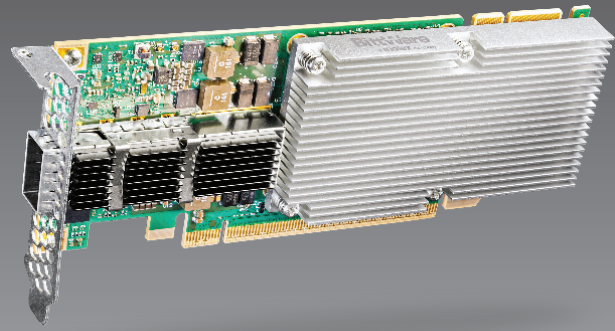




IA-441i
PCIe FPGA Card



Agilex™ FPGA card with 400GbE and White Rabbit Support

BittWare's IA-441i is an Altera Agilex™ I-series FPGA card designed for building SmartNICs or other accelerators requiring a powerful FPGA in a single-slot form factor. The NIC-sized card provides a balance of I/O and memory using the Agilex chip's unique tiling architecture with a QSFP-DD (400GbE), DDR4 SDRAM, and PCIe Gen5 x16. The card provides advanced local clocking features with support for White Rabbit.

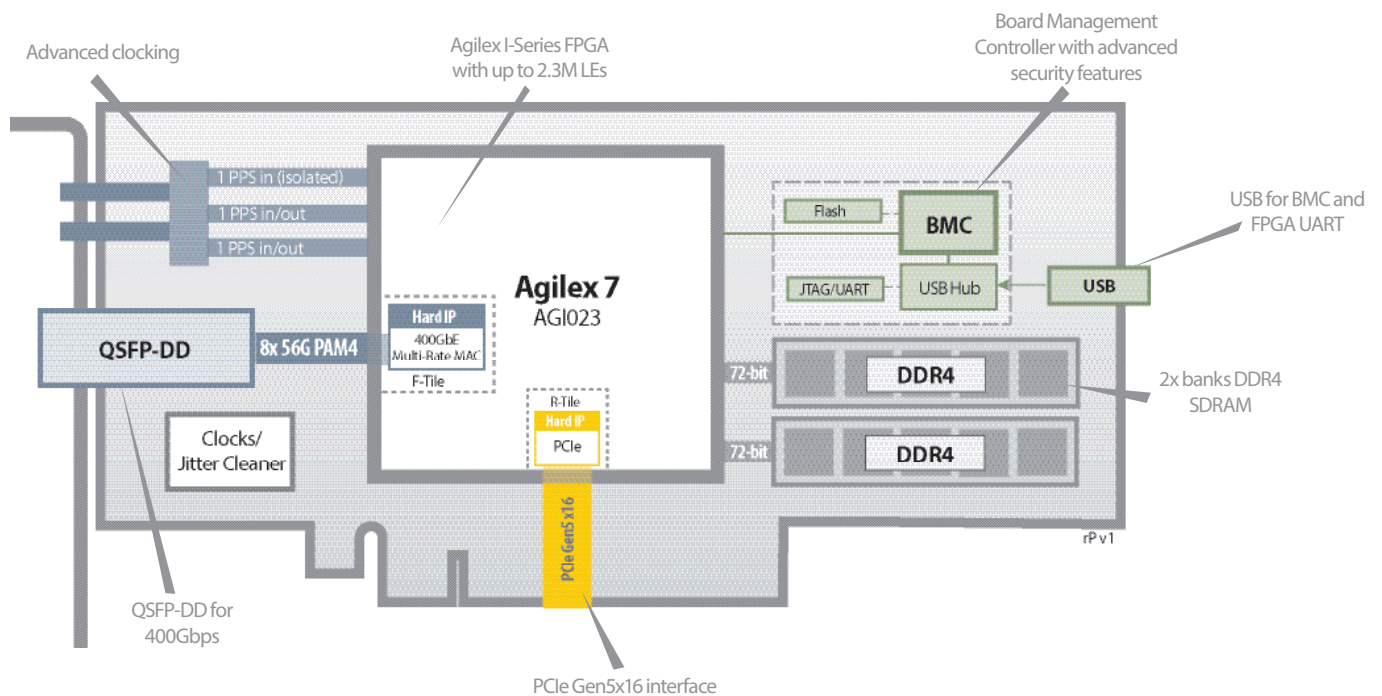


key features

1x 400G,
4x 100G, 2x 200G
or 8x 10/25/50G

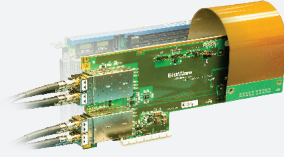
Designed for
**White
Rabbit**

Altera Agilex™
**I-Series
FPGA**



Additional Services

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



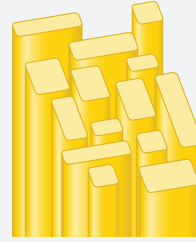
Customization

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



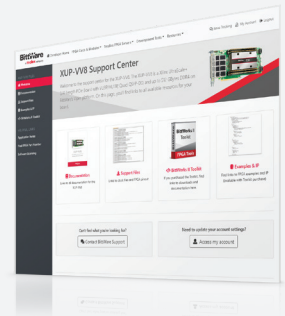
Server Integration

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"> Altera Agilex 7 I-Series AGI023 Core speed grade -1 XCVR speed grade -1
On-board Flash	<ul style="list-style-type: none"> 2Gbit Flash memory for booting FPGA
External memory	<ul style="list-style-type: none"> 2x banks on-board DDR4, 8GB each (16GB total)
Host interface	<ul style="list-style-type: none"> x16 Gen5 interface direct to FPGA, connected to PCIe hard IP
QSFP-DD cage	<ul style="list-style-type: none"> 400 Gbps (8x 50Gbps PAM4) PAM4: 1x 400GbE, 2x 200GbE, 4x 100GbE, 8x 50GbE NRZ: 1x 200GbE, 2x 100GbE, 4x 50GbE, 8x 10/25 GbE Multi-rate hard MAC supports all combinations Jitter cleaner for network recovered clocking
Clocking	<ul style="list-style-type: none"> Enhanced local clocking: Stratum 3E precision TCXO and jitter cleaner combination PPS support: isolated 1PPS input, two non-isolated 1PPS input/output (GPIO capable)
USB	<ul style="list-style-type: none"> USB access to BMC, USB-UART

Board Management Controller

- Power sequencing and reset
- Voltage, current, temperature monitoring
- Protection shut-down
- Clock configuration
- Low bandwidth BMC-FPGA comms with SPI link
- USB 2.0
- PLDM support
- Card-level security
- BMC Root of Trust
- BMC and FPGA secure boot
- BMC and FPGA secure upgrade
- Key management

Cooling

- Standard: single-width passive heatsink

Electrical

- On-board power derived from PCIe slot
- Power dissipation is application dependent
- Max power consumption 75W

Environmental

- Operating temperature: 5°C to 35°C

Quality

- Manufactured to IPC-A-610 Class 2
- RoHS compliant
- CE, FCC, UKCA & ICES approvals

Form factor

- Low profile (half-height, half-length) PCIe slot card
- Size: 68.90mm x 167.65mm (2.713in x 6.600in)

Development Tools

System development

BittWare SDK including PCIe driver, libraries, and board monitoring utilities

Application development

Supported design flows - Quartus Prime Pro (HDL, Verilog, VHDL, etc.). Contact BittWare for OneAPI support.



To learn more, visit www.BittWare.com

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