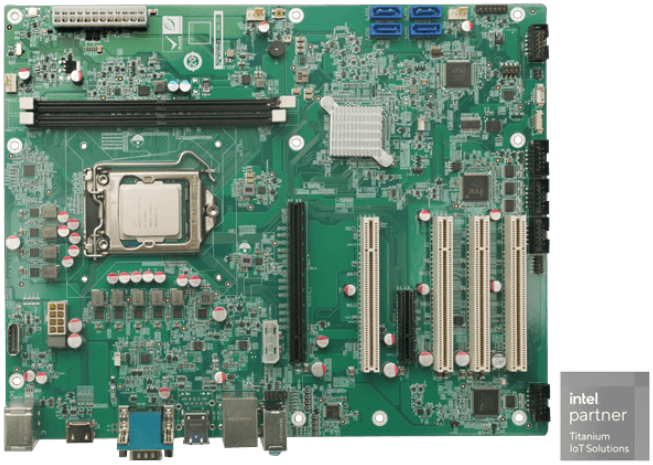
# IMBA-H420

ATX motherboard supports 14nm LGA1200 Intel® 10th/11th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor, DDR4, Triple displays, 2.5GbE LAN, USB 3.2, SATA 6Gb/s, HD Audio and RoHS




## Features

1. LGA1200 Intel® 10th/11th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor

2. Dual-channel DDR4 2933MHz

3. Support HDMI™, DP, VGA display output

4. Support 1 x PCIe x16 , 1 x PCIe x4 and 4 x PCI expansion slots

## Specifications

| | |
|---|---|
| Form Factor | |
| Form Factor | ATX Motherboard |
| System | |
| CPU | LGA1200 Intel® 10/11th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor |
| Chipset | Intel® H420E |
| Memory | Two 288-pin 2933 MHz Dual-Channel DDR4 SDRAM Unbuffered DIMMs supported up to 64GB |
| Memory Max. | up to 64GB |
| Cooling method / System Fan | 1 x CPU fan connector (1x4 pin) |
| | 2 x System fan connector (1x4 pin) |
| Physical Characteristics | |
| Dimensions (LxWxH) (mm) | 244mm x 305mm |
| Net Weight | 700g |
| Storage | |
| Storage | 4 x SATA : 6Gb/s (no RAID) |
| I/O Interface | |
| Display Output | 1 x VGA : up to 1920 x 1200@60Hz |
| | 1 x HDMI™ : up to 4096 x 2160@30Hz |
| | 1 x DP++ : up to 4096 x 2304@60Hz |
| Ethernet | 1 x LAN : |
| | LAN1: Intel® I225V/I226V 2.5GbE controller |
| Audio | 1 x Line in |
| | 1 x Line out |
| | 1 x Mic |
| | 1 x Front Audio : 2x5 pin |
| | 1 x HD Audio : Realtek ALC888S HD codec |
| I/O Interface | 1 x External RS-232 |
| | External RS-232/422/485 : RS-485 support AFC |
| | 4 x Internal RS-232 : 2x5 pin, P=2.54 |
| | 1 x Internal RS-232/422/485 : 2x5 pin, P=2.54 |
| | 2 x External USB 2.0 : Type-A |
| | 4 x External USB 3.2 Gen1x1 : 5Gb/s(Type-A) |

| | |
|---|---|
| | 2 x Internal USB 2.0 : 2x4 pin, P=2.54 |
| | 1 x PS/2 |
| | 1 x DIO : 8-bit digital I/O (2x5 pin) |
| Expansion | 1 x PCIe x16 |
| | 1 x PCIe x4 |
| | 4 x PCI Slot |
| Other Features | |
| TPM | Intel® PTT(TPM 2.0) |
| Power | |
| Power Consumption | 3.3V@0.84A, 5V@8.12A, 12V@3.77A, 5VSB@0A |
| | (Intel® Core™ i5-10500TE CPU with two 32 GB 2933 MHz DDR4 memory, EuP mode enabled) |
| Power Supply | ATX/AT power supply |
| | Support AT/ATX mode |
| | ErP/EuP Compliant |
| Environment | |
| Operating Temperature | -10°C – 60°C |
| Storage Temperature | -30°C – 70°C |
| Humidity | 5% ~ 95%, non-condensing |
| Certifications | |
| Safety & EMC | CE/FCC compliant |

