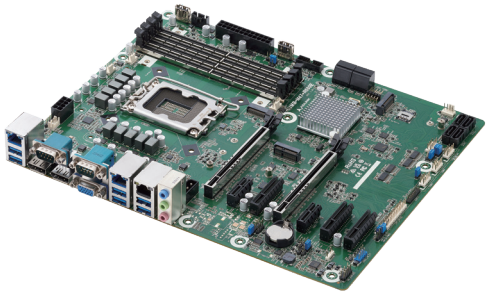
# IMB-M47-R680E

Intel® Core™ Series 2 processors and 14/13/12th Gen Core™ Processors with Intel® R680E Chipset Industrial ATX Motherboard

## Features

- 4x 288-pin Long-DIMM DDR5 up to 4400MHz, maximum 128GB (32GB per DIMM)
- 1x PCIe x16 (Gen5), 1x PCIe x8 (Gen5), 2x PCIe x4 (Gen4), 1x PCIe x4 (Gen3), 2x PCIe x1 (Gen3)
- 6x USB 3.2 Gen2, 2x USB 3.1, 4x USB 2.0, 1x M.2 Key B, 1x M.2 Key E, 1x M.2 Key M, 6x COM, 8x SATA3
- 3x Intel® 2.5 Gigabit LAN
- Supports Triple display, 2x DP1.4a, 1x VGA
- TPM 2.0 onboard IC
- Supports Intel® vPro, AMT, VMD RAID 0/1/5/10
- ATX PWR (8+24 Pin)



Windows

60°C
0°C

## Ordering Information

| PN | Model Name | Chipset | Memory | PCIe x16 | PCIe x4 | PCIe x1 | DP | VGA | LAN | COM | SATA | M.2 | USB2.0 | USB3.0 (Gen1) | RAID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95-13016-10 | IMB-M47-R680E | R680E | ECC DDR5 4400 MHz | 1 (or 2x PCIe x8) | 3 | 2 | 2 | 1 | 3 | 6 | 8 | 3 | 4 | 8 | Yes |

## Packing List

| Description | Description | QTY |
|---|---|---|
| 95-13016-1020 | IMB-M47-R680E | 1 |
| N/A | IMB-M47-R680E I/O shield | 1 |
| N/A | IMB-M47-R680E M.2 screws kit | 1 |

## Optional Accessories

| PN | Description |
|---|---|
| 32-21041-0000-A0 | CPU cooler for 125W CPU |
| 32-20976-0000-A0 | CPU cooler for 65W CPU |
| 30-25010-3010 | USB 2.0 Cable (2 ports) |
| 30-25046-0100 | USB 3.0 Cable (2 ports) |
| 30-25019-2000 | 1-port LPT port cable |
| 30-25116-0000-A0 | COM Cable (2 ports) |

## Embedded OS

| PN | Description |
|---|---|
| 92-56094-0010 | Windows 10 IoT Ent LTSC 2021 High End PKEA |
| 92-56094-2010 | Windows 10 IoT Ent LTSC 2021 Value PKEA |
| 92-56094-4010 | Windows 10 IoT Ent LTSC 2021 Entry PKEA |
| 92-56102-0010 | Windows 11 IoT Ent LTSC 2024 High End PKEA |
| 92-56102-2010 | Windows 11 IoT Ent LTSC 2024 Value PKEA |
| 92-56102-4010 | Windows 11 IoT Ent LTSC 2024 Entry PKEA |



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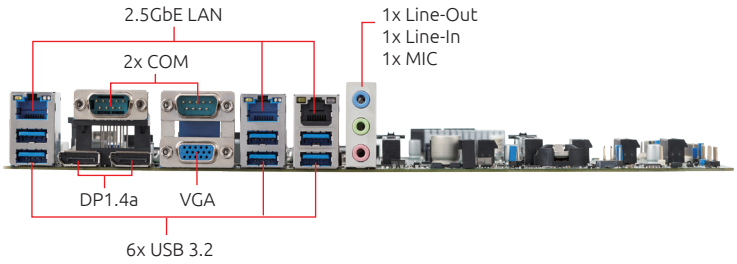
## Specifications

