BittWare a molex company

**254-U2**
U.2 FPGA Accelerator

# UltraScale+ on U.2 Form Factor with PCIe Gen4

## FPGA-Based Computational Storage Processor for NVME Acceleration

BittWare's 254-U2 is a Computational Storage Processor conforming to the U.2 form factor. Ideal for NVMe acceleration, it features a Xilinx Kintex UltraScale+ 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

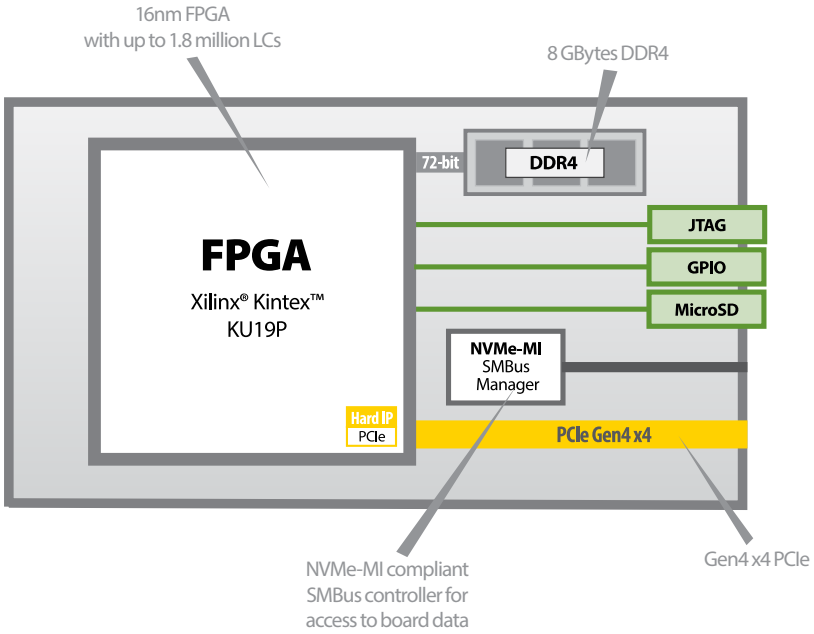
The 254-U2 can be wholly programmed by customers developing in-house capabilities or delivered as a ready-to-run pre-configured solution featuring Eideticom's NoLoad® IP. The 254-U2 is front-serviceable in a 1U chassis and can be mixed in with storage units in the same server, allowing users to mix-and-match storage and acceleration.


## key features

KU19P FPGA:
**1.8 million LCs**
Kintex UltraScale+

**PCIe Gen4**
Support

Up to
**16 GBytes**
DDR4




EIDETICOM

Order your 254-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

# Additional Services

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

## Customization

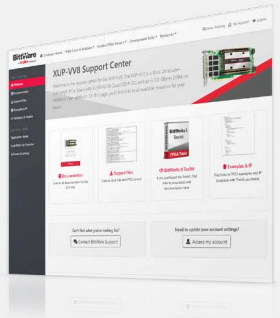
Additional specification options or accessory boards to meet your exact needs.

## 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.

## Specifications

| | |
|---|---|
| FPGA | • Xilinx Kintex UltraScale+<br>  • KU19P in an FFVB2104 package<br>  • Core speed grade -2<br>• Contact BittWare for other FPGA options |
| On-board DDR4 SDRAM | • One bank of DDR4 SDRAM x 72 bits<br>• 8GB bank (16GB version also available)<br>• Transfer Rate: 2400 MT/s |
| Host interface | • PCIe Gen4 x4<br>• U.2 Connector<br>• Compliant to SFF-8639 |
| Datacenter deployment | • On-board NVMe-MI compliant SMBUs controller (Spec. 1.0a)<br>• Field flash update via software or SMBus<br>• SMBus FPGA flash control: anti-bricking, fallback and multiboot<br>• SMBus access to unique board data and temperature sensor |
| Back panel features | • User LEDs accessible<br>• Reset switch to restore factory settings |
| Development features | • JTAG connector for access to the FPGA, flash and debug tools<br>• GPIO connector<br>• MicroSD connector |
| Power supply monitoring & reporting | • Voltage monitoring<br>• Temperature monitoring<br>• Fault condition reporting to FPGA |
| Cooling | • U.2 drive case optimized for cooling with passive heatsink |
| Electrical | • Hot swapping tolerant<br>• On-card power derived from U.2 supplies<br>• Power dissipation is application dependent<br>• Typical FPGA power consumption ~20W<br>• Card designed to deliver up to 25W power consumption |
| Environmental | • Operating temperature: 5°C to 35°C<br>• Cooling: air convection |
| Quality | • Manufactured to ISO9001:2008 IPC JSTD-001 -Class III<br>• RoHS compliant |
| Form factor | • U.2 compliant 2.5" Drive Form Factor<br>• Height: 15mm |

## Development Tools

| | |
|---|---|
| FPGA development | BIST - Built-In Self-Test for CentOS 7 provided with source code (pinout, gateware, PCIe driver and host test application) |
| Application development | Xilinx Tools - Vivado Design Suite HLx Editions: HDL and C/C++ with HLS |

## Deliverables

- 254-U2 FPGA board
- Built-In Self-Test (BIST)
- Eideticom NoLoad pre-installed (optional)
- 1-year access to online Developer Site
- 1-year hardware warranty
- Contact BittWare for extended warranty and support options

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

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