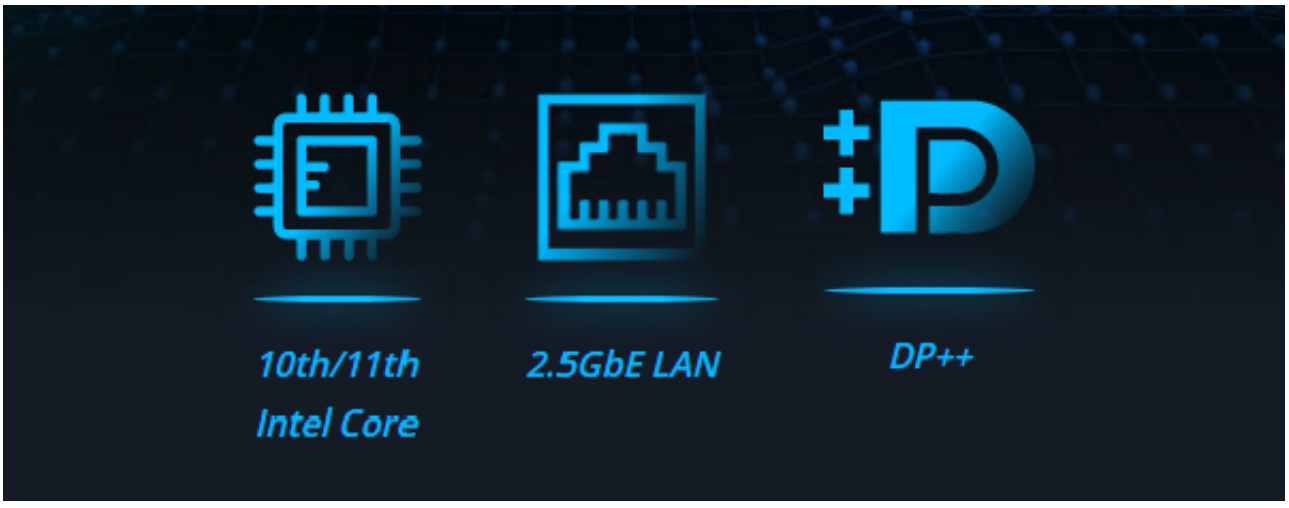
## Ordering Information

| | |
|---|---|
| IMBA-H420-R11 | ATX motherboard supports 14nm LGA1200 Intel® 10th/11th Generation Core™ i9/i7/i5/i3, Celeron® and Pentium® processor, DDR4, Triple independent displays, 2.5GbE LAN, USB 3.2, SATA 6Gb/s, HD Audio and RoHS |

