

Agilex™ FPGA card with PCIe Gen5 x16

CXL Support and Optional Hard Crypto Blocks

BittWare's IA-780i is an Intel® Agilex™ 7 I-series FPGA card designed to address security challenges for data center, networking and edge compute workloads. The FPGA features optional hardened, high-speed cryptographic engines. The standard-height, 3/4-length card provides a balance of I/O and memory using the Agilex chip's unique tiling architecture with two QSFP-DDs, DDR4 SDRAM SODIMMs, and PCIe Gen5 x16 with CXL support for a variety of applications. The IA-780i has support for Intel oneAPI™, which enables an abstracted development flow for dramatically simplified code re-use across multiple architectures.

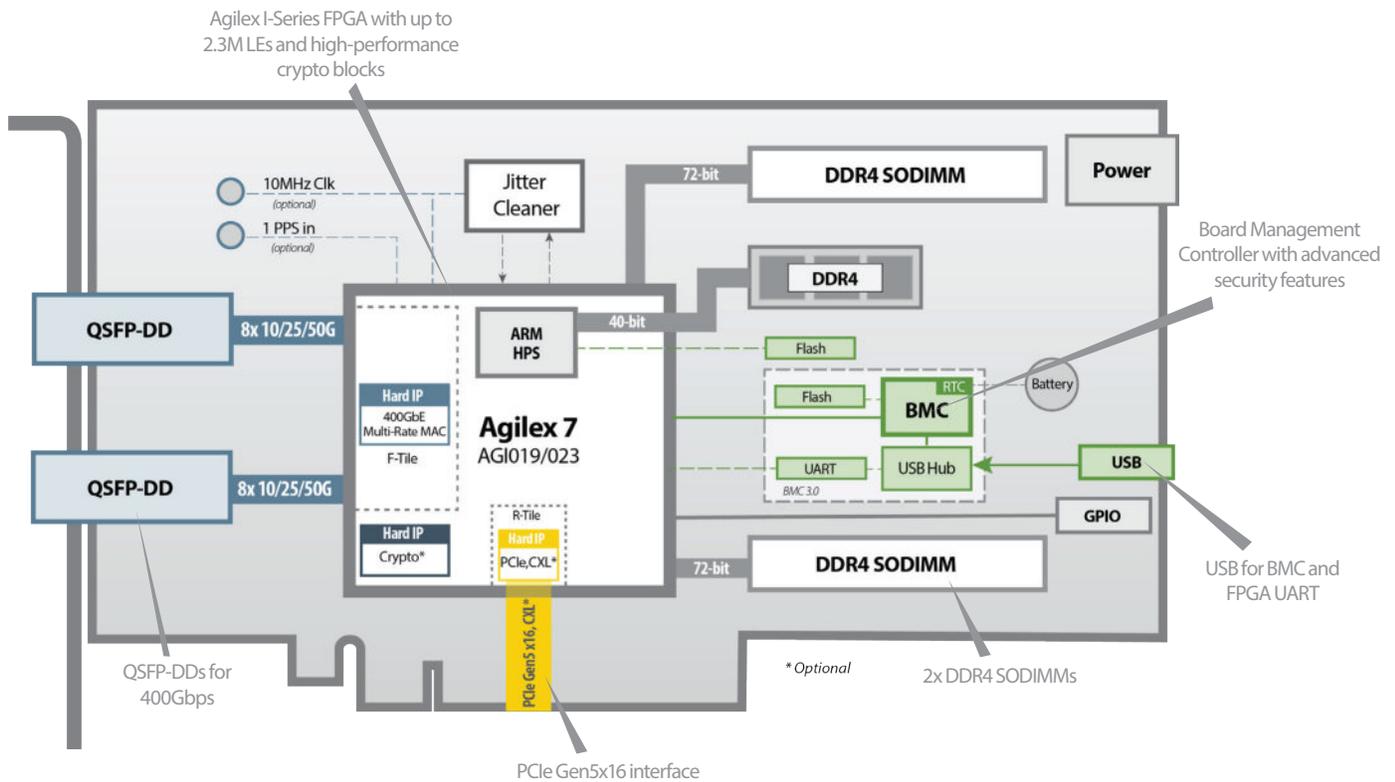


key features

400GbE

Single Width

PCIe Gen5



Additional Services

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



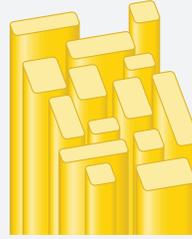
Customization

[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"> Intel Agilex 7 I-Series: AGI019 or AGI023 Core speed grade -2: I/O speed grade -1 for CXL (CXL IP is licensed and purchased separately) FPGA includes ARM HPS Other Agilex FPGA options are available, including <ul style="list-style-type: none"> Hard crypto blocks Core speed grade -1
ARM HPS	<ul style="list-style-type: none"> Dedicated 40-bit DDR4 Dedicated Flash memory for booting ARM Optional 1GbE interface (contact BittWare)
On-board Flash	<ul style="list-style-type: none"> 2Gbit Flash memory for booting FPGA
External memory	<ul style="list-style-type: none"> 2x SODIMM slots, each supporting up to 32GB (default 16GB) DDR4 SDRAM modules (up to 64GB total)
Host interface	<ul style="list-style-type: none"> x16 Gen5 interface direct to FPGA, connected to PCIe hard IP CXL v1.1 (CXL IP is licensed and purchased separately)
QSFP-DD cages	<ul style="list-style-type: none"> QSFP-DD cages supporting a total of: <ul style="list-style-type: none"> 1x 400GbE, or 2x 200/100/50/25/10GbE, or 4x 100GbE or 8x 10/25GbE with breakout cables Multi-rate hard MAC supports all combinations Jitter cleaner for network recovered clocking
GPIO	<ul style="list-style-type: none"> 4x GPIO
External clocking	<ul style="list-style-type: none"> 1 PPS and 10MHz ref clk inputs (in-board)
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
- RTC with battery backup

Cooling

- Standard: single-width passive heatsink

Electrical

- On-board power derived from PCIe slot and external power connector
- Power dissipation is application dependent
- Max power consumption 150W

Environmental

- Operating temperature: 5°C to 35°C

Quality

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

Form factor

- Standard-height, 3/4-length, single-slot PCIe card
- Size: TBD

Development Tools

System development	BittWare SDK including PCIe driver, libraries, and board monitoring utilities
Application development	Supported design flows - Intel High-Level Synthesis (C/C++) and Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

Rev 2023.02.03 | February 2023

BittWare
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