BittWare a molex company

520N-MX

PCIe FPGA Board

Stratix 10 FPGA Board with 16GB HBM2

Powerful solution for accelerating memory-bound applications

Designed for compute acceleration, the 520N-MX is a PCIe board featuring Intel's Stratix 10 MX2100 FPGA with integrated HBM2 memory. The size and speed of HBM2 (16GB at up to 512GB/s) enables acceleration of memory-bound applications. The board's 100G QSFP28s are ideal for clustering, and OCuLink connectors allow expansion.

Both traditional HDL and higher abstraction C, C++ and OpenCL-based tool flows are supported. Deliverables include an optimized board support package (BSP) for the Intel OpenCL SDK.

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

Tool Flow Flexibility for Software- or Hardware-Based Development

BittWare OpenCL FPGA Tools

- OpenCL support for software-orientated customers
- Abstraction for faster development
- Push-button flow for FPGA executable, driver, and API
- Add optimized HDL IP cores to OpenCL designs as libraries·

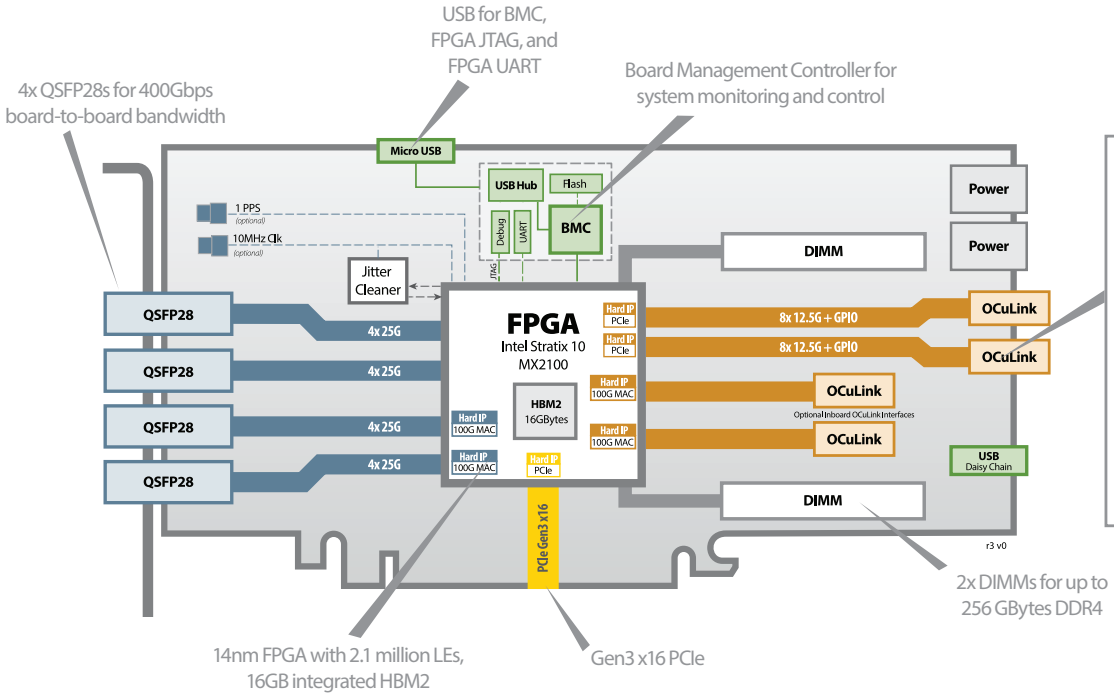
BittWare HDL FPGA Tools

Traditional VHDL/Verilog support for hardware-orientated customers

- Hand-code for ultimate performance
- High-Level Synthesis (HLS) available for rapid development
- FPGA card designed to support standard Intel IP cores for Stratix 10

key features

Intel Stratix 10 MX2100 | **16GB HBM2 up to 512GB/s** | **OpenCL BSP**



OCuLink Expansion Ports

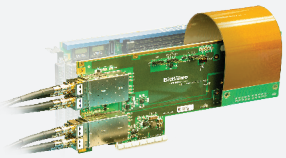
Optimize the 520N-MX for your application with expansion:

- 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

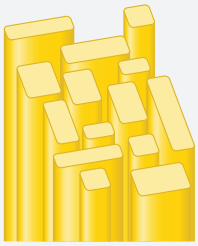


Customization

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

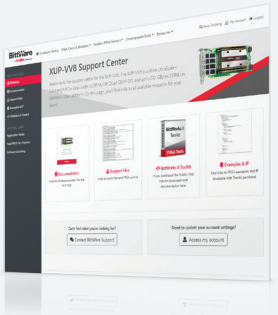
Server Integration

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 MX
	  • MX2100 in an F2597 package
	  • 16GBytes 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 MX 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)
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: dual-slot active heatsink (with fan) • Optional: dual-slot passive heatsink • Optional: dual-slot liquid cooling
Electrical	• On-board power derived from PCIe slot 12V and 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 and host test application)
Application development	Supported design flows - Intel FPGA OpenCL SDK, Intel High-Level Synthesis (C/C++) and Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

Deliverables

- 520N-MX FPGA board
- USB cable (front panel access)
- Built-In Self-Test (BIST)
- OpenCL HPC Board Support Package (BSP)
- 1-year access to online Developer Site
- 1-year hardware warranty

Safety & Compliance

- FCC (USA) 47CFR15.107 / 47CFR15.109
- CE (Europe) EN55032 / EN55024 / EN55035 / EN61000-3-2 / EN610003-3
- UKCA (United Kingdom) BS EN55032 / BS EN55024 / BS EN55035 / BS EN61000-3-2 / BS EN610003-3
- ICES (Canada) ICES-003 Issue 7
- RCM (Aus/NZ)
- The safety objectives referred to in Article 3 and set out in Annex I of DIRECTIVE 2014/35/EU have been fulfilled
- RoHS – Restriction of Hazardous Substances

intel STRATIX 10

intel partner Titanium

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

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