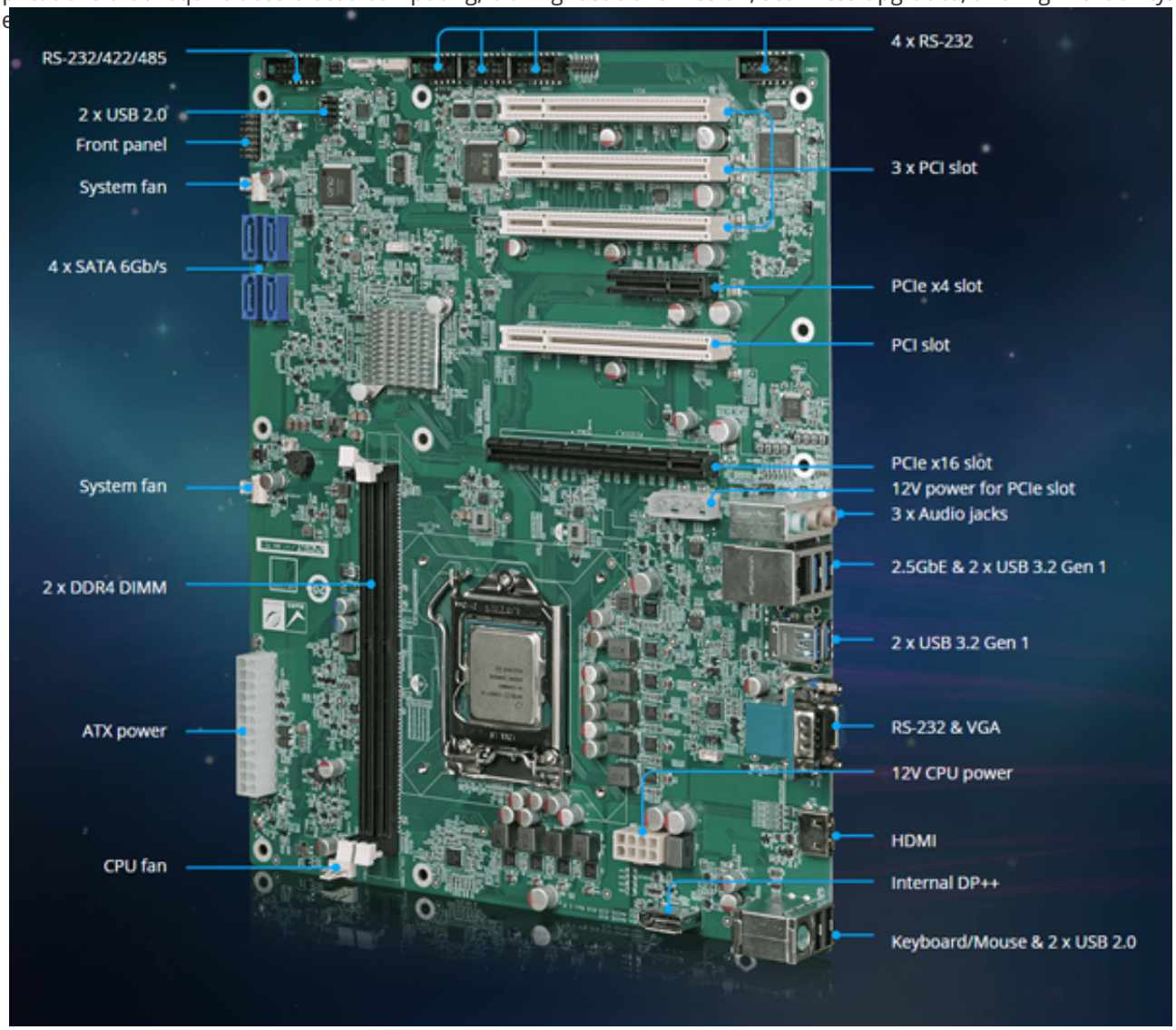
## Packing List

| | |
|---|---|
| 1 x IMBA-H420 single board computer | 2 x SATA cable |
| 1 x I/O shielding | 1 x QIG |

## Expanding to the Next Level of Performance



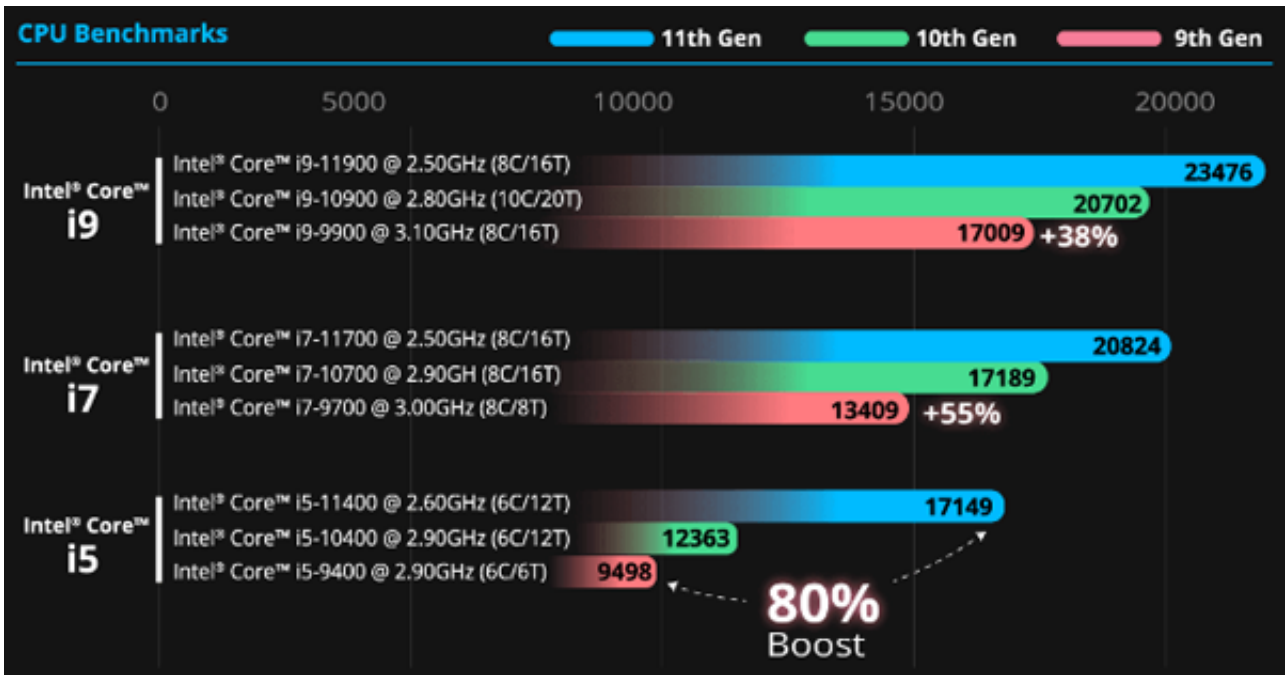
multiple expansion slots and feature rich interfaces, it offers a variety of functionalities and capabilities for the applications that require accelerated computing, blazing-fast transmission, seamless upgrades, and high reliability. The




## Leadership Performance

IEI's IMBA-H420 motherboard supports both 10th and 11th Gen Intel® Core™ processors, which boosts up to 80% better performance than its precedent (Core i5 processor). The 10th Gen Intel® Core™ platform supports up to 10 cores and improved performance over Coffee Lake-Refresh. The 10th Gen Intel® Core™ processors contain Intel® UHD Graphics 630 that offers 24 execution units and support outstanding 4K displays.

