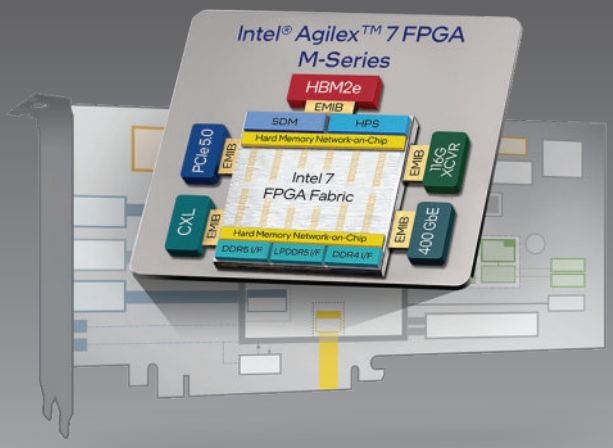
BittWare a molex company

IA-865m
PCIe FPGA Board



Agilex™ FPGA card featuring 400G and Gen5 PCIe

M-series FPGA with DDR5 memory

BittWare's IA-865m is an Intel® Agilex™ M-series FPGA card optimized for throughput- and memory-intensive applications. The M-series FPGA features an extensive memory hierarchy including integrated DDR5 memory interface and a hard memory Network-on-Chip (NoC) to maximize memory bandwidth. The IA-865m card provides a balance of I/O and memory leveraging the Agilex chip's unique tiling architecture with QSFP-DDs, DDR5 SDRAM, M.2 SSD, PCIe Gen5 x16 with CXL support, and MCIO expansion port for a variety of applications.

The IA-865m has support for Intel oneAPI™, which enables an abstracted development flow for dramatically simplified code re-use across multiple architectures.

