



**BittWare**  
a molex company

**IA-220-U2**  
U.2 FPGA Accelerator

## Agilex on U.2 Form Factor with PCIe Gen4

### FPGA-Based Computational Storage Processor for NVMe Acceleration

BittWare's IA-220-U2 is a Computational Storage Processor conforming to the U.2 form factor. Ideal for NVMe acceleration, it features an Intel Agilex FPGA supporting PCIe Gen4 directly coupled to local DDR4 memory. This energy-efficient, flexible compute node is intended to be deployed within conventional U.2 NVMe storage arrays (approximately 1:8 ratio) allowing FPGA-accelerated instances of:

- Erasure Coding and Deduplication
- Compression, Encryption & Hashing
- String/Image Search and Database Sort/ Join/Filter
- Machine Learning Inference

The IA-220-U2 can be wholly programmed by customers developing in-house capabilities or delivered as a ready-to-run pre-configured solution featuring Eideticom's NoLoad® IP. The IA-220-U2 is front-serviceable in a 1U chassis and can be mixed in with storage units in the same server, allowing users to mix-and-match storage and acceleration.



## key features

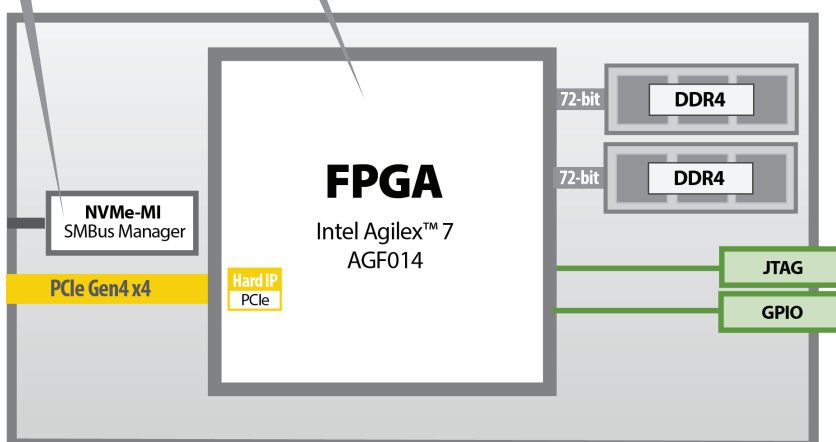
**PCIe Gen4  
Support**

**8 GBytes  
DDR4**

Intel Agilex™ FPGA  
with up to **1.4M  
Logic Elements**

NVMe-MI compliant  
SMBus controller for  
access to board data

10nm FPGA with  
1.4M LEs and 7K  
memory blocks



r1 v0



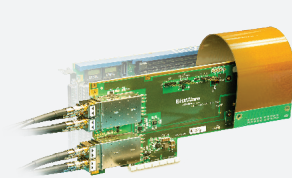
Order your IA-220-U2 pre-configured with Eideticom's NoLoad®:

- Plug-and-play solution
- NVMe compatible and standards-based with no OS changes
- Reduced TCO/TCA - lower power and reduced IO
- CPU offload improves QoS up to 40x
- Disaggregates compute and storage into independently scalable resources
- CPU agnostic
- Reconfigurable accelerators, enabling scalable compute architectures

Learn more at [www.eideticom.com](http://www.eideticom.com)

# Additional Services

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



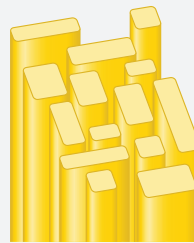
## Customization

[Additional specification options](#) or [accessory boards](#) to meet your exact needs.



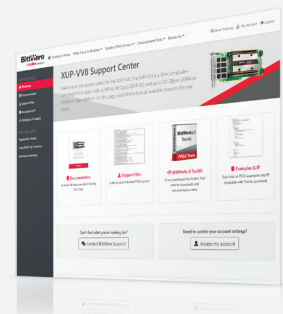
## Server Integration

Available pre-integrated in our [TeraBox servers](#) in a range of configurations.



