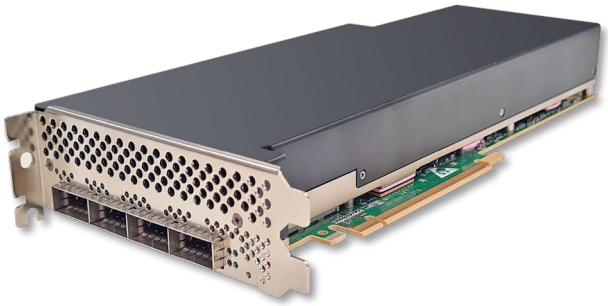
Silicom Connectivity Solutions

Silicom FPGA SmartNIC N5013

Quad port QSFP28, 100 GE, PCIe Gen4 x16, Intel® Stratix® 10 DX FPGA Based, 8GB HBM2

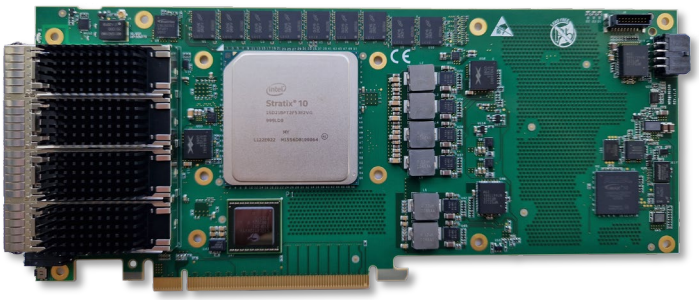
Product Description

The FB4CGG2@S10D21 FPGA SmartNIC N5013 is a high-performance programmable PCIe Server adapter based on the Intel® Stratix® 10 DX 2100 FPGA. The Stratix 10 DX 2100 is an extremely powerful FPGA which also features on-chip 8GB HBM2 memory providing an unprecedent 512 GByte/s of total aggregate bandwidth.



Key Use Cases

- Network Function Virtualization (NFV)
- Multi-Access Edge Computing (MEC)
- Cyber Security
- High-Performance Computing
- Finance
- Mobile Access and Core Network



Key Features

- Intel® Stratix ® 10 DX 2100 FPGA
- HBM2: 8GB (2x4 GB, internal)
- DDR4/ 32GByte+ECC (x18 devices)
- QDR-IV: 144Mbit
- PCIe x16 Gen4
- Intel® Max® 10 Board Management Controller
- On-board power and temperature sensors
- FPGA controlled link and status LEDs
- Time Synchronization via IEEE 1588 (PTP) and SyncE (optional)
- Optional external Sync bracket with 4 x SMA for in/out of PPS and 10MHz

Technical Specifications

Network Interface	
IEEE standard	IEEE 802.3 100GbE, 40GbE, 25GbE, 10GbE
Interfaces	▪ Physical interface: 4 x QSFP28 slots ▪ Multimode SR4 (850nm), Single Mode LR4 (1310nm) or Direct Attached Copper (Twinax) ▪ Data rate: 4x100, 4x40, 16x25, 16x10 Gbps
Host Interface	
PCI bus	▪ PCIe 4.0 x16

General Technical Specifications	
FPGA Details	**Intel® Stratix® 10 DX 2100** ▪ 2.073M Logic Element Fabric ▪ HBM2: 8GB (2x4 GB, internal)
Configuration	▪ Configuration flash can be made to support multiple boot images for automatic fallback to factory default image ▪ Upload of FPGA configuration to flash via PCIe – with supported image and tool
On-board Memory	▪ DDR4, 32GB +ECC (x18 devices), 2 banks of 16G + ECC. ▪ QDR-IV XP, 144Mbit ▪ HBM2, 8GB in Stratix 10 DX2100
On-board Clock	▪ PCIe clock: 100 MHz ▪ 8 output reprogrammable clock generator ▪ Supports network synchronization
Additional Board Support	▪ On-board power and temperature sensors (via SMBus/I2C) ▪ LEDs for board status and board management
Physical Dimensions	▪ Full height, ¾ length, Dual Slot Passive
Environment	▪ Storage temperature: -40°C–65°C (-40°F–149°F) ▪ Operating temperature: 0°C – 45°C (32°F – 113°F) ▪ Hardware compliance: RoHS, FCC Class A, CE, UL
Thermal Design	▪ Passive heat sink targeted to dual slot
Power	▪ Max 225W ▪ 75W max from the PCIe Slot ▪ 150W max from the 12V Aux 2x4 Connector
Port LEDs	▪ 4 x Link/ ACT for the 4 x QSFP28, on bracket ▪ 1 x multi color status LED, on bracket
Time Synchronization	▪ Support Sync-E/ 1588 standard (option for SW support) ▪ Bracket mounted SMA connector, optional ▪ Support for external Sync bracket with 4 x SMA for in/out of PPS and 10MHz
Board Management	▪ Intel® Max® 10 FPGA Board Management Controller ▪ Voltage level monitoring ▪ Thermal shut-down protection ▪ Over current protection on 12V input

Ordering Information

Product Line	Ordering P/N	Notes
N5013	**FB4CGG2@S10D21-D00P0**	0: (0) E810-CAM1 0: ¾ Length, 10” P: Passive heat sink, dual slot 0: No external Sync bracket
N5013	**FB4CGG2@S10D21-D00P1**	0: (0) E810-CAM1 0: ¾ Length, 10” P: Passive heat sink, dual slot 1: With external Sync bracket

V1.2