

**BittWare**  
a molex company

**A10PED**  
PCIe FPGA Board



## Dual Intel Arria 10 GX PCIe Board

Standard-size PCIe with Dual 12x Avago Fiber Optic, QSFP, and HMC

BittWare's A10PED is a full-length PCIe x8 card featuring two Intel Arria 10 GX FPGAs. The Arria 10 boasts high densities and a power-efficient FPGA fabric married with a rich feature set including high-speed transceivers up to 15 Gbps, hard floating-point DSP blocks, and embedded Gen3 PCIe x8. The board offers flexible memory configurations, supporting a Hybrid Memory Cube along with up to 32 GBytes of memory. Two 12x Avago fiber optic modules and a QSFP cage provide high-speed, low-latency I/O direct to the FPGAs.

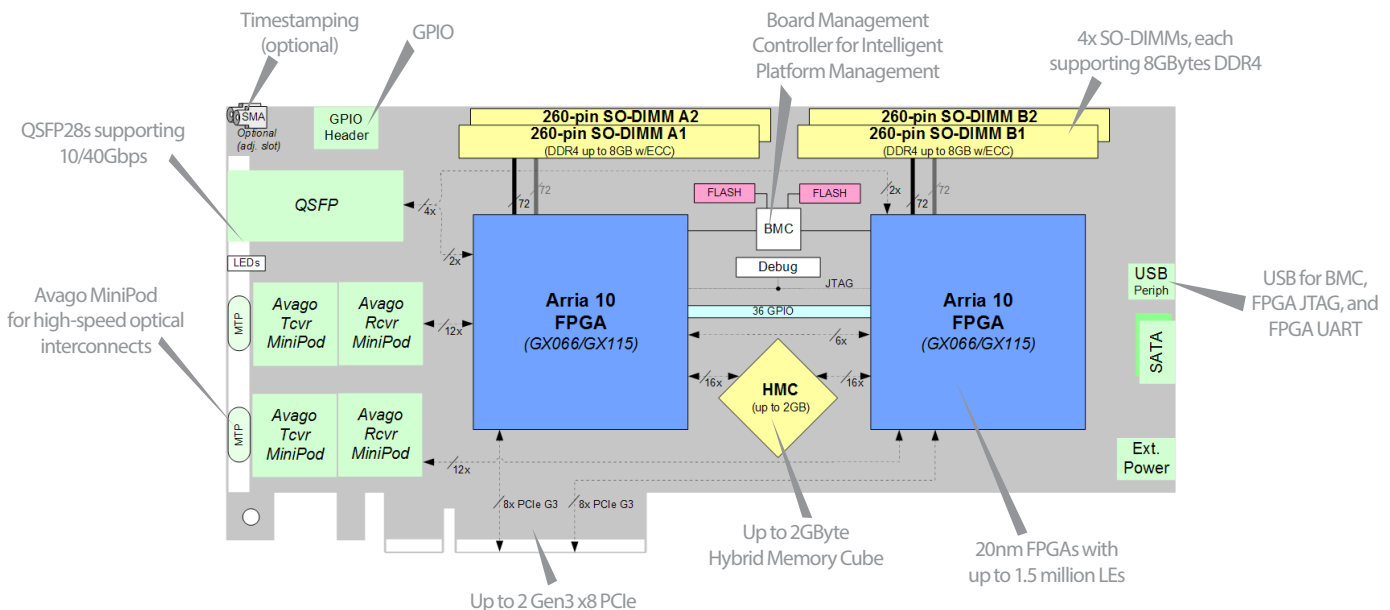
The A10PED also incorporates a Board Management Controller (BMC) for advanced system monitoring, which greatly simplifies platform management. All of these features combine to make the A10PED ideal for a wide range of applications, including network processing and security, compute and storage, instrumentation, broadcast, and SigInt.

### key features

Dual Arria 10  
GX FPGAs

QSFP28  
for 10/40Gbps

2x Avago  
Fiber Optic



# 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.



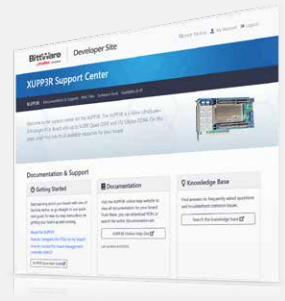
## Server Integration

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	<ul style="list-style-type: none"> <li>Intel Arria® 10 GX FPGAs             <ul style="list-style-type: none"> <li>GX 660 FPGA</li> <li>Core speed grade - 2; I/O speed grade -3</li> </ul> </li> <li>Contact BittWare for Arria 10 GX 1150 FPGA option</li> </ul>
External memory	<ul style="list-style-type: none"> <li>4 SO-DIMM sites, each supporting 4 GBytes DDR4 x72 with ECC (8 GByte option available)</li> <li>2 GByte Hybrid Memory Cube (HMC) connected to each FPGA via 16x SerDes</li> <li>Flash for FPGA images</li> </ul>
Host interface	<ul style="list-style-type: none"> <li>Two x8 Gen1, Gen2, Gen3 interfaces direct to FPGAs: one x8 interface (to FPGA A) in a standard slot; two x8 interfaces (one to each FPGA) requires bifurcated slot</li> </ul>
USB	<ul style="list-style-type: none"> <li>Micro USB port (USB 2.0) for debug and programming FPGA and Flash</li> <li>Built-in Intel USB-Blaster</li> </ul>
I/O	<ul style="list-style-type: none"> <li>Two 12x Avago fiber optic modules, connected to the FPGAs via 12 SerDes channels each</li> <li>Two SATA connectors, connected to FPGA</li> </ul>
QSFP cages	<ul style="list-style-type: none"> <li>QSFP28 (zQSFP) cage on front panel connected directly to each FPGA via 2 SerDes (no external PHY)</li> <li>Each supports 4x 10GbE</li> <li>Backward compatible with QSFP and can be optionally adapted for use as SFP+</li> </ul>

Board Management Controller	<ul style="list-style-type: none"> <li>Voltage, current, temperature monitoring</li> <li>Power sequencing and reset</li> <li>Field upgrades</li> <li>FPGA configuration and control</li> <li>Clock configuration</li> <li>I<sup>2</sup>C bus access</li> <li>USB 2.0 and JTAG access</li> <li>Voltage overrides</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>Standard: active heatsink</li> <li>Optional: passive heatsink</li> </ul>
Electrical	<ul style="list-style-type: none"> <li>On-board power derived from 12V PCIe slot</li> <li>AUX connector (6-pin) also available</li> <li>Power dissipation is application dependent</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>Operating temperature 5°C to 35°C</li> </ul>
Size	<ul style="list-style-type: none"> <li>Full-length, standard-height, double-width PCIe board</li> <li>312mm x 111.15mm</li> </ul>

## Development Tools

Application development	<ul style="list-style-type: none"> <li><b>HDL development - BittWorks II Toolkit:</b> host, command, and debug tools for BittWare hardware</li> </ul>
FPGA development	<ul style="list-style-type: none"> <li><b>FPGA Examples</b> - example Quartus projects</li> <li><b>Intel Tools</b> - Quartus II software</li> </ul>

To learn more, visit [www.BittWare.com](http://www.BittWare.com)

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