BittWare a molex company

XUS-P3S
PCIe FPGA Board

UltraScale PCIe board with Quad QSFP, DDR4, and QDR-II+

BittWare's XUS-P3S is a ¾-length PCIe x8 card based on the Xilinx Virtex or Kintex UltraScale FPGA. The high-performance UltraScale devices provide increased system integration, reduced latency, and high bandwidth for systems demanding massive data flow and packet processing. The board offers flexible memory configurations supporting up to 64 GBytes of memory, sophisticated clocking and timing options, and four front panel QSFP cages, each supporting up to 100 Gbps (4x25) - including 100GbE.
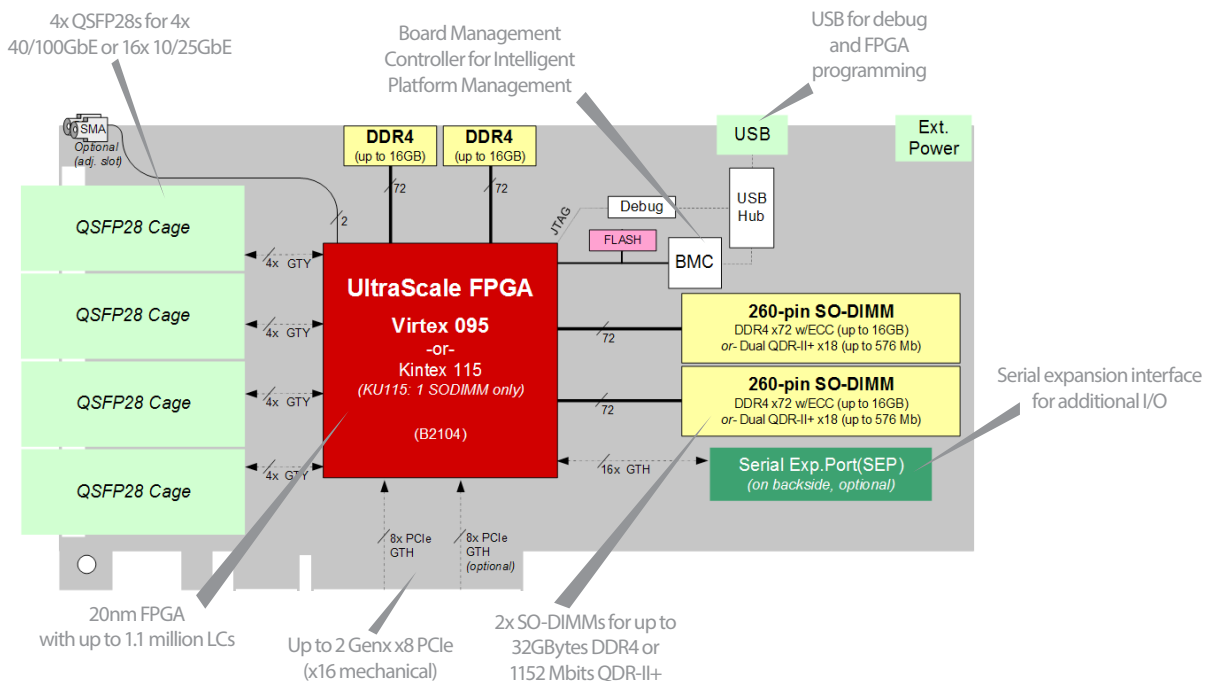
The XUS-P3S also incorporates a Board Management Controller (BMC) for advanced system monitoring, which greatly simplifies platform integration and management. All of these features combine to make the XUS-P3S ideal for a wide range of data center applications, including network processing and security, acceleration, storage, broadcast, and SigInt.

key features

| **4x 100GbE** via 4 QSFP28 | Up to **64 GBytes** DDR4 | VU095: **1.1 million LCs** FPGA by Xilinx |

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

Board Management Controller for Intelligent Platform Management

USB for debug and FPGA programming

SMA
Optional
(adj. slot)

QSFP28 Cage

QSFP28 Cage

QSFP28 Cage

QSFP28 Cage

DDR4 (up to 16GB)

DDR4 (up to 16GB)

USB

Ext. Power

Debug

FLASH

BMC

USB Hub

72   72

JTAG

2

4x GTY

4x GTY

4x GTY

4x GTY

UltraScale FPGA

Virtex 095
-or-
Kintex 115
(KU115: 1 SODIMM only)

(B2104)

260-pin SO-DIMM
DDR4 x72 w/ECC (up to 16GB)
or- Dual QDR-II+ x18 (up to 576 Mb)

260-pin SO-DIMM
DDR4 x72 w/ECC (up to 16GB)
or- Dual QDR-II+ x18 (up to 576 Mb)

72

72

16x GTH

Serial Exp.Port(SEP)
(on backside, optional)

Serial expansion interface for additional I/O

8x PCIe GTH

8x PCIe GTH (optional)

20nm FPGA with up to 1.1 million LCs

Up to 2 Genx x8 PCIe (x16 mechanical)

2x SO-DIMMs for up to 32GBytes DDR4 or 1152 Mbits QDR-II+

Additional Services

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

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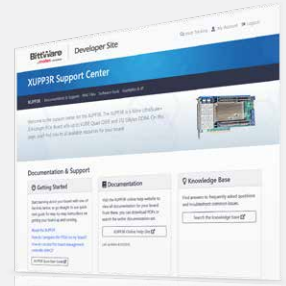Additional specification options or accessory boards to meet your exact needs.

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	• Virtex UltraScale FPGA
	  • VU095 FPGA
	  • Core speed grade - 2
	• Contact BittWare for Kintex UltraScale options

On-board memory	• Two banks of up to 16 GB DDR4 (x72) • Flash memory for booting FPGA

External memory	• 2 SODIMM sites, each supporting:
	  • Up to 16 GBytes DDR4 x72 with ECC
	  • Up to 576 Mbits dual QDR-II+ x18 (2 independent 288 Mbit banks)

Host interface	• Up to two 8-lane PCIe interfaces up to Gen3 (one 8x interface in a standard slot; two 8x interfaces requires a bifurcated slot)
Timestamping (optional)	• 1 PPS input/output • Reference clock input/output
USB header	• Micro USB: (USB 2.0) for debug and programming FPGA and Flash
Serial expansion port (SEP)	• Expansion interface to FPGA via 16x transceivers (optional; requires second slot)
QSFP cages	• 4 QSFP28 (zQSFP) cages on front panel connected directly to FPGA via 16 GTY transceivers (GTH for Kintex) • Each supports 100GbE, 40GbE, 4x 25GbE, or 4x 10GbE (100GbE, 25 GbE Virtex only) and can be combined for 400GbE • Backward compatible with QSFP and can be optionally adapted for use as SFP+

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: single-slot FPGA fansink • Optional: single-slot FPGA heatsink
Electrical	• On-board power derived from 12V PCIe slot & an AUX connector (6-pin) • Power dissipation is application dependent
Environmental	• Operating temperature 5°C to 35°C
Size	• ¾-length, standard-height PCIe single-slot card • 241mm x 111.15mm

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

XILINX.

ALLIANCE PROGRAM
CERTIFIED

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

BittWare

a **molex** company