BittWare
a **molex** company

IA-720i
PCIe FPGA Card
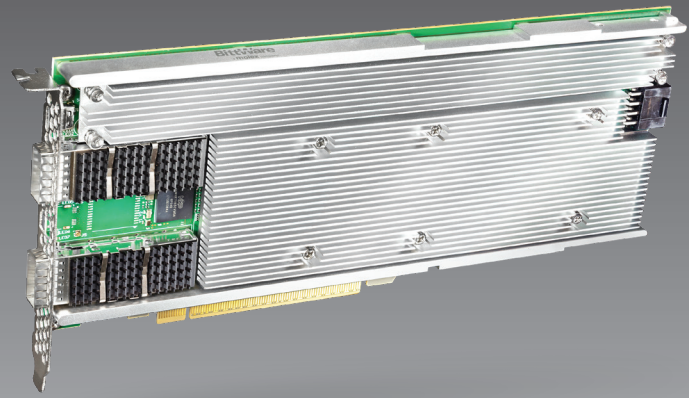
Agilex™ FPGA card with PCIe Gen5 x16

CXL Compute Express Link™

Agilex™ 7

BittWare's IA-720i is an Altera Agilex™ 7 I-series FPGA card designed for building SmartNICs or other accelerators requiring a powerful FPGA in a single-slot form factor. 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 QSFP56s, DDR4 SDRAM, and PCIe Gen5 x16 for a variety of applications. The card features two M.2 slots supporting enterprise SSDs for data storage.
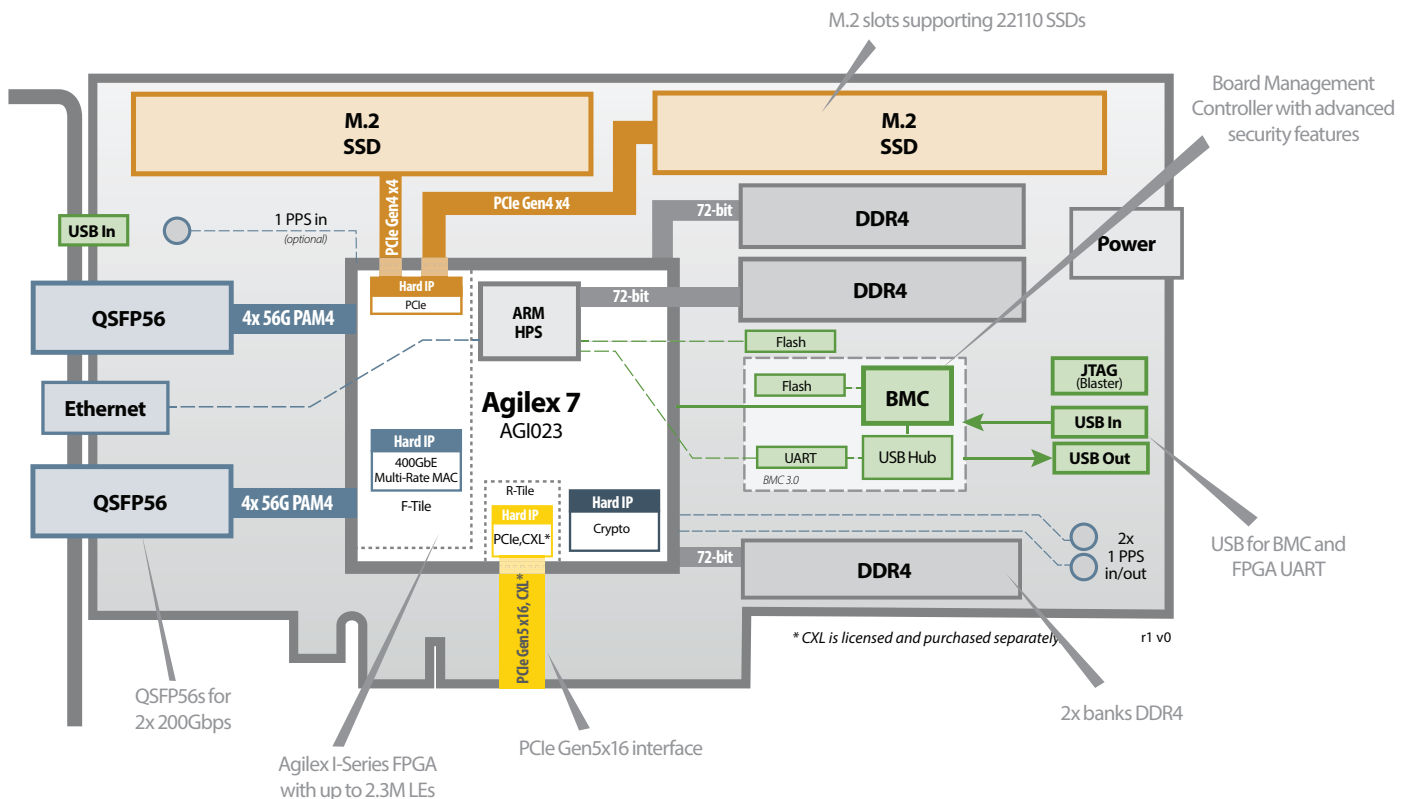
key features