With the combination of new Intel Core processor technology and graphics architecture, the IMBA-H420 delivers superior computing power that sets it apart from other products available in the market.



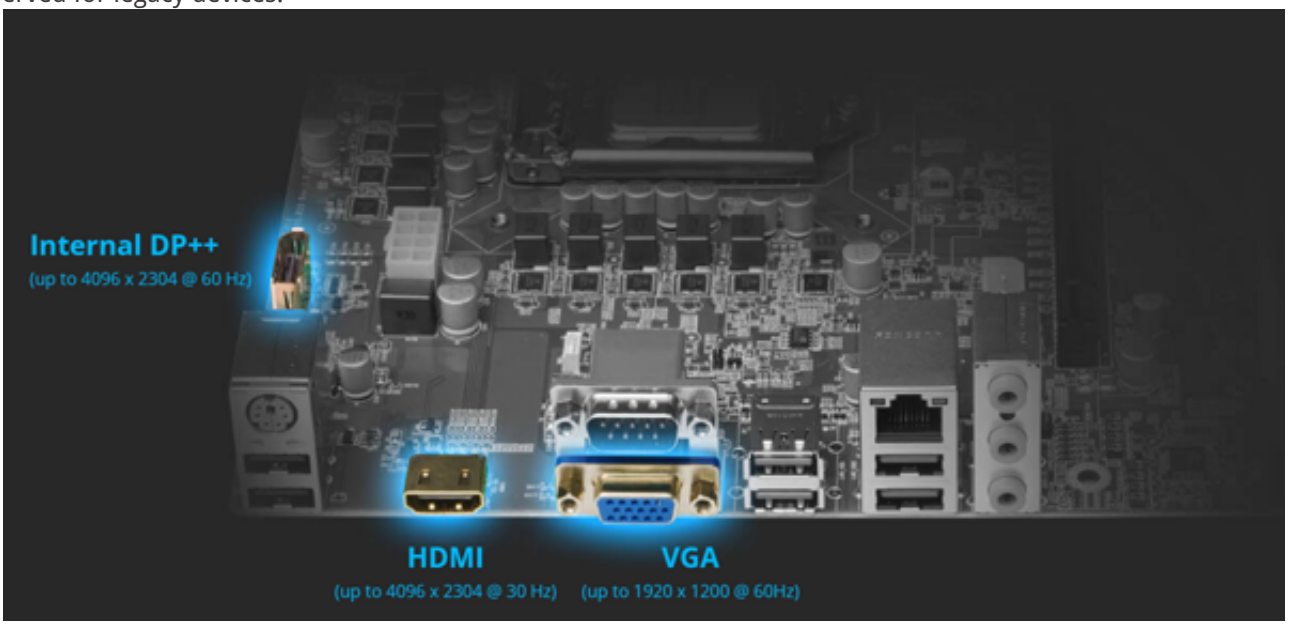

## 10th Gen Intel® Embedded CPU Support List

Up to 10 cores / 20 threads in LGA1200 socket

| Sockets | Brand | Process | Cores/Threads | CPU | Processor Base Frequency | Cache | TDP | Processor Graphics | Graphics Base Frequency | Memory Types | Chipset |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FCLGA1200 | CoreTM i9 | 14nm Comet Lake-S | 10/20 | I9-10900E | 2.8 GHz | 20MB | 65W | Intel® UHD Graphics 630 | 350 MHz | DDR4-2933 | Q470/Q470E |
| | | | 10/20 | I9-10900TE | 1.8 GHz | 20MB | 35W | | | DDR4-2933 | |
| | CoreTM i7 | | 8/16 | I7-10700E | 2.9 GHz | 16MB | 65W | | | DDR4-2933 | |
| | | | 8/16 | I7-10700TE | 2.0 GHz | 16MB | 35W | | | DDR4-2933 | |
| | CoreTM i5 | | 6/12 | I5-10500E | 3.1 GHz | 8MB | 65W | | | DDR4-2666 | |
| | CoreTM i5 | | 6/12 | I5-10500TE | 2.3 GHz | 8MB | 35W | | | DDR4-2666 | |
| | CoreTM i3 | | 4/8 | I3-10100E | 3.2 GHz | 9MB | 65W | | | DDR4-2666 | |
| | CoreTM i3 | | 4/8 | I3-10100TE | 2.3 GHz | 9MB | 35W | | | DDR4-2666 | |
| | Pentium® | | 2/4 | G6400E | 3.8 GHz | 4MB | 58W | | | DDR4-2400 | |
| | Pentium® | | 2/4 | G6400TE | 3.2 GHz | 4MB | 35W | | | DDR4-2400 | |
| | Celeron® | | 2/2 | G5900E | 3.2 GHz | 2MB | 58W | | | DDR4-2400 | |
| | Celeron® | | 2/2 | G5900TE | 3.0 GHz | 2MB | 35W | | | DDR4-2400 | |

## Pixel-accurate 4K Resolution

The IMBA-H420 is equipped with three display output connectors, including HDMI™, internal DP++ and VGA. The HDMI™ and DP++ interfaces support pixel-accurate 4K resolutions for high-end applications while the VGA is reserved for legacy devices.