| Model | IMB-M47-R680E |
|---|---|
| **Processor System** | |
| CPU | Intel® Core™ Series 2 processors and 14/13/12th Gen Core™ Processors<br>with Intel® R680E Processors, up to 125W |
| Chipset | R680E |
| Memory | 4x DDR5 UDIMMs 4400MHz, up to 128 GB, ECC (dependent on SKU) |
| OS Support | Windows® 10/11 (64bit)<br>Ubuntu LTS 20.04 (32/64bit) |
| **Display** | |
| VGA | 1 |
| HDMI | - |
| DisplayPort | 2 |
| No. of Displays | 3 |
| **Ethernet** | |
| Gbe Port | 3 |
| Controller/ Frequency | 3x Intel® I226-LM, 2.5Gps |
| **Storage** | |
| SATA | 8x SATA 6Gb/s ports |
| RAID | Intel® software RAID 0/1/5/10 |
| **I/O Interfaces** | |
| USB | 6x USB 3.2 Gen2 ports (10Gbps) (rear I/O)<br>2x USB 3.1 via header<br>2x USB 2.0 vertical type A ports for internal dongles<br>2x USB 2.0 via headers |
| COM | 2x RS-232/422/485 (rear I/O)<br>4x RS-232 (pin header) |
| PS/2 | 1 (internal) |
| Audio | Realtek ALC897 |
| LPT | 1 (pin header) |
| GPIO | 8 x GPI, 8 x GPO (shared with LPT header) |
| TPM | Yes (TPM 2.0) |
| **Expansion Slots** | |
| PCIe | 2x PCIe Gen5 Slots (1x PCIe x16/ 2x PCIe x8)<br>2x PCIe x4 Gen4<br>1x PCIe x4 Gen3<br>2x PCIe x1 Gen3 |
| PCI | - |
| M.2 | 1x M.2 M-key, 2280 (support PCIe gen4 x 4)<br>1x M.2 E-key, 2230 (PCIe x1, USB2.0)<br>1x M.2 B-key, 3042/3052 (PCIe x1, USB3.2 Gen1, USB2.0) w/ SIM |
| **Mechanical and Environmental** | |
| Dimension | ATX (305 mm x 244 mm (W x L)) |
| Operating Temperature | 0°C to 60°C |
| Storage Temperature | -40°C to 85°C |
| Relative Humidity | 60 °C @ 90% RH, non-condensing |
| **Certification** | |
| | - |

