

G43-AFibre-400G

Agilex-7 I-Series Network and Storage Accelerator SmartNIC Card - 400G

The G43-AFibre-400G, built on Agilex 7 I-Series FPGAs, offers a high-performance NIC prototyping platform designed for advanced, bandwidth-heavy applications. Perfect for complex computing and network infrastructures, it is optimized to handle the most demanding workloads.

The platform features a high-performance processor interface, two DDR4 memory channels, PCIe Gen4 x 16 connectivity, and four F-tiles supporting high data rates. A quad-core 64-bit Arm Cortex-A53 HPS with one DDR4 memory channel provides increased flexibility and control.

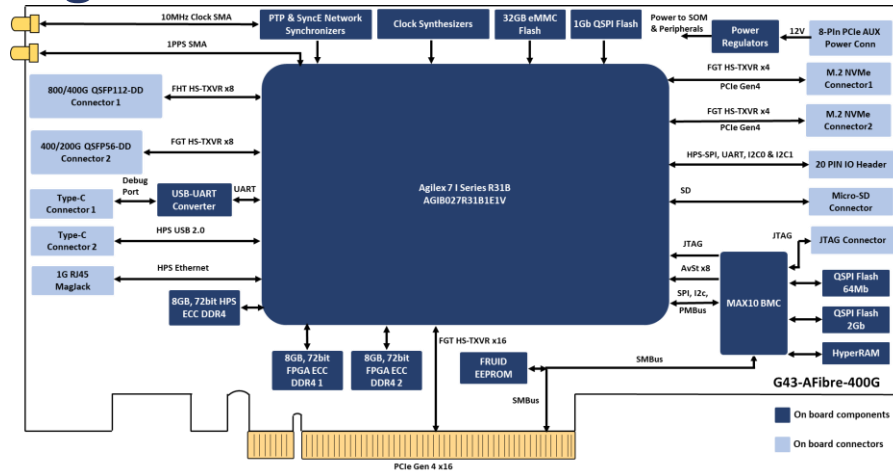
The integrated Board Management Controller (BMC) enhances the overall device management experience.



Highlights

- ❖ PCIe Gen4 x16 Host Interface
- ❖ 3/4 Length, Full Height, Single Slot with Active Cooling PCIe Card.
- ❖ Front Panel QSFP112-DD Cage (400GbE), Front Panel QSFP56-DD Cage (400GbE/200GbE)
- ❖ MAX10 Board Management Controller
- ❖ DDR4 Memory
 - ❖ HPS – Single Channel 8GB, 72b, 3200MHz @409.6 Gbps
 - ❖ FPGA – Dual Channel 8GB, 72b, 3200MHz @409.6 Gbps
- ❖ Dual Gen4 M.2 NVMe Slots, Single Gen4 x4 OCU Link Connector

Block Diagram



Technical Specifications

FPGA	- Agilex7 I-Series AGIB027 -1 Speed Grade 4 x F-Tile Transceiver 64 x FGT Transceivers upto 58Gbps 8 x FHT Transceivers upto 116Gbps 2,692K Logical Elements (Density) 912800 Adaptive Logic Modules (ALM) 3,651K Adaptive Logic Module (ALM) Registers 28 Fabric and I/O Phase-Locked Loops (PLLs) 287Mb Embedded Memory	OCU Link Connector	1 x Gen4 x 4
Memory	1 x 8GB x 72 DDR4-3200MHz @409.6 Gbps (HPS) 2 x 8GB x 72 DDR4-3200MHz @409.6 Gbps (FPGA)	Storage Media	1 x 1Gb QSPI to Agilex 1 x 2Gb QSPI to MAX 10 (Agilex Img) 1 x 64Mb QSPI to MAX 10 (NIOS FW) 1 x Micro SD (HPS) 1 x 32 GB eMMC (HPS)
PCIe Host Interface	Gen4 x16	BMC	MAX10 - MCTP over SMBus - RSU - MCTP over PCIe VDM - PLDM for Monitor and Control - FPGA temperature - Pluggable module temperature - Power sensors - HyperRAM
PCIe Bracket Connectors	1 x QSFP56-DD 1 x QSFP112-DD 1 x USB 2.0 Type-C Connector (HPS) 1 x USB UART Type-C Connector (HPS) 2 x SMA Connectors 1 x RJ45 Connector (HPS)	Host Software	- Linux OS - Management Tools - BMC libraries*, DPDK
Network Interfaces	1 x QSFP56-DD 1 x QSFP112-DD	HPS Operating System	Linux
Line rates (Ethernet)	- QSFP56-DD: 1 x 400G, 2 x 200G, 4 x 100G, 8 x 50G, 2 x 40G, 8 x 25G, 8 x 10G - QSFP112-DD: 8 x 50G, 8 x 25G	Operating Temperature	0°C to 45°C
Hard Processor System	1 x Quad-core 64-bit Arm Cortex-A53 1 x USB 2.0 1 x 20 pin GPIO - I2C, SPI	Power Input	75W max from PCIe x 16 Host 8Pin ATX Power Connector in Back Panel Power Droop - Sharing (to maximize power when needed)
NVMe	2 x Gen4 x 4 M.2	Cooling	Active cooling (Default)
		Form Factor	- Full Height, Single Slot PCIe Card 254mm x 111.15mm (¾ Length PCIe)
		Enclosure	Aluminum alloy 5052- H32
		Compliance	REACH & RoHS Compliant *, CE*

Product accessories

Auxillary Power Supply

Auxiliary Power Supply ensures SmartNIC stability during high-performance operation.

Thermal Solutions

For any highly integrated SmartNIC product, thermal design is a very important factor. iWave supports thermal designs for SmartNIC

PCIe Bracket

Facilitates secure SmartNIC installation, ensures compatibility with standard chassis, and withstands mechanical stress.

Card Backplate

To support secure installation and mechanical stability of the SmartNIC, a Card Backplate is provided.

Applications

- **Resource Management and orchestration services**
Dynamically scales resources based on network demand, ensuring high performance and seamless service delivery.
- **Data Center for workloads**
SmartNICs enhance data centre efficiency by offloading networking, security, and storage functions, reducing CPU load and improving overall performance.
- **High-Performance Computing**
By integrating SmartNICs, HPC systems achieve low-latency communication, intelligent workload distribution, and accelerated data transfer, enabling seamless execution of high-speed simulations, AI, and scientific computing tasks.
- **Data acceleration**
Leveraging SmartNICs, systems achieve faster data ingestion, real-time analytics, and improved responsiveness for demanding enterprise and cloud workloads.

Additional Services

- **Custom hardware integration**
Expanded specs and add-ons designed to meet your needs
- **Preloaded Servers**
Ready-to-deploy in servers with flexible configurations
- **IP and Solutions**
We reduce risk in both development and deployment with proven IP and solutions
- **Service**
Documentation and issue tracking made easy at the iWave Support Center

A Global Leader in Embedded Systems Engineering and Solutions

Since 1999, we have pioneered leadership in embedded systems technology, establishing ourselves as a strategic embedded technology partner for advanced solutions. Our comprehensive portfolio encompasses ARM and FPGA System on Modules, COTS FPGA solutions, and ODM solutions which include Telematics, Gateways & HMI Solutions.

Beyond our robust product ecosystem, we provide comprehensive ODM support with specialized custom design and manufacturing capabilities, enabling customers to accelerate and optimize their product development roadmaps. With a strategic focus on industrial, automotive, medical, and avionics markets, we deliver innovative technology solutions to global clients.

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