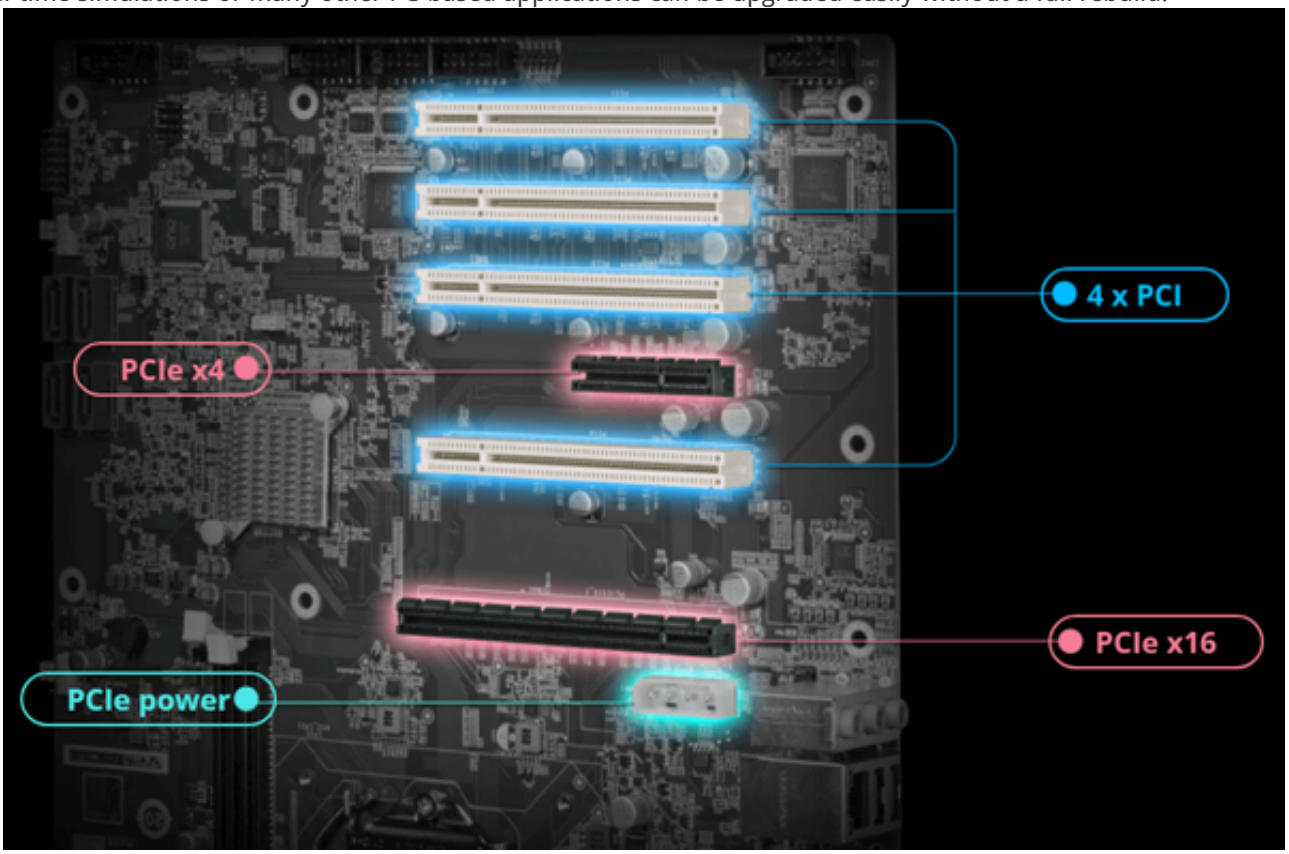
## DP++ Supported

The IMBA-H420 provides various display outputs for customers to connect to a device with the same native interface to avoid quality loss. However, when conversion is needed, the equipped DisplayPort Dual-Mode (DP++) connector allows the use of a simple, inexpensive passive adapter to convert to HDMI™. It is completely plug and play, handles both video and audio, and does not need any driver to work.


