BittWare a molex company

# 520N
PCIe FPGA Board


## Stratix 10 FPGA Board with 4x 100G

Introducing ground-breaking single precision floating point performance of up to 10 TFLOPS, the 520N is a PCIe board featuring an Intel Stratix 10 FPGA, along with four banks of DDR4 external memory.

Four network ports enable dramatic FPGA-to-FPGA scaling independent of the PCIe bus, plus support for an array of serial I/O protocols operating up at 10/25/40/100GbE.

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.

### Tool Flow Flexibility for Software- or Hardware-Based Development

BittWare OpenCL FPGA Tools

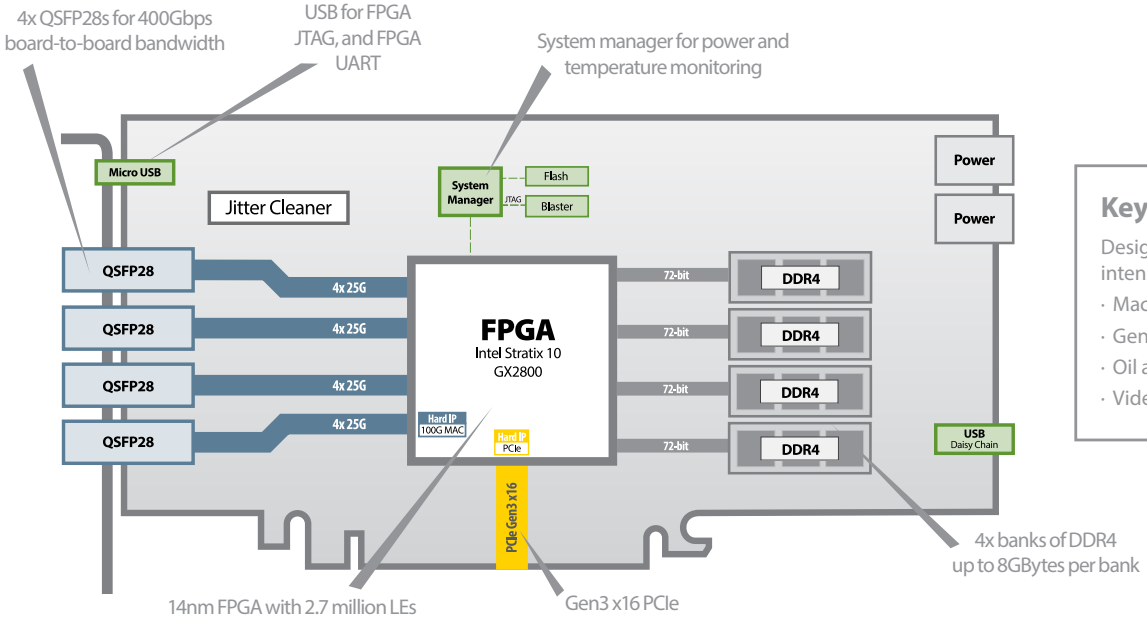
- OpenCL support for software-orientated customers
- Abstration for faster development
- Push-button flow for FPGA executable, driver, and API
- Add optimized HDL IP cores to OpenCL designs as libraries

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 GX 2800** | **4x QSFP28s for 400Gbps** | **OpenCL BSP**




### Key Applications

Designed to address a range of compute-intensive and latency-critical applications:

- Machine learning
- Gene sequencing
- Oil and Gas
- Video transcoding

# Additional Services

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

### Customization

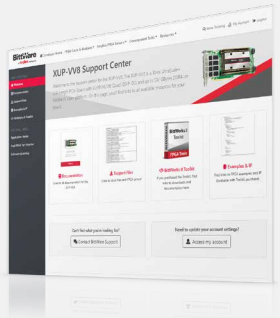
Additional specification options or accessory boards to meet your exact needs.

### 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 GX<br>  • GX2800 in an F1760 package<br>  • L-tile with up to 26Gbps SerDes I/O<br>  • H-tile with up to 28Gbps SerDes I/O<br>  • Core speed grade -2: I/O speed grade -2<br>• Contact BittWare for other Stratix 10 GX options |
| On-board Flash | • 2Gbit Flash memory for booting FPGA |
| External memory | • Four banks of DDR4 SDRAM x 72 bits<br>• 8GB per bank (32GB total / 64GB version also available)<br>• Transfer Rate: 2400 MT/s |
| 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<br>  • L-Tile: up to 2 100Gbps network ports<br>  • H-Tile: up to 4 100Gbps network ports<br>• User programmable low jitter clocking supporting 10/25/40/100GbE<br>• Each QSFP28 can be independently clocked<br>• Jitter cleaner for network recovered clocking<br>• 2 QSFP28s have available 100GbE MAC hard IP |
| System manager | • On-board Intel USB Blaster<br>• Power and temperature monitoring<br>• Fault condition reporting to FPGA |

| | |
|---|---|
| Cooling | • Standard: double-width active heatsink (with fan)<br>• Optional: double-width passive heatsink |
| Electrical | • On-board power derived from 12V PCIe slot & two AUX connectors (one 8-pin, one 6-pin)<br>• Power dissipation is application dependent<br>• Typical max power consumption 225W |
| Environmental | • Operating temperature: 5°C to 35°C |
| Quality | • Manufactured to IPC-A-610 Class 2<br>• RoHS compliant<br>• CE, FCC & ICES approvals |
| Form factor | • Standard-height PCIe dual-slot board<br>• 4.376 x 10.5 inches (111 x 266.7 mm) |

## Development Tools

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|---|---|
| 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 - Intel FPGA OpenCL SDK, Intel High-Level Synthesis (C/C++) & Quartus Prime Pro (HDL, Verilog, VHDL, etc.) |

## Deliverables

- 520N 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

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

Rev 2021.11.23 | November 2021



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