

BittWare
a moxle company

XUP-VV4
PCIe FPGA Card



UltraScale+ PCIe board with VU13P

BittWare's XUP-VV4 is an UltraScale+ VU13P FPGA-based PCIe card, ideal for high-density datacenter applications. The AMD UltraScale+ VU13P FPGA gives designers incredible performance potential, with 3.8M logic elements — yet with a power density that makes thermal management difficult. The XUP-VV4 meets this challenge with BittWare's Viper platform, supporting large FPGA loads, up to 512 GBytes DDR4, and 4x 100 Gbps Ethernet.

BittWare's Viper platform uses advanced computer flow simulation to drive the physical board design in a thermals first approach, including the use of heat pipes, airflow channels, and arranging components to maximize the limited available airflow in a server. The XUP-VV4 features air cooling by default, but liquid cooling is also available. The board features the D2104 lidless package from AMD—allowing the heat pipes to contact the die directly, instead of through the heat spreader lid.



AMD VU13P FPGA: lidless package is used by BittWare's Viper thermal management for enhanced cooling performance

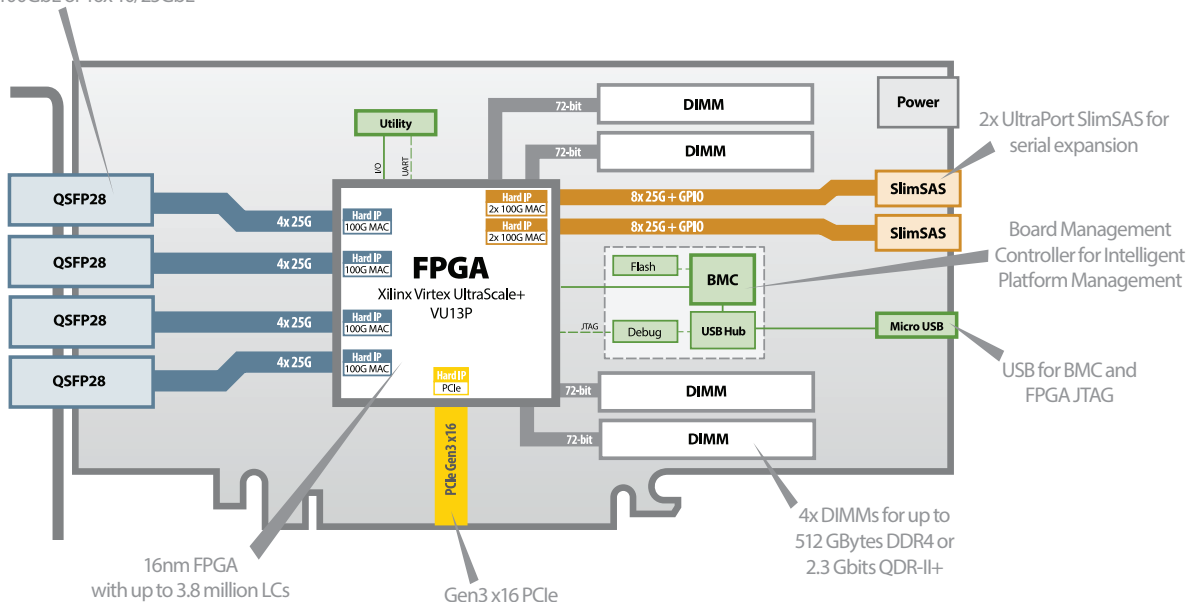
key features

4x 100GbE
via 4 QSFP28

Air or Liquid Cooled

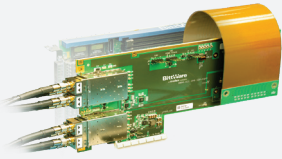
VU13P FPGA: 3.8 million LCs
FPGA by AMD

4x QSFP28s for 4x 40/100GbE or 16x 10/25GbE



Additional Services

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



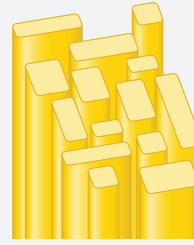
Customization

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



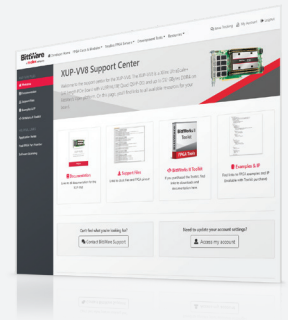
Server Integration

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"> Virtex UltraScale+ <ul style="list-style-type: none"> VU13P in D2104 package Core speed grade - 2 Contact BittWare for other FPGA options
On-board Flash	<ul style="list-style-type: none"> Flash memory for booting FPGA
External memory	<ul style="list-style-type: none"> 4 DIMM sites, each supporting*: <ul style="list-style-type: none"> Up to 128 GBytes DDR4 x72 with ECC Up to 576 Mbits dual QDR-II+ x18 (2 independent 288 Mbit banks)
Host interface	<ul style="list-style-type: none"> x16 Gen3 interface direct to FPGA
USB port	<ul style="list-style-type: none"> Micro USB: access to BMC and FPGA JTAG
Utility	<ul style="list-style-type: none"> Connects to a breakout board for UART, 1 PPS input, and 10MHz clock input
UltraPort SlimSAS	<ul style="list-style-type: none"> 2 UltraPort SlimSAS on rear edge connected to FPGA via 16x GTY transceivers Can support an additional x16 or x8 PCIe interface (requires soft IP core and additional slot)
QSFP cages	<ul style="list-style-type: none"> 4 QSFP28 (zQSFP) cages on front panel connected directly to FPGA via 16 transceivers Each supports 100GbE, 40GbE, 4x 25GbE, or 4x 10GbE and can be combined for 400GbE

* DIMM sites 1/2 and sites 3/4 must have the same memory type, or be empty.

Board Management Controller

- Voltage, current, temperature monitoring
- Power sequencing and reset
- Field upgrades
- FPGA configuration and control
- Clock configuration
- I²C bus access
- USB 2.0
- Voltage overrides

Cooling

- Standard: double-width passive heatsink
- Optional: double-width liquid cooling

Electrical

- On-board power derived from 12V PCIe slot & an AUX connector (8-pin)
- Power dissipation is application dependent

Environmental

- Operating temperature 5°C to 35°C

Form factor

- ¾-length, standard-height PCIe dual-slot board
- 111.15mm x 266.70mm (4.376in x 10.500in)

Development Tools

System development

- [BittWorks II Toolkit](#) - host, command, and debug tools for BittWare hardware

FPGA development

- [FPGA Examples](#) - example Vivado projects
- [AMD Tools](#) - Vivado® Design Suite



ALLIANCE PROGRAM
CERTIFIED

To learn more, visit www.BittWare.com

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