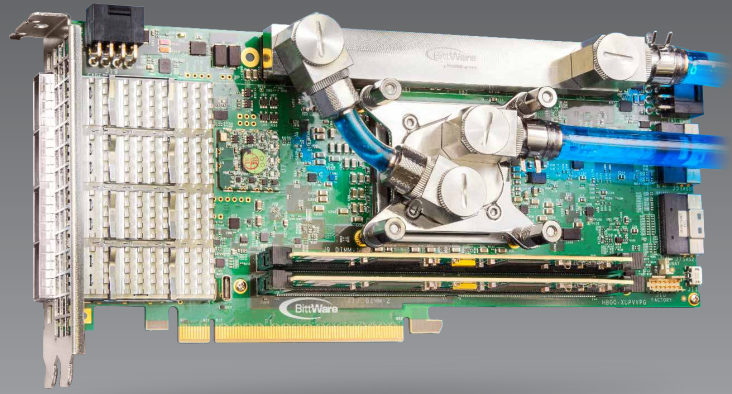


**BittWare**  
a **molex** company

**XUP-VVP**  
PCIe FPGA Board



## Power Edition for Monster FPGA Loads

Liquid cooled with 300A power supply

BittWare's XUP-VVP is an UltraScale+ VU13P FPGA-based PCIe card, designed for ultra high power applications. The Xilinx UltraScale+ VU13P FPGA gives designers incredible performance potential, with 3.8M logic elements —yet with a power density that makes power and thermal management difficult. The XUP-VVP meets this challenge with BittWare's Viper platform, supporting monster FPGA loads, up to 256 GBytes DDR4 or 1152 Mbits QDR-II+, 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. While the default option for the board is air-cooling, the XUP-VVP is also available with liquid cooling for rapid heat removal. A 300A FPGA core power supply powers even the largest FPGA loads.

**XILINX**



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

## key features

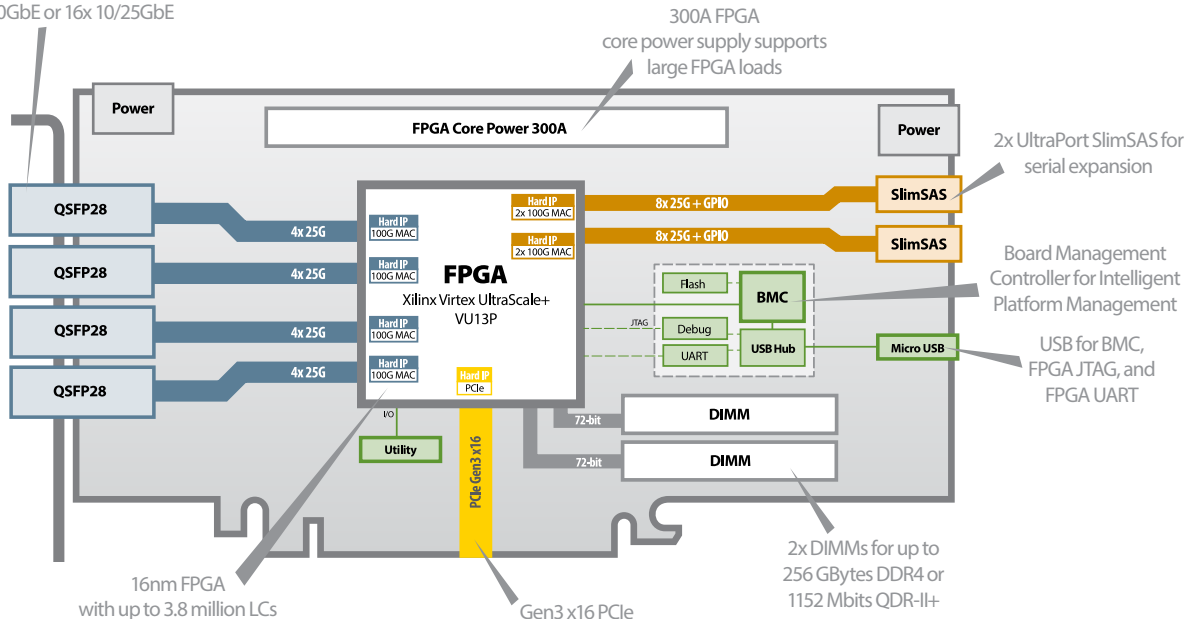
**300A**

FPGA core power supply

Viper platform  
**Liquid Cooling**  
option for extreme FPGA loads

Up to VU13P FPGA:  
**3.8 million LCs**  
**360Mb UltraRAM**  
FPGA by Xilinx

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.



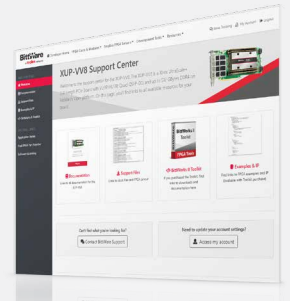
## Server Integration

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"> <li>Virtex UltraScale+             <ul style="list-style-type: none"> <li>VU13P D2104 package</li> <li>Core speed grade - 2</li> </ul> </li> <li>Contact BittWare for VU9P/VU11P FPGA options</li> </ul>
On-board Flash	<ul style="list-style-type: none"> <li>Flash memory for booting FPGA</li> </ul>
External memory	<ul style="list-style-type: none"> <li>2 DIMM sites, each supporting:             <ul style="list-style-type: none"> <li>Up to 128 GBytes DDR4 x72 with ECC</li> <li>Up to 576 Mbits dual QDR-II+ x18 (2 independent 288 Mbit banks)</li> </ul> </li> </ul>
Host interface	<ul style="list-style-type: none"> <li>x16 Gen3 interface direct to FPGA (optional; no power used from PCIe connector)</li> </ul>
USB port	<ul style="list-style-type: none"> <li>Micro USB: access to BMC, FPGA JTAG, and FPGA UART</li> </ul>
Utility	<ul style="list-style-type: none"> <li>Connects to a breakout board for 1 PPS input and 10MHz clock input</li> </ul>
UltraPort SlimSAS	<ul style="list-style-type: none"> <li>2 UltraPort SlimSAS on rear edge connected to FPGA via 16x GTY transceivers</li> <li>Provides 400Gbps board-to-board bandwidth</li> <li>Can support an additional x16 or x8 PCIe interface (requires soft IP core and additional slot)</li> </ul>
QSFP cages	<ul style="list-style-type: none"> <li>4 QSFP28 (zQSFP) cages on front panel connected directly to FPGA via 16 transceivers</li> <li>Each supports 100GbE, 40GbE, 4x 25GbE, or 4x 10GbE and can be combined for 400GbE</li> <li>Provides 400Gbps board-to-board bandwidth</li> </ul>

### Board Management Controller

- Voltage, current, temperature monitoring
- Power sequencing and reset
- Field upgrades
- FPGA configuration and control
- Clock configuration
- I<sup>2</sup>C 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 & two AUX connectors (8-pin; both must be connected)
- Power dissipation is application dependent
- 300A FPGA core power supply

### Environmental

- Operating temperature 5°C to 35°C

### Size

- ¾-length, standard-height PCIe dual-slot board
- 10 x 4.37 inches (254 x 111.15 mm)

## Development Tools

### System development

- BittWorks II Toolkit** - host, command, and debug tools for BittWare hardware

### FPGA development

- FPGA Examples** - example Vivado projects
- Xilinx Tools** - Vivado® Design Suite



ALLIANCE PROGRAM  
CERTIFIED

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

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