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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

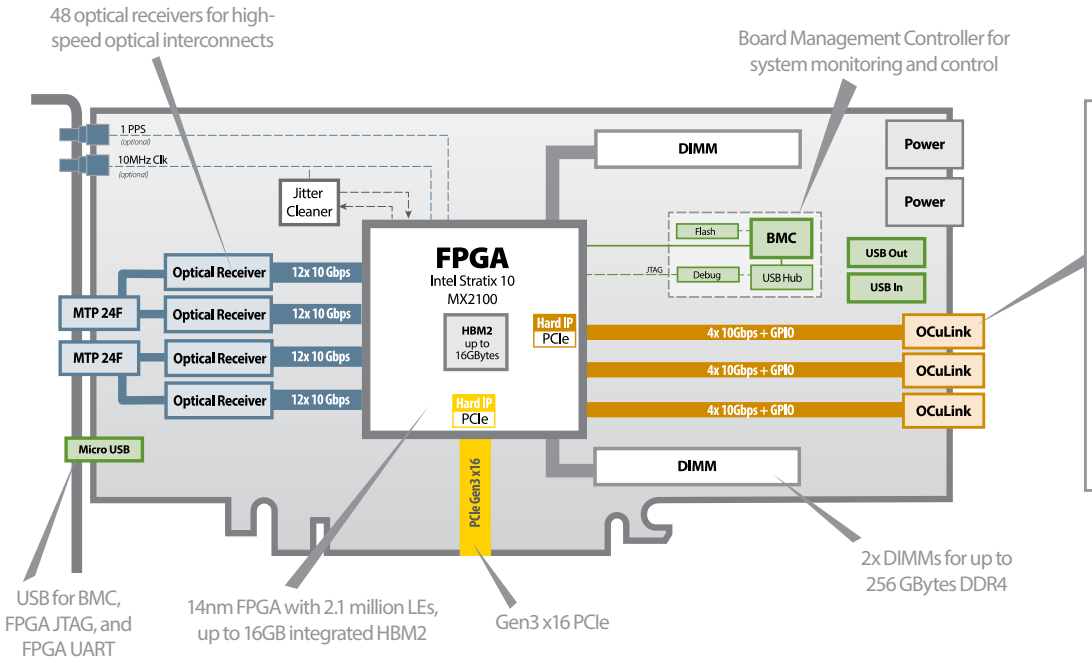
Designed for compute acceleration of high-speed sensor data, the 520R-MX is a PCIe board featuring Intel's Stratix 10 MX2100 FPGA with integrated HBM2 memory. The size and speed of HBM2 (up to 16GB at up to 512GB/s) enables acceleration of memory-bound applications. 48 optical receivers provide high-speed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



OCuLink Expansion Ports

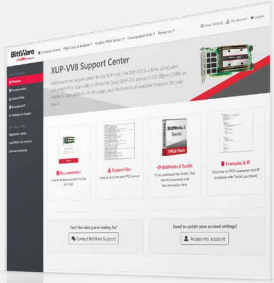
Optimize the 520R-MX for your application with expansion:

- 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.

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 & ICES-003 approvals
Form factor	• Standard-height PCIe dual-slot board • 111 x 266.7 mm (4.376 x 10.5 inches)

Development Tools

System development	BittWare SDK including PCIe driver, libraries, and board monitoring utilities
FPGA development	Supported design flows - Intel High-Level Synthesis (C/C++) & Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

Deliverables

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

intel. STRATIX 10

intel. partner Titanium

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BittWare a molex company

International Distributors

sky blue microsystems

Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de

ZERIF TECHNOLOGIES LTD. A SKY BLUE COMPANY, FOUNDED 1999

In Great Britain:
Zerif Technologies Ltd.
Winnington House, 2 Woodberry Grove
Finchley, London N12 0DR
+44 115 855 7883, info@zerif.co.uk
www.zerif.co.uk