Silicom Connectivity Solutions

fb1C1XLG@A10 Server Adapter

Programmable PCI Express Server Adapter Based on Intel FPGA Arria 10 GX/GT

Product Description

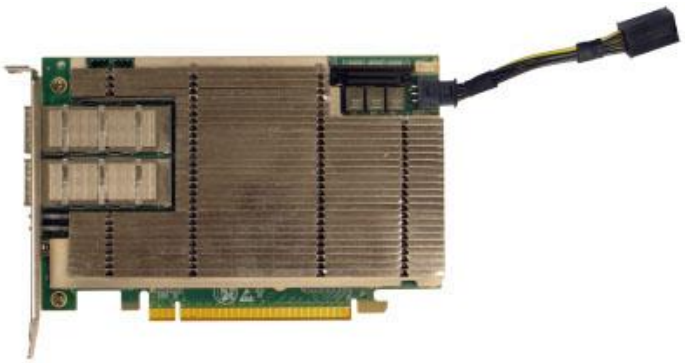
The fb1C1XLG@A10 series is a high performance OEM hardware platform with intended for 10/25/40/100 Gigabit Ethernet via QSFP+ and QSFP28, two PCI Express Gen3 x8 lanes endpoints.

The card based on Intel® FPGA Arria 10 and Ethernet Network Controller Intel® XL710 dual port 40G with all it features as a leading controller in the market.

The card is also offered with a variety of different FPGAs to provide flexibility for the intended application. The card is mounted with 8xDDR4 devices running up to 2400MT/s, total memory 8GB, one device DDR4 1Gbx8 running up to 2400MT/s and one QDR-IV 144Mb density 18 bit data channels, running up to 1066 MHz.

For options on alternate hardware configuration see ordering code.

Key Features



Host Interface:

- Physical bus connector: 16-lane PCIe
- PCIe bus type: 2 x 1-8 lane PCIe Gen1/Gen2/Gen3 with bifurcation
- Network Virtualization offloads for VXLAN and NVGRE
- Unified Networking Providing a single wire for LAN and storage: NAS (SMB, NFS) and SAN (iSCSI, FCoE)
- Virtual Bridging Support – VEPA/802.1Qbg, BPE/802.1Qbh
- Physical Functions – Up to 8 per port, up to 16 per device
- Support for 128 Virtual Device Queues (VMDq) per port
- Hardware Queue Pairs – Up to 1.5K (non-RDMA); up to 256K (RDMA)
- Virtualization – Alleviating hypervisor I/O bottlenecks by providing flow separation for Virtual Machines (VMs)
- Receive Side Scaling (RSS)
- Large Send Offload (LSO)

- TCP/UDP/IP/SCTP Checksum Offload
- IPV4, IPV6

Network Interface:

- IEEE standard: IEEE 802.3 10/40/25/100 GE
- Physical interface: 1xQSFP+, 1xQSFP28
- Supported QSFP+/QSFP28 modules: including fan-out modules for 4x10G/4x25GE, Multimode SR4 (850nm), Single Mode LR4 (1310nm), Multimode LRM4 (1310 nm), or Direct Attached Copper (Twinax)
- Data rate: 8×10 Gbps, 4×10 Gbps+4×25 (FPGA GT only), Gbps, 2×40 Gbps, 1x40Gbps+1x100Gbps (FPGA GT only)
- Support Sync-E standard (optional feature depending on FPGA image)

Configuration:

- Upload of FPGA configuration to flash via PCIe
- USB Blaster II on Board
- Serial Configuration EPCQ-L device memory size of 1Gb , using Active Serial x4 configuration mode

On Board Memory:

- DDR4 – 9 x devices on board of 8Gbx16 each DDR4 device, running up to 2400MT/s
- QDRIV- 1x device 144Mb density 18 bit data channels, running up to 1066 MHz

Board Management:

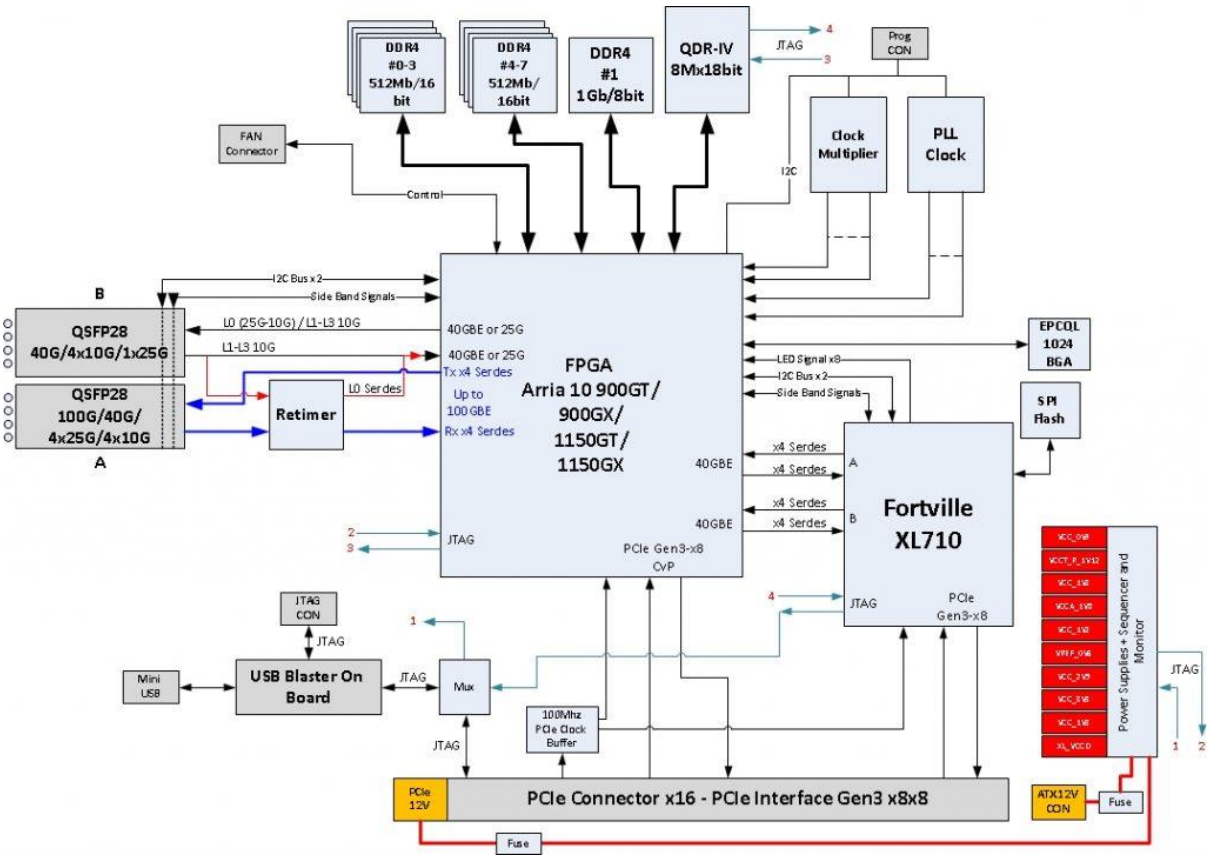
- Voltage level monitoring
- Thermal shut-down protection
- Over current protection on 12V input

Technical Specifications

General Technical Specifications:	
Interface Standard:	PCI-Express Base Specification Revision 3.0 (8 GTs)
Board Size:	Standard height short add-in card 167.65mm X 111.15mm (6.6”X 4.376”)
PCI Express Card Type:	x8x8 Lanes Bifurcation 8-Lanes to Arria 10 GT/GX 8-Lanes to XL710 Note: Can be plug only in 16xPCIe slot
PCI Express Voltage:	+12V ± 8%

On Board Connector Voltage	+12V ± 8% On board auxiliary power connector to support power over 75W
PCIe Connector:	x16 Lanes
FPGA:	Intel® FPGA Arria 10 900/1150 GT or GX • See ordering information about types Arria 10 GX/GT
Ethernet Controller:	Intel® Ethernet Controller XL710-BM2
Memory:	Onboard DDR4, 2400MT, total memory 8GB Onboard QDR-IV, 2132MT, 144Mb (4Mx36)
Holder:	Metal Bracket
Weight:	350g (12.34oz) With Passive Heat-Sink and without optical modules
Power Consumption:	Maximum 130W Maximum 124W (Without Intel®XL710 device) • The total power consumption of the card is depend on user application
Cooling:	– Passive heat sink or active heat sink solution – Built-in thermal protection
Sensors/Monitors:	– Thermal protection – Voltage monitors – Current protection
Operating Temperature:	0°C – 45°C (32°F – 113°F)
Air Flow Requirements:	• Depend on type of heat sink and user application
Storage:	-40°C–65°C (-40°F–149°F)
Regulation:	CE, FCC Class B, ROHS 2 requirements.
Leds:	
LEDs:	Each QSFP Ports has 4 LEDs
LEDs location:	LEDs are located on the PCB, indication visible through light pipe
Connectors:	(2) QSFP28 Cages (1) Auxiliary 12V power supply connector on board (1) Mini-USB Type B connector, located on front of panel for on board USB Blaster II interface (1) On board right angle JTAG connector 8 pins (custom) for FPGA

Main Blocks Diagram:



Order Information

P/N	Description	Notes
fb1C1XLG@	Programmable PCI Express Server Adapter Based on Intel FPGA Arria 10 GX/GT	

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