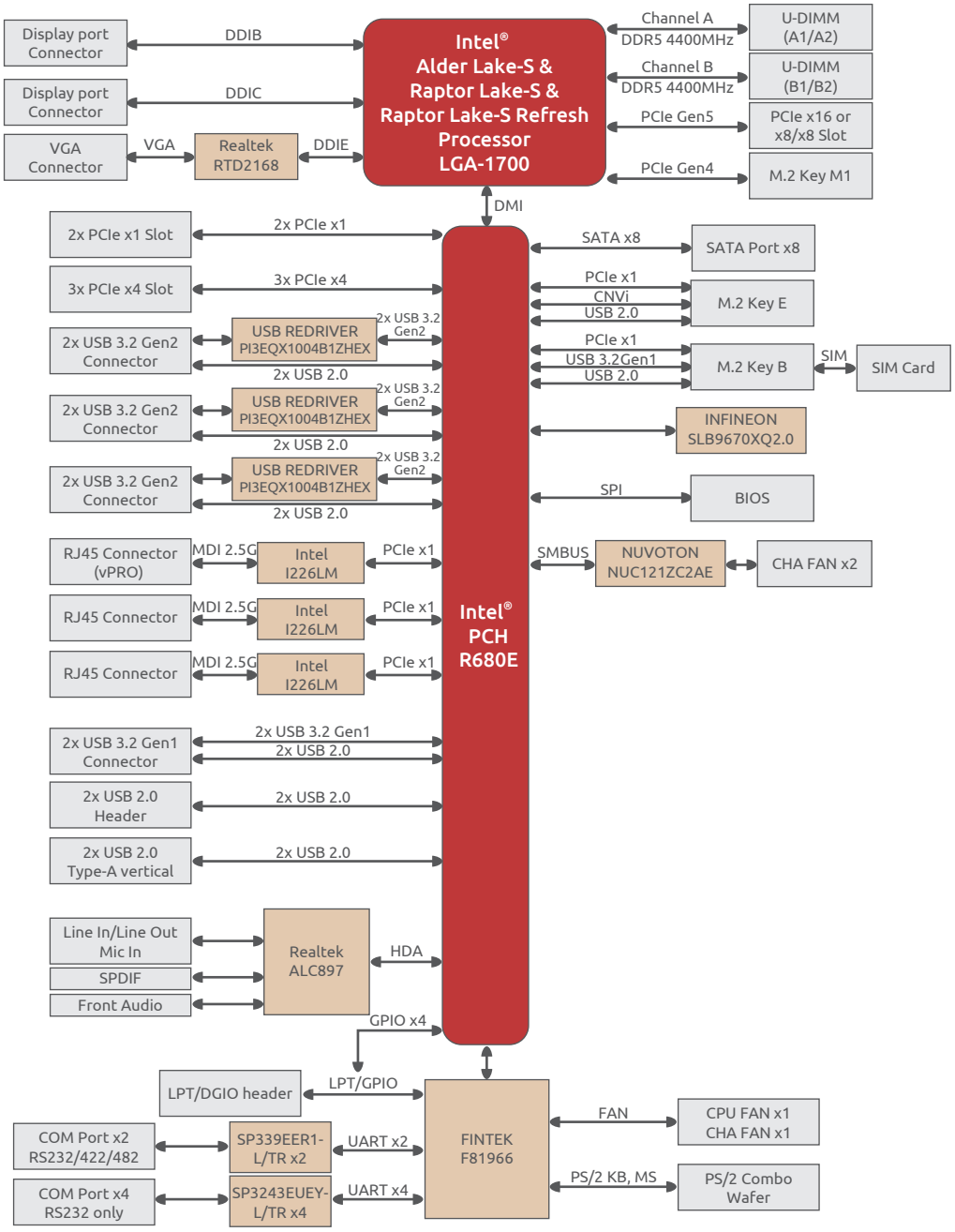


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## Product Illustration




## Block Diagram






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## CPU Support List

| Family | Number | CPU Core | Frequency(GHz) | Cache(MB) | Power | Since BIOS |
|---|---|---|---|---|---|---|
| Bartlett Lake-S | 273PQE | 12 | 3.4 GHz | 36MB | 125 | 1.05.10 |
| Bartlett Lake-S | 273PE | 12 | 2.3GHz | 36MB | 65 | 1.05.10 |
| Bartlett Lake-S | 273PTE | 12 | 1.4GHz | 36MB | 45 | 1.05.10 |
| Bartlett Lake-S | 253PQE | 10 | 3.5 GHz | 33MB | 125 | 1.05.10 |
| Bartlett Lake-S | 253PE | 10 | 2.5GHz | 33MB | 65 | 1.05.10 |
| Bartlett Lake-S | 253PTE | 10 | 1.8GHz | 33MB | 45 | 1.05.10 |
| Bartlett Lake-S | 223PQE | 8 | 4.0GHz | 24MB | 125 | 1.05.10 |
| Bartlett Lake-S | 223PE | 8 | 2.9GHz | 24MB | 65 | 1.05.10 |
| Bartlett Lake-S | 223PTE | 8 | 2.3GHz | 24MB | 45 | 1.05.10 |
| Bartlett Lake-S | 213PE | 8 | 2.7GHz | 24MB | 65 | 1.05.10 |
| Bartlett Lake-S | 213PTE | 8 | 2.1GHz | 24MB | 45 | 1.05.10 |
| Bartlett Lake-S | 251E | 24 | 2.1 GHz | 36MB | 65 | 1.04.10 |
| Bartlett Lake-S | 251TE | 24 | 1.4 GHz | 36MB | 45 | 1.04.10 |
| Bartlett Lake-S | 221E | 14 | 2.7 GHz | 24MB | 65 | 1.04.10 |
| Bartlett Lake-S | 221TE | 14 | 1.8 GHz | 24MB | 45 | 1.04.10 |
| Bartlett Lake-S | 211E | 10 | 2.7 GHz | 20MB | 65 | 1.04.10 |
| Bartlett Lake-S | 211TE | 10 | 1.7 GHz | 20MB | 45 | 1.04.10 |
| Bartlett Lake-S | 201E | 4 | 3.6 GHz | 12MB | 60 | 1.04.10 |
| Bartlett Lake-S | 201TE | 4 | 2.9 GHz | 12MB | 45 | 1.04.10 |
| Raptor Lake-S Refresh | i9-14900K | 24 | 3.2GHz | 36MB | 125 | 1.00.10 |
| Raptor Lake-S Refresh | i9-14900 | 24 | 2.0GHz | 36MB | 65 | 1.00.10 |
| Raptor Lake-S Refresh | i9-14900T | 24 | 1.1GHz | 36MB | 35 | 1.00.10 |
| Raptor Lake-S Refresh | i7-14700K | 20 | 3.4GHz | 33MB | 125 | 1.00.10 |
| Raptor Lake-S Refresh | i7-14700 | 20 | 2.1GHz | 33MB | 65 | 1.00.10 |