2x SSDs 22110 M2s	PCIe Gen5	Single Width

M.2 slots supporting 22110 SSDs

Board Management Controller with advanced security features

USB In

1 PPS in *(optional)*

M.2 SSD

M.2 SSD

PCIe Gen4 x4

PCIe Gen4 x4

72-bit

DDR4

Power

Hard IP PCIe

QSFP56

4x 56G PAM4

ARM HPS

72-bit

DDR4

Flash

Ethernet

Agilex 7 AGI023

Flash

BMC

JTAG (Blaster)

USB In

Hard IP 400GbE Multi-Rate MAC

UART

USB Hub

USB Out

QSFP56

4x 56G PAM4

F-Tile

R-Tile

Hard IP PCIe,CXL*

Hard IP Crypto

BMC 3.0

2x 1 PPS in/out

72-bit

DDR4

PCIe Gen5 x16, CXL*

USB for BMC and FPGA UART

QSFP56s for 2x 200Gbps

Agilex I-Series FPGA with up to 2.3M LEs

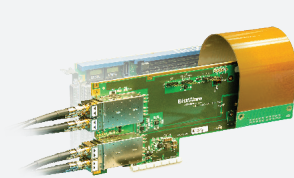PCIe Gen5x16 interface

CXL is licensed and purchased separately.

r1 v0

2x banks DDR4

Additional Services

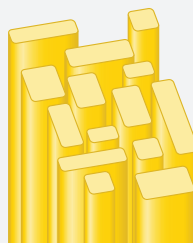Take advantage of BittWare's range of design, integration, and support options

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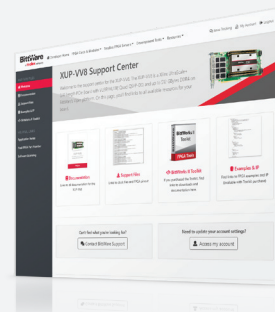Additional specification options or accessory boards to meet your exact needs.

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	• Altera Agilex 7 I-Series: AGI023
	  • Core speed grade -1: I/O speed grade -1 for CXL (CXL IP is licensed and purchased separately)
	  • FPGA includes ARM HPS
	  • Hard crypto blocks

ARM HPS	• Dedicated 72-bit DDR4 • Dedicated Flash memory for booting ARM • Ethernet access via front-panel RJ45 (optional)
On-board Flash	• 2Gbit Flash memory for booting FPGA
External memory	• 2x 72-bit DDR4 banks (discrete components), up to 16GB each (32GB total)
Host interface	• x16 Gen5 interface direct to FPGA, connected to PCIe hard IP
M.2 SSD Slots	• 2x slots for NVMe PCIe M.2 22110 SSDs
QSFP56 cages	• QSFP56 cages supporting a total of 2x 200/100/50/25/10GbE • Multi-rate hard MAC supports all combinations • Jitter cleaner for network recovered clocking
External clocking	• 2x 1 PPS in/out (in-board) • 1x 1PPS in (in-board)
USB	• 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 150W
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	• Standard-height, 3/4-length, single-slot PCIe card • Size: 111.15mm x 254.00mm (4.376in x 10.000in)

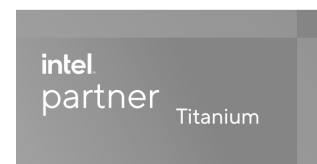## Development Tools

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

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

Agilex™ 7

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