BittWare a **molex** company

520R-MX
PCIe FPGA Board

Stratix 10 FPGA Board with HBM2 and 480Gbps Optical Input
Optimized for sensor processing applications with massive real-time data ingest requirements

Designed for compute acceleration of high-speed sensor data, the 520R-MX is a PCIe board featuring Intel's Stratix 10 MX2100 FPGA with integrated HBM2 memory. The size and speed of HBM2 (up to 16GB at up to 512GB/s) enables acceleration of memory-bound applications. 48 optical receivers provide high-speed input to the FPGA, and OCuLink connectors allow expansion.

The 520R-MX 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 **MX2100** | up to 16GB HBM2 up to **512GB/s** | 48 10Gbps **optical receivers** |

48 optical receivers for high-speed optical interconnects

Board Management Controller for system monitoring and control
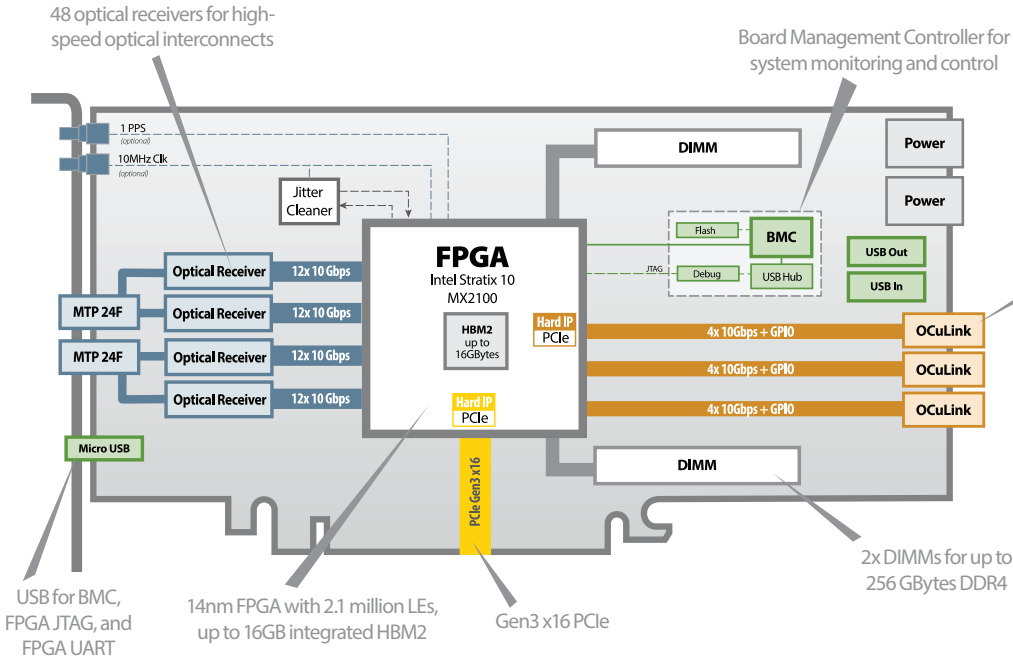
OCuLink Expansion Ports

Optimize the 520R-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.

1 PPS *(optional)*
10MHz Clk *(optional)*

DIMM
Power
Power

Jitter Cleaner

Flash
BMC
JTAG
Debug
USB Hub
USB Out
USB In

FPGA
Intel Stratix 10
MX2100

HBM2 up to 16GBytes

Hard IP PCIe

Hard IP PCIe

Optical Receiver — 12x 10 Gbps
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Optical Receiver — 12x 10 Gbps

MTP 24F
MTP 24F

Micro USB

PCIe Gen3 x16

4x 10Gbps + GPIO — OCuLink
4x 10Gbps + GPIO — OCuLink
4x 10Gbps + GPIO — OCuLink

DIMM

USB for BMC, FPGA JTAG, and FPGA UART

14nm FPGA with 2.1 million LEs, up to 16GB integrated HBM2

Gen3 x16 PCIe

2x DIMMs for up to 256 GBytes DDR4

Additional Services

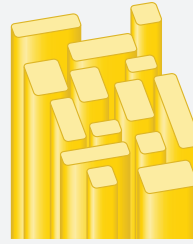Take advantage of BittWare's range of design, integration, and support options
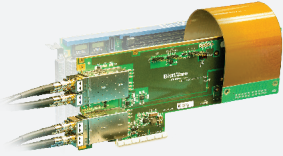
Customization
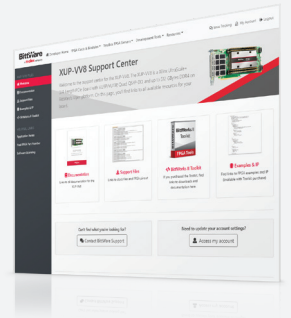Additional specification options or accessory boards to meet your exact needs.

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 • 8GBytes on-chip High Bandwidth Memory (HBM2) DRAM, 410 GB/s (speed grade 2) • Core speed grade -2: I/O speed grade -3 • Contact BittWare for other Stratix 10 MX options (16GBytes HBM2, speed grades)
On-board Flash	• 2Gbit Flash memory for booting FPGA
External memory	• 2 288-pin DIMM slots each fitted with a 64GB DDR4-2400 LRDIMM by default, i.e., 128GB total on board (options up to 256GB total)
Host interface	• PCIe Gen3 x16 interface direct to FPGA, connected to PCIe hard IP
Optical Receivers	• 4 12-channel 10.3125Gbps optical receivers, each connected to the FPGA via 12 SerDes channels
OCuLink	• 3 x4 edge connectors (A, B, C) @ 10.3125Gbps per lane; one lane (C) supports PCIe Gen3 x4 hard IP
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

Cooling	• Double-width passive heatsink
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 200W
Environmental	• Operating temperature: 5°C to 40°C at card inlet
Quality	• Manufactured to IPC-A-610 Class 2 • RoHS compliant • CE, FCC, UKCA & ICES-003 approvals
Form factor	• Standard-height PCIe dual-slot board • 111.15mm x 266.70mm (4.376in x 10.500in)

Development Tools

System development	BittWare SDK including PCIe driver, libraries, and board monitoring utilities
FPGA development	Supported design flows -Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

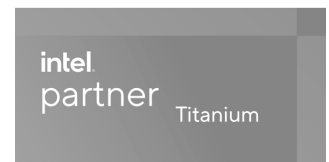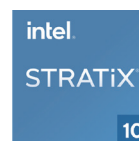## Deliverables

• 520R-MX FPGA board
• 1-year access to online Developer Site
• 1-year hardware warranty

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

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