## Rich Expansion Options

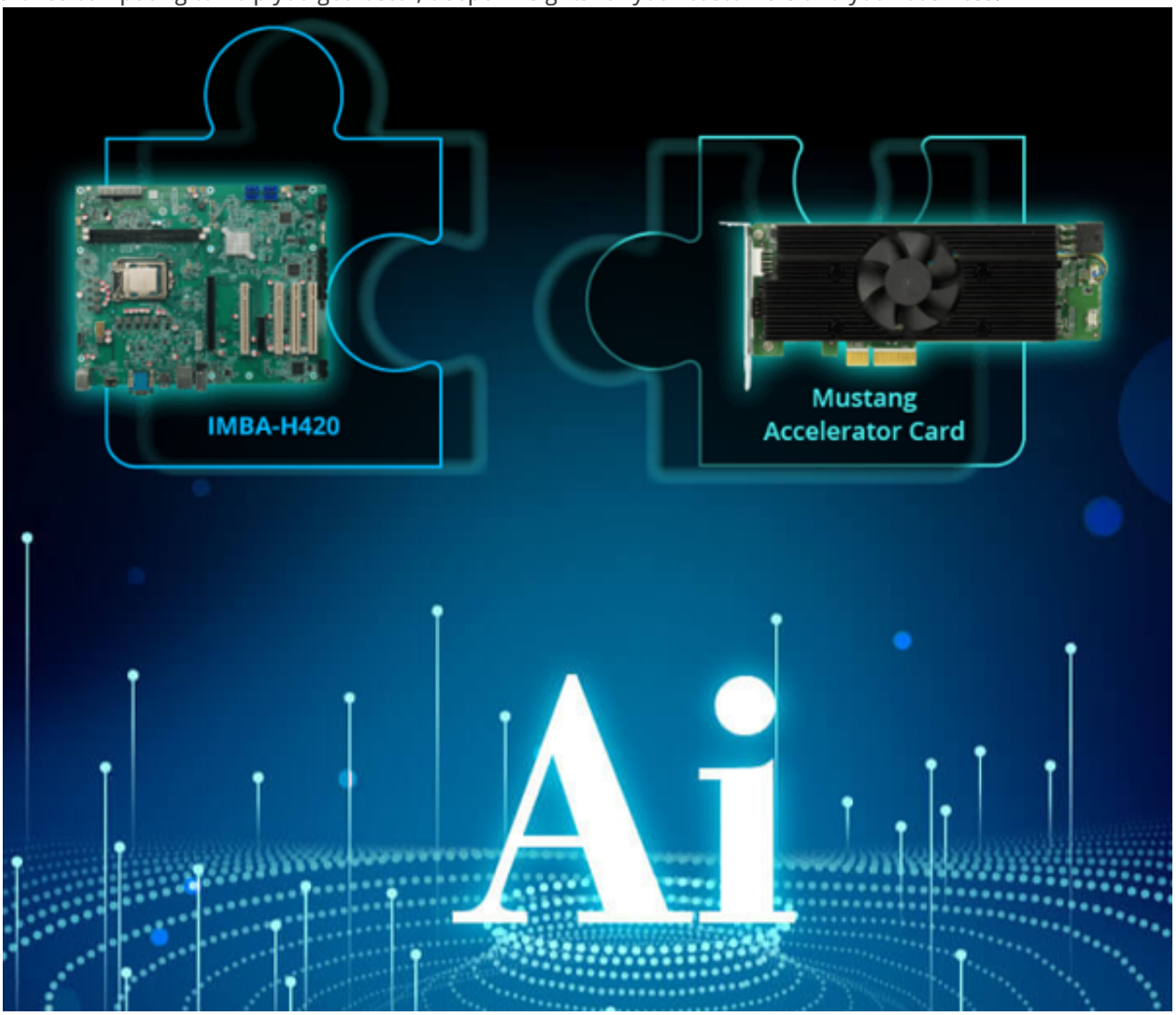
Bringing together PCIe 3.0 technology and legacy PCI standard creates endless possibilities in developing a wide range of solutions. A graphics card or AI card can be added via the PCIe x16 for sophisticated applications, like medical diagnosis, machine vision, robotics or AI-based projects.

Four PCI slots are also provided to maintain backward compatibility. Legacy systems in machine controllers, test rigs, real-time simulations or many other PC-based applications can be upgraded easily without a full rebuild.



