BittWare a molex company

520NX
PCIe FPGA Board

Stratix 10 AI-optimized FPGA with HBM2
AI-Optimized for High-Bandwidth, Low-Latency AI Acceleration

Designed to tackle the most demanding artificial intelligence workloads, the 520NX is a PCIe card featuring Intel's Stratix 10 NX2100 FPGA. This revolutionary accelerator delivers a unique combination of capabilities needed to implement low latency and larger AI models:

- **High-performance AI Tensor Blocks**: 143 INT8 TOPS
- **Deep Near-Compute Memory**: up to 8GB of HBM2
- **High-Bandwidth Networking**: up to 600Gbps board-to-board bandwidth

The 520NX features a Board Management Controller (BMC) for advanced system monitoring and control, which greatly simplifies platform integration and management.

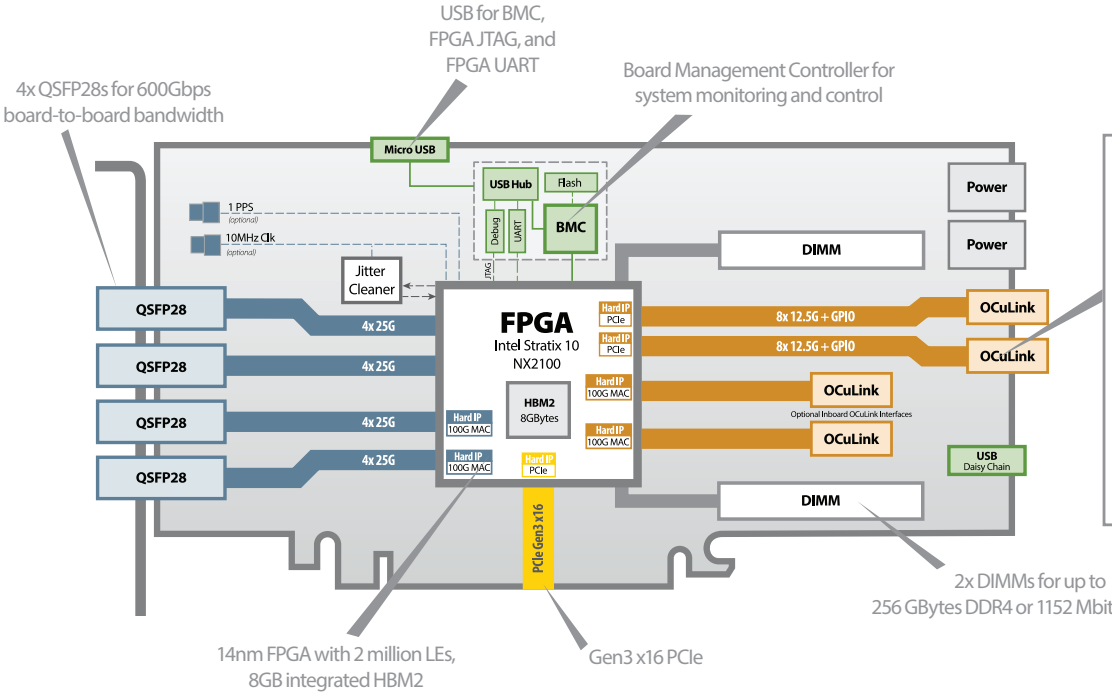
intel STRATIX 10

key features

Intel Stratix 10 **NX2100**

8GB of 3D stacked **HBM2**

AI Tensor Blocks



OCuLink Expansion Ports

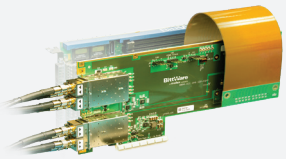
Optimize the 520NX for your application with expansion:

- Board-to-board interconnect
- NVMe access for storage acceleration
- Connect to accessory boards for customization options
- Includes GPIO

Inquire about customized Molex connectors/cables as required for your application.

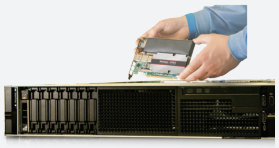
Additional Services

Take advantage of BittWare's range of design, integration, and support options



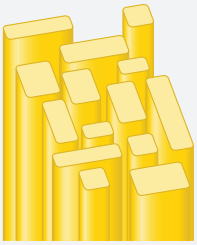
Customization

Additional specification options or accessory boards to meet your exact needs.



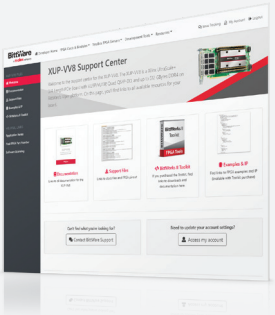
Server Integration

Available pre-integrated in our TeraBox servers in a range of configurations.



Application Optimization

Ask about our services to help you port, optimize, and benchmark your application.



Service and Support

BittWare Developer Site provides online documentation and issue tracking.

Board Specifications

FPGA	• Intel Stratix 10 NX
	  • NX2100 in an F2597 package
	  • 8GBytes on-chip High Bandwidth Memory (HBM2) DRAM, 410 GB/s (speed grade 2)
	  • Core speed grade -2: I/O speed grade -2
	• Contact BittWare for other Stratix 10 NX options

On-board Flash	• 2Gbit Flash memory for booting FPGA
External memory	• 2x 288-pin DIMM slots each fitted with 16GB modules by default, i.e., 32GB total on board (options up to 256GB total) • Contact BittWare for QDR-II+ DIMM options
Host interface	• x16 Gen3 interface direct to FPGA, connected to PCIe hard IP
QSFP cages	• 4 QSFP28 cages on front panel connected directly to FPGA via 16 transceivers • User programmable low jitter clocking supporting 10/25/40/100GbE • Each QSFP28 can be independently clocked • Jitter cleaner for network recovered clocking • 2 QSFP28s have available 100GbE MAC hard IP
OCuLink	• 2x edge connectors (A, B) @ 12.5G per lane (default); each supports PCIe Gen 3 x8 hard IP, GPIO, and PCIe master and optional input clocking • 2x inner connectors (C, D) @ 25G per lane (optional); 1x 100GbE MAC hard IP per OCuLink
Board Management Controller	• Voltage, current, temperature monitoring • Power sequencing and reset • Field upgrades • FPGA configuration and control • Clock configuration • Low bandwidth BMC-FPGA comms with SPI link • USB 2.0 • PLDM support • Voltage overrides
Cooling	• Standard: double-width active heatsink (with fan) • Optional: double-width passive heatsink • Optional: double-width liquid cooling
Electrical	• On-board power derived from 12V PCIe slot & two AUX connectors (one 8-pin, one 6-pin) • Power dissipation is application dependent • Typical max power consumption 225W
Environmental	• Operating temperature: 5°C to 35°C
Quality	• Manufactured to IPC-A-610 Class 2 • RoHS compliant • CE, FCC, UKCA & ICES approvals
Form factor	• Standard-height PCIe dual-slot board • 111.15mm x 266.70mm (4.376in x 10.500in)

Development Tools

FPGA development	BIST - Built-In Self-Test for CentOS 7 provided with source code (pinout, gateware, PCIe driver & host test application)
Application development	Supported design flows - Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

Deliverables

- 520NX FPGA board
- USB cable (front panel access)
- Built-In Self-Test (BIST)
- 1-year access to online Developer Site
- 1-year hardware warranty

To learn more, visit **www.BittWare.com**

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