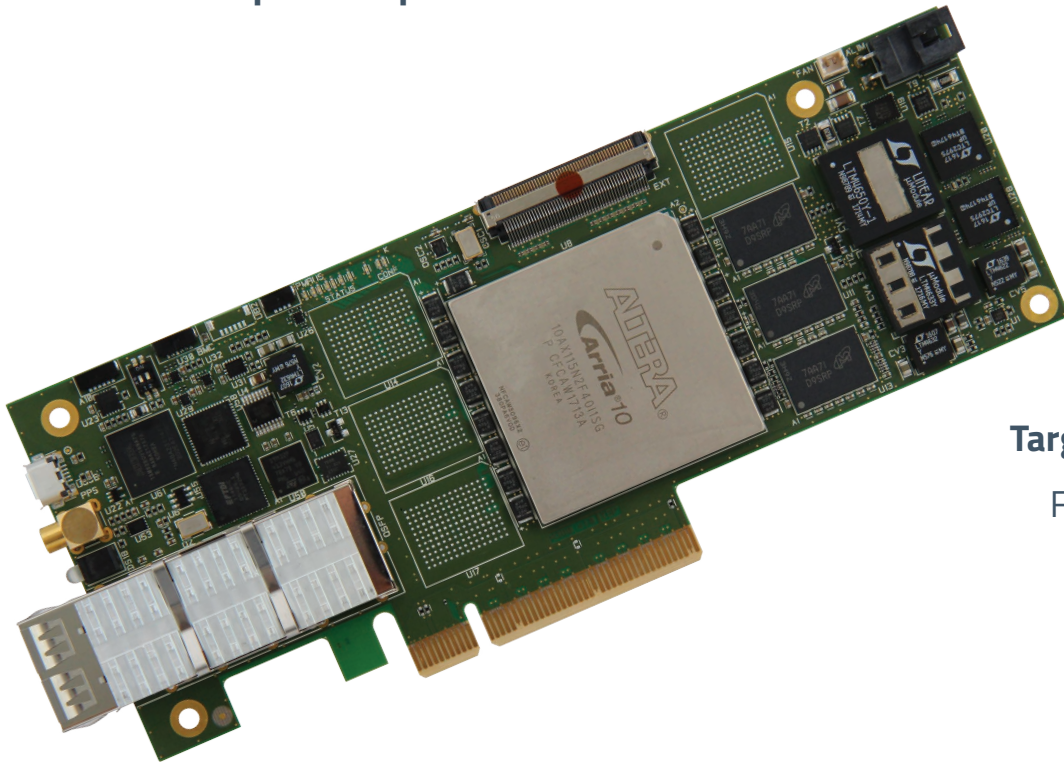# REFLEX CES
Custom Embedded Systems

XpressGXA10-LP1151

Low-profile PCIe Network Processing FPGA
Board Featuring 40G Ethernet

- **Low-profile PCIe board using Intel Arria 10 GX 1150 KLE**

- **Single slot passive cooling for servers**

- **Designed for fog computing and ultra low latency applications**

- **PCIe Gen3 x8 interface**

- **8 GB on board DDR4 (x 72bit)**

- **QSFP+ cage 10/40 GbE ports**

- **Board Management Controller (BMC) with IPMI features**

- **10 transceiver expansion port**

- **10 GPIO expansion port**

Target applications:

Fog Computing
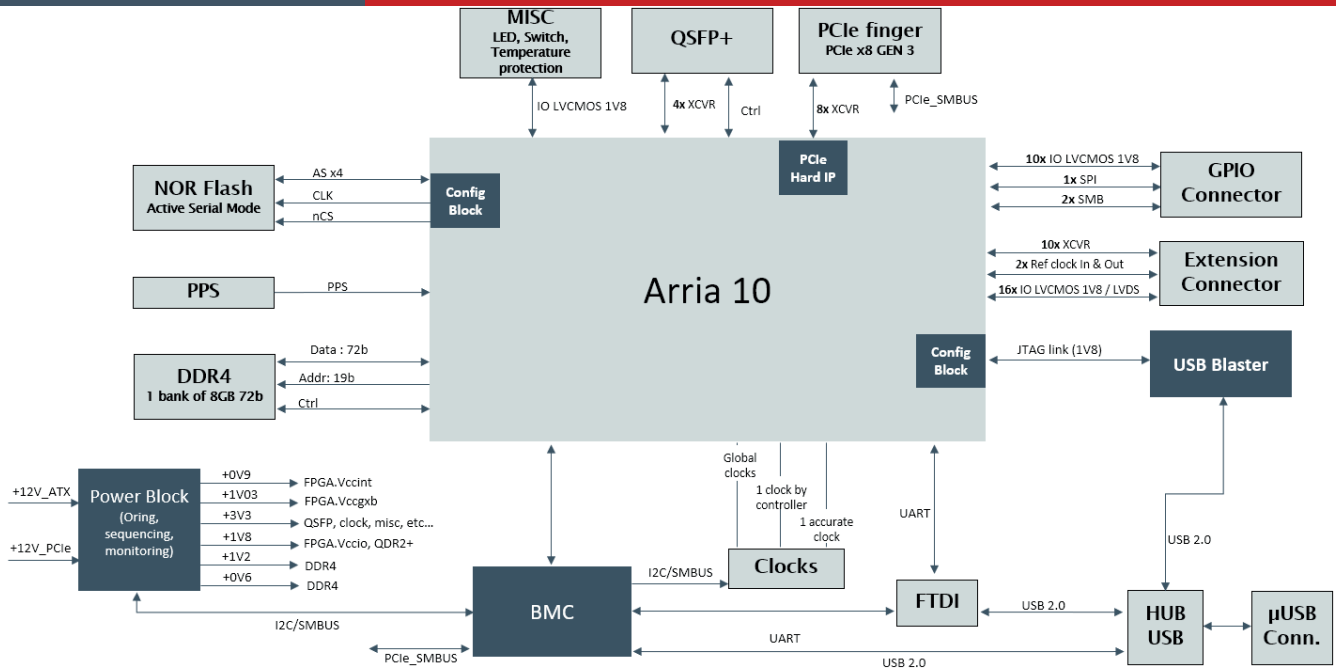
Finance

Acceleration

Networking

Security

ALTERA
now part of Intel

Arria®10

PCI EXPRESS 3

Block diagram: MISC (LED, Switch, Temperature protection), QSFP+, PCIe finger (PCIe x8 GEN 3), NOR Flash (Active Serial Mode), PPS, DDR4 (1 bank of 8GB 72b), Power Block (Oring, sequencing, monitoring), Arria 10, Config Block, PCIe Hard IP, GPIO Connector, Extension Connector, USB Blaster, BMC, Clocks, FTDI, HUB USB, µUSB Conn.

Full Specifications

FPGA and Configuration Modules

- Intel Arria 10 GX 20nm FPGA : 10AX115N2F40I1SG
- NOR Flash for Active Serial (AS) configuration mode (2 sector for fail safe feature)

Communication Interfaces

- PCI Express x8 (Gen 1, 2 or 3)
- QSFP+ quad optical cage (4 XCVR:10.3125 Gb/s per link)
  - 10GbE/40GbE networking interface
  - Other protocols supported by the QSFP module

Memory

- 1 bank on board 8GB DDR4, 72bit (ECC), up to 2400 MT/s

Power

- External auxiliary connector (12V)
- Max 80W
- Single slot passive heat-sink

Operating Range : 0°C to 40°C
Storage Temp Range : 0°C to 70°C

Other resources

- 10 transceivers (Rx/Tx) LVCMOS/LVDS expansion port with board-to-board connection over SAMTEC LSHM connector (LSHM-150-01-F-DH-A-S-K-TR)
- 10 LVCMOS GPIO connector, SPI
- Programmable PLL oscillator (Si5341) controlled via the FPGA through an I²C serial interface, or via the BMC
- USB Blaster on board
- High precision oscillator clock accuracy 20MHz-0.05ppm for Precision Time Protocol (PTP) IEEE 1588
- One coax connector for PPS (pulse per second) for synchronisation of multiple electronics parts
- Board Management Controller (BMC) = monitoring, NOR Flash and clock programmation, updates and IPMI features

Board Dimensions

- Length : 167.7mm (6.59inches)
- Height : 68.9mm (2.71 inches) / Low Profile PCIe
- Thickness : 1.57 mm (0.062 inches) / Standard Thickness PCIe

Standards and compliance

- RoHS/REACH compliant
- UL certified
- ISO9001 Facility

Deliverables

- Low-profile (half-height) form factor PCIe Board
- Board Support Package (Manual, Test Designs)
- PCIe Power Supply adapter cable (same as GPU)
- PCIe Low profile or Standard bracket

- Mechanical files 3D DWF/STEP models and 2D drawings (upon request)
- SDK for Windows 10 64Bits
- SDK for Linux Debian Stretch 64Bits (on request for other Linux distribution)

  Both SDK version are based on WinDriver driver

Ordering informations

Part number	Description
Basic = XpressGXA10-LP1151B	Intel Arria 10 GX 10AX115N2F40I1SG, 8GB DDR4