraction enables faster and higher level software development flow
- Emulate OpenCL application code on x86 platforms in seconds
- Push button flow generates FPGA executable, driver and API
- Add optimized HDL IP cores to OpenCL designs as libraries

### » Hardware Description Language (HDL)
- Traditional VHDL/Verilog tool flow support
- Aimed at hardware-orientated customers
- Hand-code HDL for ultimate performance
- FPGA card designed to support standard Intel IP cores for Arria 10

## Form Factor
» Full-height, double-width PCI Express card
» 4.37 x 10.5 inches (106.65 x 266.7 mm)

## Host Interface
» 16-lane PCI-Express Gen 3.0
» Actual performance is host computer chipset and operating system dependent

## Processing
» Intel Arria 10 F45 package
» Default configuration: 1150GX
» Core speed grade -2, I/O speed grade -3
» Contact Sky Blue or Zerif for other FPGA options

## DDR4 SDRAM Memory
» Eight banks of DDR4 SDRAM x 72 bits
» Four 4GB banks per FPGA (32GB total)
» Transfer rate: 2133 MT/s

## Application Development
» Supports multiple design flows including Intel FPGA OpenCL SDK and HDL

## Electrical
» On-card power derived from 12V PCIe slot and one AUX connectors (one 8-pin)
» Power dissipation is application dependent
» Card designed to deliver up to 225W power consumption

## Quality
» Manufactured to ISO9001:2008 IPC-A-610-Class III
» RoHS compliant

## Power Supply Monitoring & Reporting
» On-board Intel USB Blaster II
» Power and temperature monitoring
» Fault condition reporting to FPGA
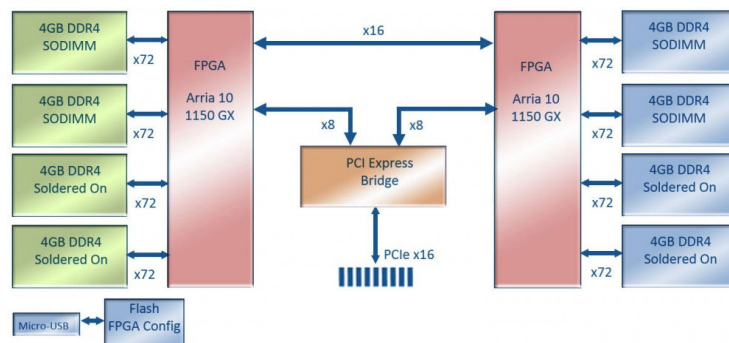
## PCI backplate
» USB for programming, debug and monitoring
» User programmable LEDs

## Cooling
» Standard: double-width active heatsink (embedded fan)
» Optional: double-width passive heatsink

## Environmental
» Cooling: Air convection
» Operating temperature: 0°C to 35°C

## Deliverables
» 510T FPGA card
» USB cable (front panel access)
» Built-In-Self-Test (BIST)
» OpenCL "HPC" Board Support Package (BSP)*
» 1 year access to online support lounge
» 1 year hardware warranty

**Customization:** Technical specifications (e.g. FPGA type, size, external memory capacity etc.) can be modified to meet the exact needs of commercial customer applications as off-the-shelf product available to the general market.

**Application optimization:** Sky Blue and Zerif provides consultancy services assisting customers in the porting, optimization and benchmarking of applications executed on Nallatech FPGA accelerators.

* Please check with Sky Blue or Zerif for availability
V2-5a: 2017/10/02