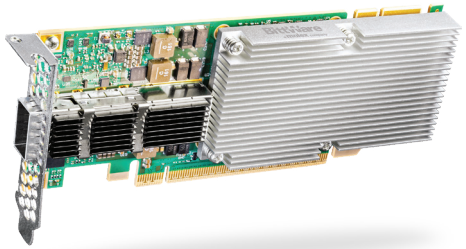
PRODUCT OVERVIEW SHEET

molex

BittWare IA-440i PCIe Card ›

The BittWare IA-440i 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 with CXL support for a variety of applications.

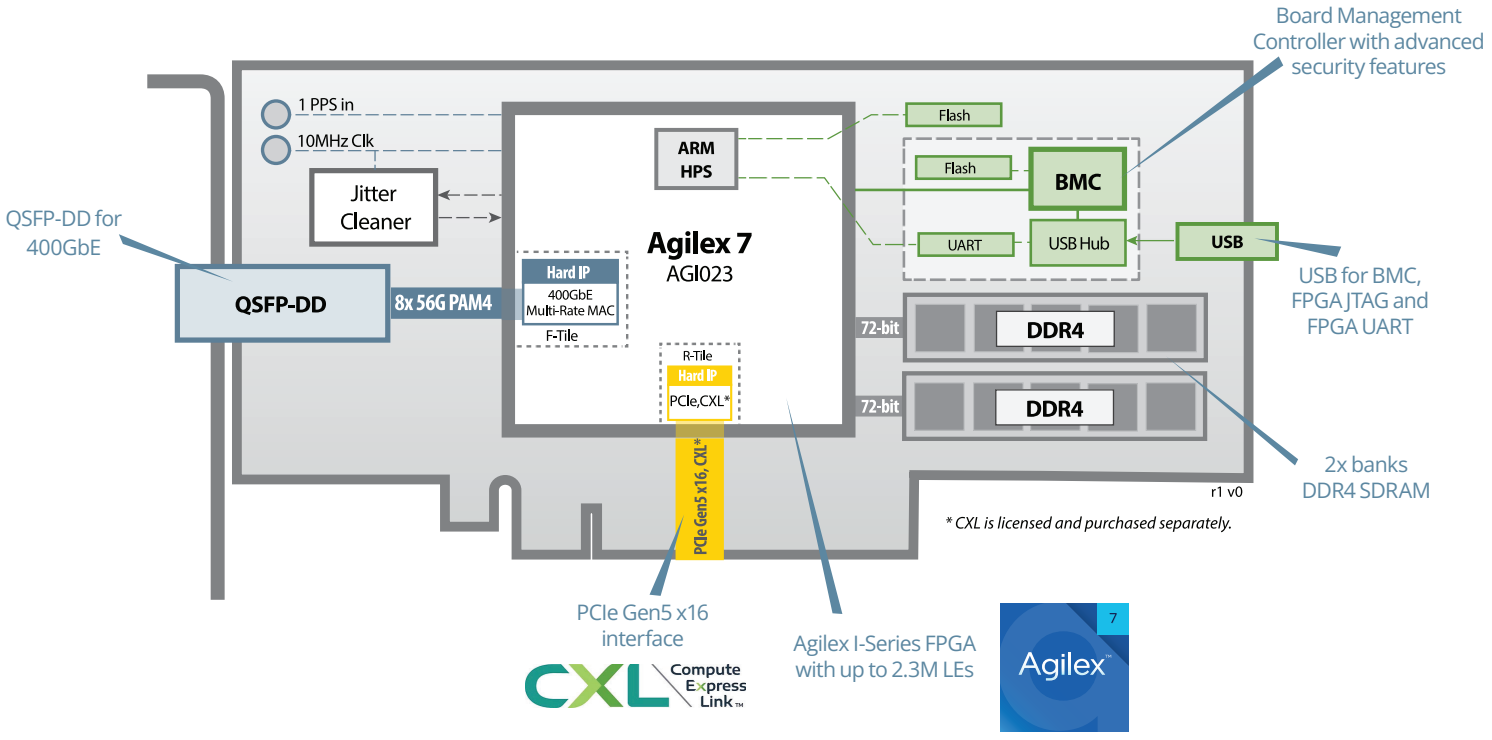
FEATURES AND ADVANTAGES

1x 400G or 4x 100G
Ideal for network-intensive applications

PCIe Gen5 with CXL support
High-speed, low-latency host interface

Altera Agilex I-Series FPGA
Powerful FPGA resources with 2.3m LEs

Single width
Ideal for SmartNICs or other accelerators



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BOARD SPECIFICATIONS

FPGA
- Altera Agilex 7 I-Series AGI023
  - 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

On-board Flash
- 2Gbit Flash memory for booting FPGA

External memory
- 2x banks on-board DDR4, 8GB each (16GB total)

Host interface
- x16 Gen5 interface direct to FPGA, connected to PCIe hard IP
- CXL support (CXL IP is licensed and purchased separately)

QSFP-DD cage
- 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

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

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

ACCESSORY CABLES

Access to USB andJTAG requires accessory cables. **Cables are sold separately.**

USB-onlycable	ico-lock to USB A cable Part number: RS-PL12-UAP-83 Designed for deployment in servers
JTAG-only cable	Pico-lock to JTAG cable Part number: RS-PL12-JTB-13 Recommended for development
USB+JTAG breakout card	Breakout card with access to both USB and JTAG Part number: ACC-IA-JTUSB-BKO Recommended for development

altera solution acceleration partner Select

DEVELOPMENT TOOLS

System development
BittWare SDK including libraries and board monitoring utilities

Application development
Supported design flows - Altera High-Level Synthesis (C/C++) and Quartus Prime Pro (HDL, Verilog, VHDL, etc.)

SAFETY & COMPLIANCE

- FCC (USA) 47CFR15.107 / 47CFR15.109
- CE (Europe) EN 55032:2015/A11:2020 / EN 55035:2017/A11:2020 / EN 61000-3-2:2014 / EN 61000-3-3:2013
- UKCA (United Kingdom) BS EN 55032:2015/A11:2020 / BS EN 55035:2017/A11:2020 / BS EN 61000-3-2:2014 / BS EN 61000-3-3:2013
- ICES (Canada) ICES-003 Issue 7 October 2020
- Safety EN IEC 62368-1:2018 / EN IEC 62368-1:2020 / EN IEC 62368-1:2020/A11:2020 / CB Scheme Certificate No. DK-151662-UL
- Safety (UK) BS EN IEC 62368-1:2018 / BS EN IEC 62368-1:2020 / BS EN IEC 62368-1:2020/A11:2020 / CB Scheme Certificate No. DK-151662-UL
- RoHS compliant to the 2011/65/EU + 2015/863 directive

To learn more, visit **bittware-molex.com**

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