## IP and Solutions

Our portfolio of IP and solutions reduce risk for development and deployment.



## Service and Support

BittWare Developer Site provides online documentation and issue tracking.

## Board Specifications

FPGA	<ul style="list-style-type: none"> <li>Intel Agilex 7 F-Series AGF014</li> <li>Core speed grade -3: I/O speed grade -3</li> <li>Contact BittWare for other Agilex FPGA options</li> </ul>
On-board DDR4 SDRAM	<ul style="list-style-type: none"> <li>Two banks of DDR4 SDRAM x 72 bits</li> <li>4GB per bank</li> <li>Transfer Rate: 2400 MT/s</li> </ul>
Host interface	<ul style="list-style-type: none"> <li>PCIe Gen4 x4</li> <li>U.2 Connector</li> <li>Compliant to SFF-8639</li> </ul>
Datacenter deployment	<ul style="list-style-type: none"> <li>On-board NVMe-MI compliant SMBus controller (Spec. 1.0a)</li> <li>Field flash update via software or SMBus</li> <li>SMBus FPGA flash control: anti-bricking, fallback and multiboot</li> <li>SMBus access to unique board data and temperature sensor</li> </ul>
Back panel features	<ul style="list-style-type: none"> <li>User LEDs accessible</li> </ul>
Development features	<ul style="list-style-type: none"> <li>JTAG connector for access to the FPGA, flash and debug tools</li> <li>GPIO connector</li> </ul>
Power supply monitoring and reporting	<ul style="list-style-type: none"> <li>Voltage monitoring</li> <li>Temperature monitoring</li> <li>Fault condition reporting to FPGA</li> </ul>

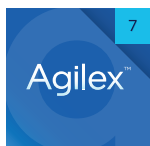
Cooling	<ul style="list-style-type: none"> <li>U.2 drive case optimized for cooling with passive heatsink</li> </ul>
Electrical	<ul style="list-style-type: none"> <li>Hot swapping tolerant</li> <li>On-card power derived from U.2 supplies</li> <li>Power dissipation is application dependent</li> <li>Typical power consumption ~20W</li> <li>Card designed to deliver up to 25W power consumption</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>Operating temperature: 5°C to 35°C</li> <li>Cooling: forced air</li> </ul>
Quality	<ul style="list-style-type: none"> <li>Manufactured to IPC-A-610 Class 2</li> <li>RoHS compliant</li> </ul>
Form factor	<ul style="list-style-type: none"> <li>U.2 compliant 2.5" Drive Form Factor</li> <li>Height: 15mm</li> </ul>

## Development Tools

FPGA development	BittWare SDK including PCIe driver, libraries, and board monitoring utilities (Linux support only)
Application development	<a href="#">Supported design flows</a> - Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

## Safety & Compliance

- FCC (USA) 47CFR15.107 / 47CFR15.109
- CE (Europe) EN55032:2015 + A11:2020 / EN55035:2017 + A11:2020 / EN61000-3-2:2019 +
- A1:2021 / EN610003-3:2013 + A1:2019
- UKCA (United Kingdom) BS EN55032:2015 + A11:2020 / BS EN55035:2017 + A11:2020 / BS
- EN61000-3-2:2019 + A1:2021 / BS EN610003-3:2013 + A1:2019
- ICES (Canada) ICES-003 Issue 7 October 2020
- Safety: CE (Europe) EN IEC 62368-1:2020+A11:2020 with national differences for Australia, New Zealand, EU Group, Singapore, United States, Canada and UK
- UKCA (United Kingdom) BS EN IEC 62368-1:2020+A11:2020
- AS/NZS 62368-1 3rd Edition, Revised October 22, 2021
- CAN/CSA C22.2 No. 62368-1:19, Revised October 22, 2021
- CB Test Certified IEC 62368-1:2018
- RoHS compliant to the 2011/65/EU + 2015/863 directive



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

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