BittWare
a **molex** company

IA-720i
PCIe FPGA Card

Intel® Agilex™ 7 FPGA I-Series

PCIe 5.0
E-MIB
HPS
Intel 10nm SuperFin FPGA Fabric
56G XCVR
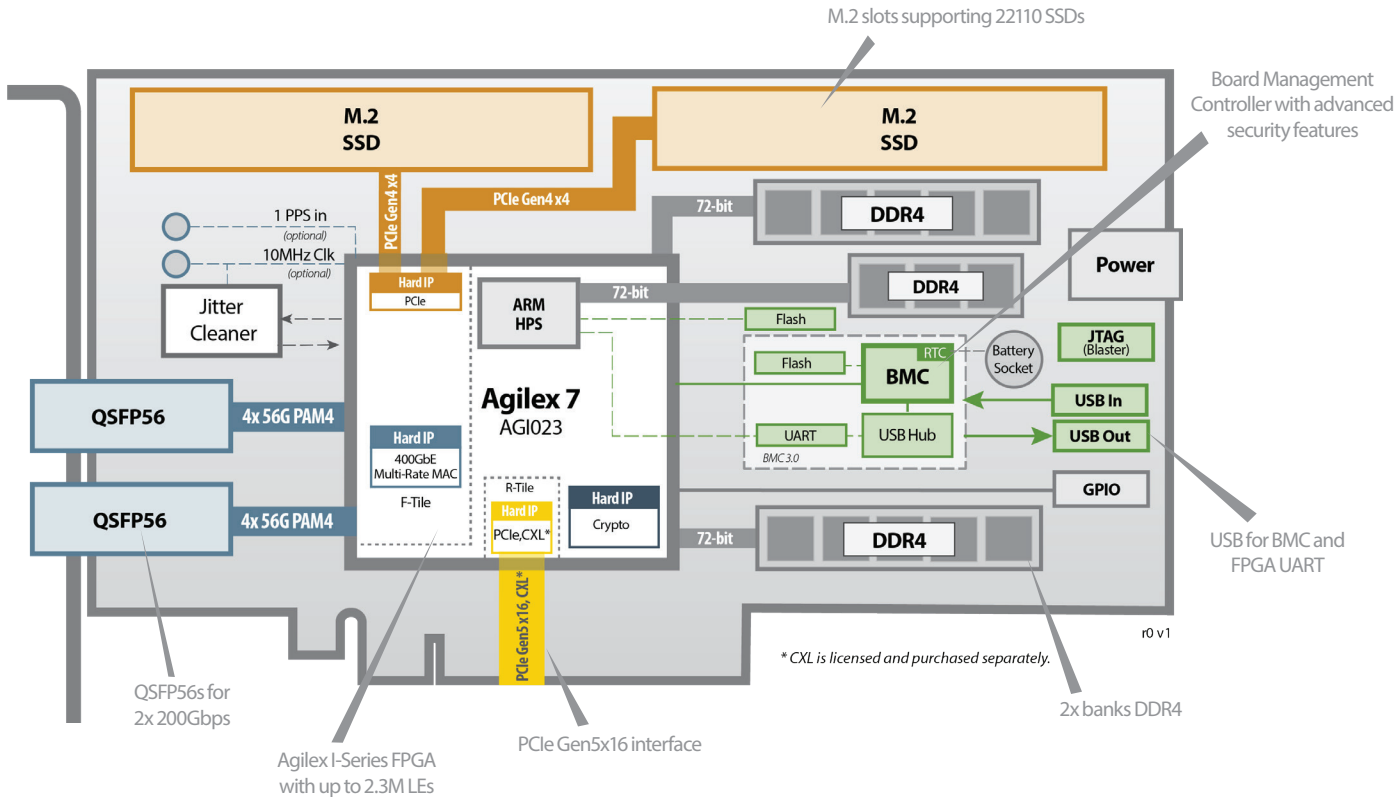CXL
E-MIB
EM8
400G GbE
ADRAM

Agilex™ FPGA card with PCIe Gen5 x16

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 with CXL support for a variety of applications. The card features two M.2 slots supporting enterprise SSDs for data storage.

CXL Compute Express Link™

intel. AGILEX™ 7

key features

| **2x SSDs** 22110 M2s | **PCIe Gen5** with support for **CXL** | **Single Width** |

M.2 slots supporting 22110 SSDs

Board Management Controller with advanced security features

M.2 SSD

M.2 SSD

PCIe Gen4 x4

1 PPS in *(optional)*
10MHz Clk *(optional)*

PCIe Gen4 x4

72-bit

DDR4

Power

Jitter Cleaner

Hard IP PCIe

ARM HPS

72-bit

DDR4

Flash

Flash

RTC

BMC

Battery Socket

JTAG (Blaster)

QSFP56

4x 56G PAM4

Agilex 7 AGI023

Hard IP 400GbE Multi-Rate MAC

F-Tile

USB In

UART

USB Hub

USB Out

BMC 3.0

QSFP56

4x 56G PAM4

R-Tile

Hard IP PCIe,CXL*

Hard IP Crypto

GPIO

72-bit

DDR4

USB for BMC and FPGA UART

PCIe Gen5x16, CXL*

QSFP56s for 2x 200Gbps

Agilex I-Series FPGA with up to 2.3M LEs

PCIe Gen5x16 interface

r0 v1

* CXL is licensed and purchased separately.

2x banks DDR4

Additional Services

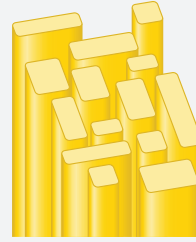Take advantage of BittWare's range of design, integration, and support options

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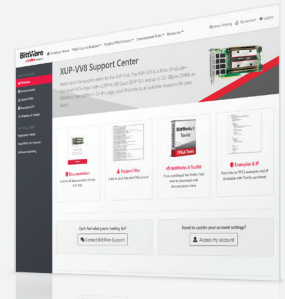[Additional specification options or accessory boards](#) to meet your exact needs.

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
On-board Flash	• 2Gbit Flash memory for booting FPGA
External memory	• 2x 72-bit DDR4 banks, up to 32GB each (64GB total)
Host interface	• x16 Gen5 interface direct to FPGA, connected to PCIe hard IP • CXL support (CXL IP is licensed and purchased separately)
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
GPIO	• 4x GPIO
External clocking	• 1 PPS and 10MHz ref clk inputs (in-board)
USB	• USB access to BMC, USB-UART

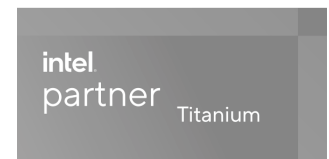|	

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
	• 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, 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 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.)

intel AGILEX 7

intel partner Titanium

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

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