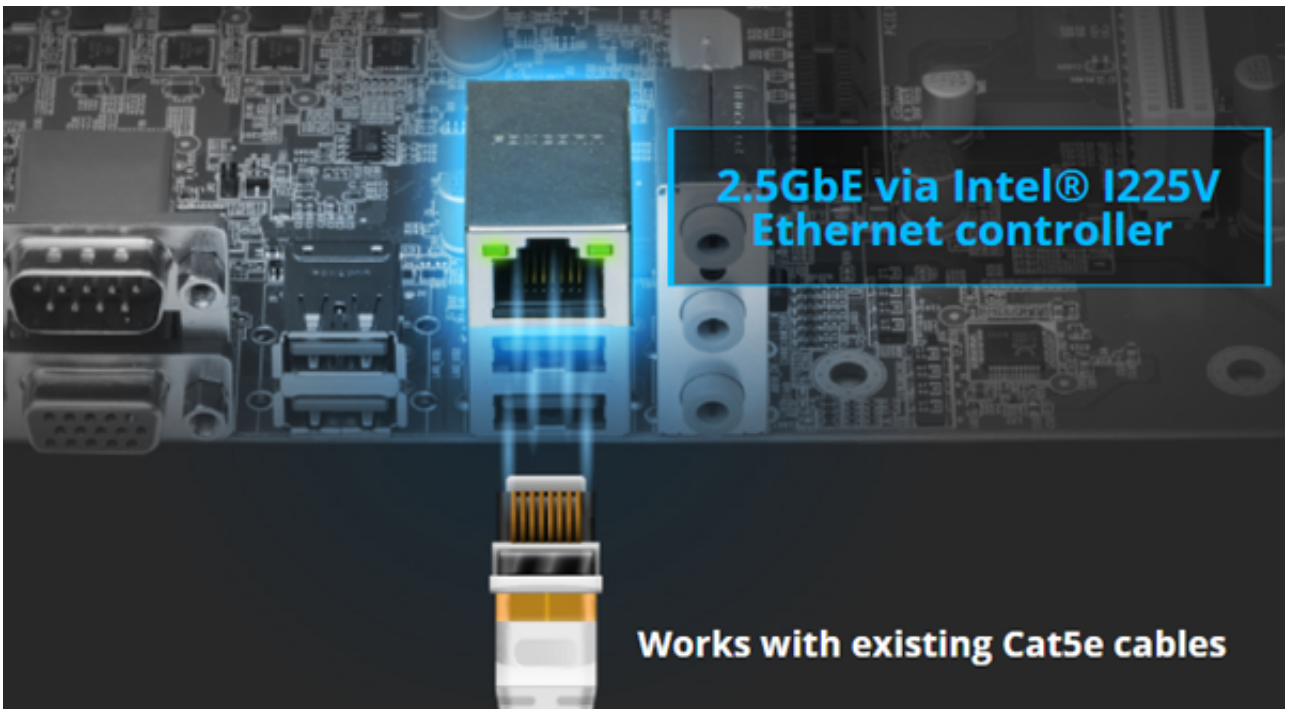
## Tap into the Power of AI

In recent years, Edge AI has became a virtual role. We are now at a time where AI is revolutionizing the world. The IMBA-H420 can deliver excellent computing capabilities to accelerate AI adoption in food/fruit inspection, factory automation and test equipment. By adding IEI's Mustang accelerator card, it could be used for deep learning inference computing to help you get faster, deeper insights for your customers and your business.




## 2.5GBASE-T Ethernet Technology

The 2.5GBASE-T speed is a contemporary solution to an old problem due to the increases in throughput. Enterprises that choose the IMBA-H420 as their solutions for the implementation of 2.5GBASE-T technology will benefit from a simple change that achieves a noticeable gain in bandwidth, while at the same time realizing cost savings from reuse of existing Cat5e cables.




## Energy Efficiency

As shown in the following table, the IMBA-H420 is compliant with ErP, which requires a system should not consume more than 0.5 W during off state or standby. The IMBA-H420 consumes nearly no energy in sleep mode or shutdown, making it a green and eco-friendly product that saves cost and electricity.

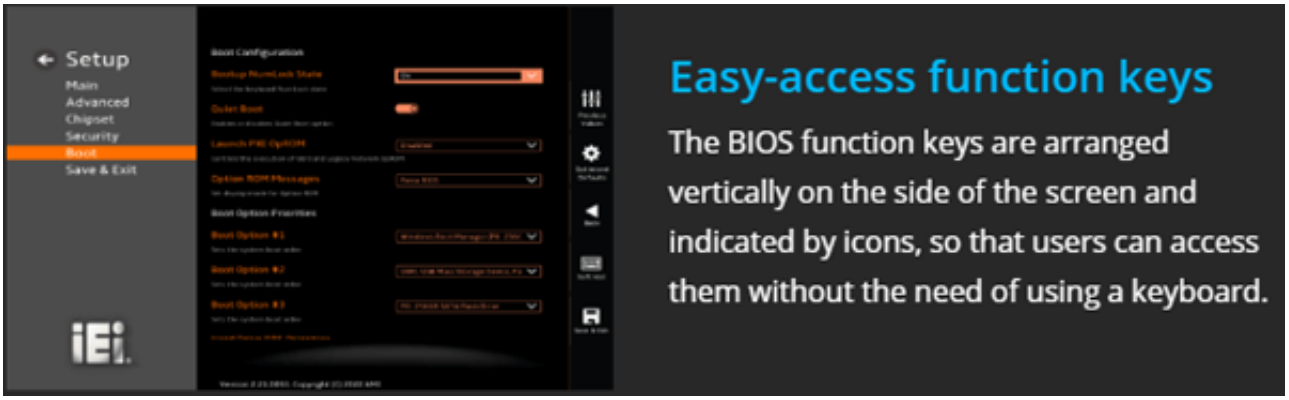
| | Voltage | 3.3 V | 5 V | 5 V Standby | 12 V |
|---|---|---|---|---|---|
| EuP Mode Enabled | Current | 0.84 A | 8.12 A | 0A | 3.77 A |
| | Power Consumption | 2.77 W | 40.6 W | 0W | 45.24 W |
| EuP Mode Disabled | Current | 0.81 A | 8.21 A | 0.02A | 3.84 A |
| | Power Consumption | 2.67 W | 41.5 W | 0.1W | 46.08 W |

