BittWare’s IA-420f is an Intel® Agilex™-based FPGA card designed to deliver next generation performance for data center, networking and edge compute workloads. The NIC-sized card provides a balance of I/O and memory using the Agilex chip’s unique tiling architecture with a QSFP-DD (1x 200G), DDR4 SDRAM, PCIe Gen4 x16, and a GPIO port for diverse applications.

key features

QSFP-DD for 200G

PCIe Gen4 x16

Intel Agilex™ FPGA with up to 1.4M Logic Elements

10nm FPGA with 1.4M LEs and 7K memory blocks

Board Management Controller for system monitoring and control

USB for BMC, FPGA JTAG, and FPGA UART

1 PPS

40MHz Ck

8x25G

Jitter Cleaner

QSFP-DD for 200Gbps

PCIe Gen4 x16 interface

2x banks DDR4 SDRAM
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
- Intel Agilex 7 F-Series: AGF014
- Core speed grade -2: I/O speed grade -2
- Contact BittWare for other Agilex FPGA options

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

External memory
- 2x banks on-board DDR4, 8GB per bank, 16GB total

Host interface
- x16 Gen4 interface direct to FPGA, connected to PCIe hard IP

QSFP-DD cages
- QSFP-DD cage on front panel connected directly to FPGA via 8 transceivers
- User programmable low jitter clocking supporting 10/25/40/100GbE
- Jitter cleaner for network recovered clocking

GPIO
- 4x GPIO expansion connector

External clocking
- 1 PPS and 10MHz ref clk front panel inputs (optional)

USB
- USB access to BMC, USB-JTAG, USB-UART

Board Management Controller
- Voltage, current, temperature monitoring
- Power sequencing and reset
- Field upgrades
- FPGA configuration and control
- Clock configuration
- Low bandwidth BMC-FPGA comms with SPI link
- USB 2.0
- PLDM support
- Voltage overrides

Cooling
- Standard: single-slot 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)

Development Tools

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

Application development
Supported design flows - Quartus Prime Pro (HDL, Verilog, VHDL, etc.). Contact BittWare for OneAPI support.

Sales Part Numbers

IA-420F-0001 Low-profile FPGA card: Agilex F-Series, 200G, PCIe Gen4 x16
IA-420F-0002 FHHL FPGA card: Agilex F-Series, 200G, PCIe Gen4 x16
IA-420F-0005 FHHL FPGA card: Agilex F-Series, 200G, PCIe Gen4 x16, front panel timing connectors

Looking for a different configuration? Ask us about other configuration options.

To learn more, visit www.BittWare.com

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