CXL Compute Express Link™

oneAPI

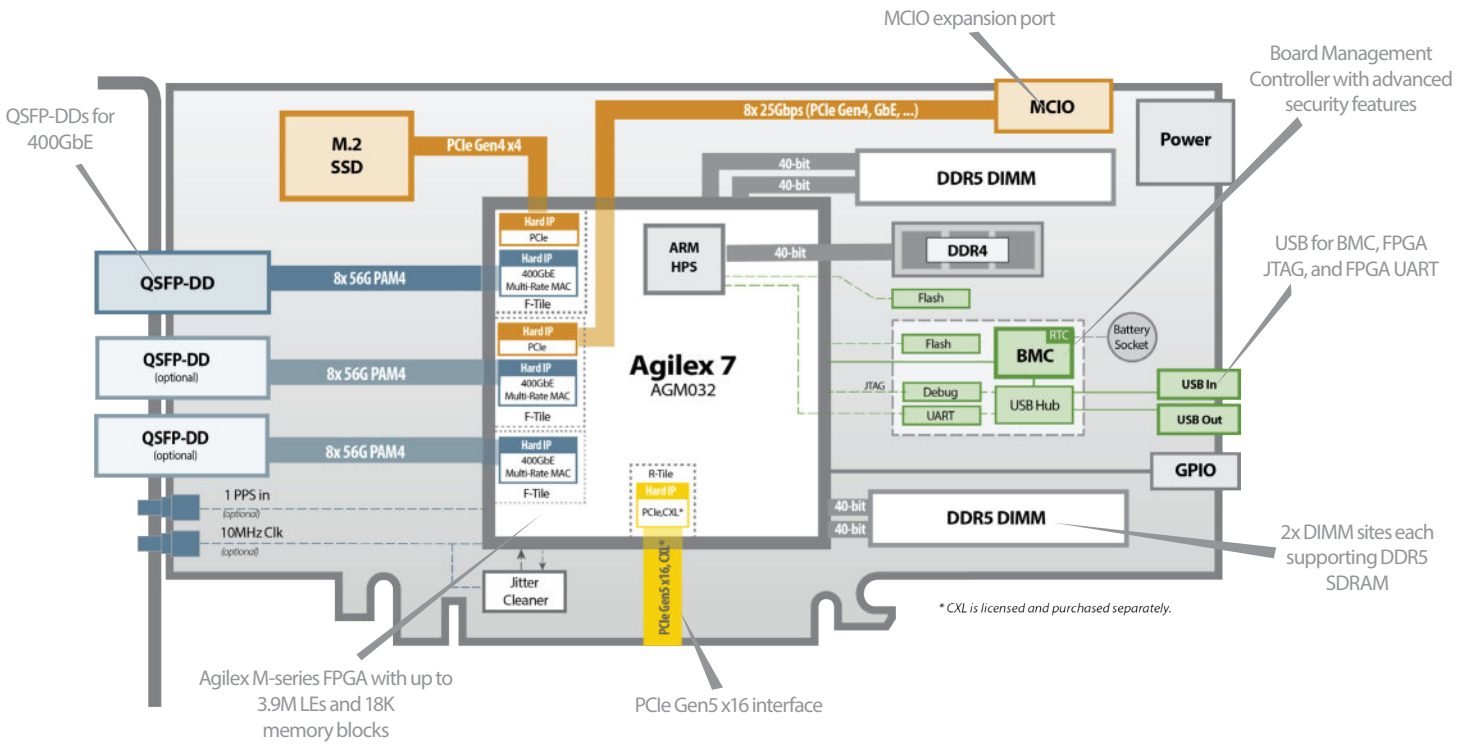
intel. AGILEX 7

key features

400G

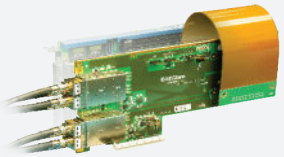
PCIe Gen5 with support for **CXL**

2x banks **DDR5** Memory



Additional Services

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

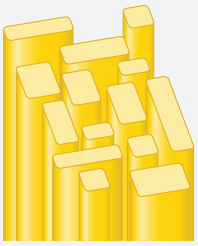


Customization

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	• Intel Agilex 7 M-Series: AGM032 (default)
	  • Package: R36A
	  • Core speed grade -2; XCVR speed grade -1
	  • CXL with XCVR speed grade -1 (CXL IP is licensed and purchased separately)
	  • FPGA includes ARM HPS

ARM HPS	• Dedicated 40-bit DDR4 • Dedicated Flash memory for booting ARM • Optional 1GbE interface (contact BittWare)
On-board Flash	• 2Gbit Flash memory for booting FPGA
External memory	• 2x 288-pin DDR5 DIMM slots, each supporting 32GB (default) DDR5 SDRAM modules (64GB total)
Host interface	• x16 PCIe Gen5 interface direct to FPGA • CXL v1.1 (CXL IP is licensed and purchased separately)
M.2 SSD	• NVMe PCIe M.2 2230 SSD
QSFP-DD cages	• QSFP-DD cage on front panel connected directly to FPGA via 8 transceivers • Configuration option for 2x additional QSFP-DDs (contact BittWare) • User programmable low jitter clocking supporting 10/25/40/100/400GbE • Each QSFP-DD can be independently clocked • Jitter cleaner for network recovered clocking • Multi-rate hard MAC+FEC • Fully backward compatible with QSFP28s
MCIO	• x8 connector supporting 2x Gen4 x4 root complexes
External clocking	• 1 PPS and 10MHz ref clk front panel inputs (optional)
USB	• USB access to BMC, USB-JTAG, 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: dual-width passive heatsink • Optional: dual-width liquid cooling
Electrical	• On-board power derived from PCIe slot 12V and 12-pin AUX power connector • Power dissipation is application dependent • Typical max power consumption TBD
Environmental	• Operating temperature: 5°C to 35°C (passive heatsink)
Quality	• Manufactured to IPC-A-610 Class 2 • RoHS compliant • CE, FCC and ICES approvals
Form factor	• Standard-height, 3/4-length, dual-slot PCIe card • 111.15mm x 266.70mm (4.376in x 10.500in)

Development Tools

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

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BittWare a molex company

intel AGILEX 7

intel partner Titanium

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