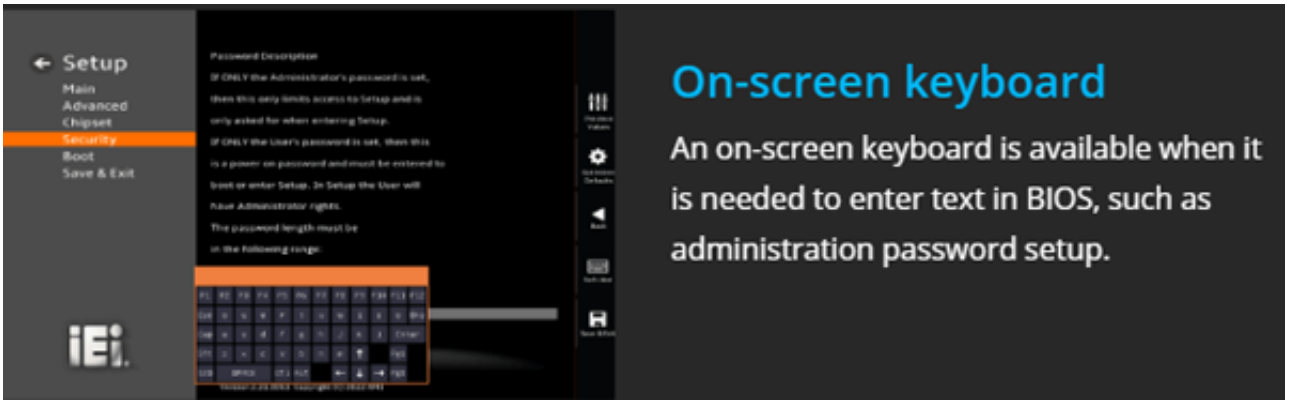

## Touch-enabled BIOS

The BIOS menu in the latest IEI products is re-designed to a touch-enabled user interface to eliminate excessive steps and unnecessary keyboard connection. It allows users to navigate with finger on a touch-enabled monitor to make BIOS configuration easily. The new design features the followings:

## Graphical interface

BIOS menus is transformed from text-based to graphical user interface, making it intuitive and easy to navigate.


## One-Stop Service

IEI provides a one-stop source of products for the IMBA-H420 motherboard, ranging from industrial chassis, accelerator cards and CPU fans, to help you with your integration needs.

## Industrial Chassis

| Industrial Chassis | ECA-100<br>Desktop/Wall-mount Chassis | ECA-300<br>Mini-Tower Chassis |
|---|---|---|
| Dimensions (mm) | 365 x 291 x 162 | 210 x 320 x 480.5 |
| I/O Ports | 2 x USB<br>6 x COM | 6 x USB<br>2 x COM |
| Expansion Slots | 7 | 7 |
| Storage | 1 x 3.5"/2.5" HDD/SSD<br>1 x Additional 3.5"/2.5" HDD/SSD by the optional ECA-HDDKIT-R10 | 2 x 5.25"<br>1 x 3.5"/2.5" HDD/SSD |
| Fan | 1 | 1 |

## Accelerator Card

| Accelerator Card | Mustang-V100-MX8 | Mustang-T100-T5 |
|---|---|---|
| Main Chip | Intel® Movidius™ Myriad™ X | Five Google Coral Edge TPU Accelerator Modules |
| Operating Systems | Ubuntu* 16.04.3 (LTS), 64-bit<br>CentOS 65-bit | Linux: 64-bit version of Debian 10 or Ubuntu 16.04 (or newer)<br>Windows: 64-bit version of Windows 10 |
| Physical PCIe Interface | PCI Express 2.0 x4 | PCI Express 2.0 x4 |
| Fan | Active | Active |
| Dimensions | Standard half-height, half-length, single-width | |

CPU Cooling Kits