

BittWare
a **molex** company

IA-640i
PCIe FPGA Card



Agilex™ FPGA card with 400GbE and PCIe Gen5 x16 Hard Crypto Blocks and CXL Support

BittWare's IA-640i is an Intel® Agilex™ 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, half-length 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 with CXL support for a variety of applications.

CXL Compute Express Link™

1
oneAPI

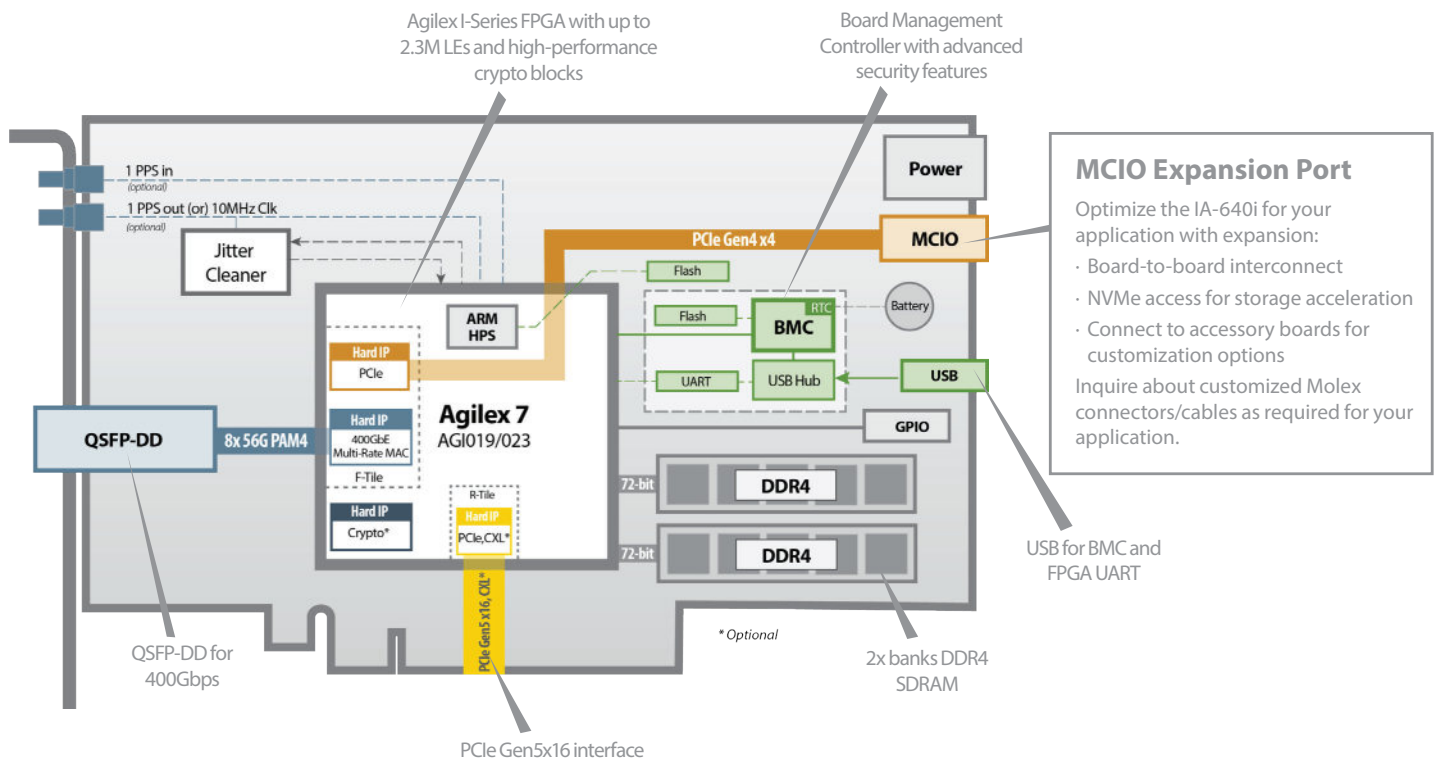
intel
AGILEX™
7

key features

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

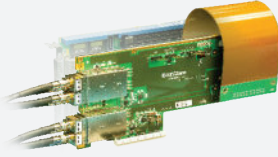
PCIe Gen5
Single-Width

Intel Agilex™ FPGA
with **CXL v1.1**
support



Additional Services

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



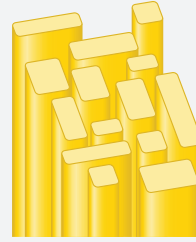
Customization

[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 AGI019: Core speed grade -2: XCVR speed grade -1 AGI023: Core speed grade -1: XCVR speed grade -1 XCVR speed grade -1 supports CXL (CXL IP is licensed and purchased separately) FPGA includes ARM HPS Other Agilex FPGA options are available, including Hard crypto blocks
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, up to 32GB each
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 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
MCIO	<ul style="list-style-type: none"> 1x 4-lane edge connector @ up to 25G per lane Hard IP support for PCIe Gen4 x4 (default is root port)
GPIO	<ul style="list-style-type: none"> 4x GPIO
External clocking	<ul style="list-style-type: none"> 1 PPS and 10MHz ref clk front panel inputs (optional)
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 and external power connector
- Power dissipation is application dependent
- Max power consumption 125W

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, half-length, single-slot PCIe card
- Size: 111.15mm x 167.65mm (4.376in x 6.600in)

Development Tools

System development

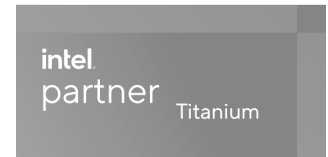
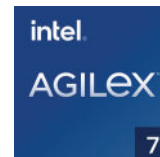
BittWare SDK including PCIe driver, libraries, and board monitoring utilities

Application development

Supported design flows - Intel FPGA oneAPI Base Toolkit, Intel High-Level Synthesis (C/C++) and Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

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