| Raptor Lake-S Refresh | i7-14700T | 20 | 1.3GHz | 33MB | 35 | 1.00.10 |
| Raptor Lake-S Refresh | i5-14600K | 14 | 3.5GHz | 24MB | 125 | 1.00.10 |
| Raptor Lake-S Refresh | i5-14500 | 14 | 2.6GHz | 24MB | 65 | 1.00.10 |
| Raptor Lake-S Refresh | i5-14500T | 14 | 1.7GHz | 24MB | 35 | 1.00.10 |
| Raptor Lake-S Refresh | i5-14400 | 10 | 2.5GHz | 20MB | 65 | 1.00.10 |
| Raptor Lake-S Refresh | i3-14100 | 4 | 3.5GHz | 12MB | 60 | 1.00.10 |
| Raptor Lake-S Refresh | i3-14100T | 4 | 2.7GHz | 12MB | 35 | 1.00.10 |
| Raptor Lake-S Refresh | 300 | 2 | 3.9GHz | 6MB | 46 | 1.00.10 |
| Raptor Lake-S Refresh | 300T | 2 | 3.4GHz | 6MB | 35 | 1.00.10 |
| Raptor Lake-S | i9-13900K | 24 | 3.0GHz | 36MB | 125 | 1.00.10 |
| Raptor Lake-S | i9-13900E | 24 | 1.8GHz | 36MB | 65 | 1.00.10 |
| Raptor Lake-S | i9-13900 | 24 | 2.0GHz | 36MB | 65 | 1.00.10 |
| Raptor Lake-S | i9-13900TE | 24 | 1.0GHz | 36MB | 35 | 1.00.10 |
| Raptor Lake-S | i7-13700K | 16 | 2.5GHz | 30MB | 125 | 1.00.10 |
| Raptor Lake-S | i7-13700E | 16 | 1.9GHz | 30MB | 65 | 1.00.10 |
| Raptor Lake-S | i7-13700 | 16 | 2.1GHz | 30MB | 65 | 1.00.10 |
| Raptor Lake-S | i7-13700TE | 16 | 1.1GHz | 30MB | 35 | 1.00.10 |
| Raptor Lake-S | i5-13500E | 14 | 2.4GHz | 24MB | 65 | 1.00.10 |
| Raptor Lake-S | i5-13500 | 14 | 2.5GHz | 24MB | 65 | 1.00.10 |
| Raptor Lake-S | i5-13500TE | 14 | 1.3GHz | 24MB | 35 | 1.00.10 |
| Raptor Lake-S | i5-13400E | 10 | 2.4GHz | 20MB | 65 | 1.00.10 |
| Raptor Lake-S | i5-13400 | 10 | 2.5GHz | 20MB | 65 | 1.00.10 |
| Raptor Lake-S | i3-13100E | 4 | 3.3GHz | 12MB | 60 | 1.00.10 |
| Raptor Lake-S | i3-13100 | 4 | 3.4GHz | 12MB | 60 | 1.00.10 |
| Raptor Lake-S | i3-13100TE | 4 | 2.4GHz | 12MB | 35 | 1.00.10 |



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## CPU Support List

| Family | Number | CPU Core | Frequency(GHz) | Cache(MB) | Power | Since BIOS |
|---|---|---|---|---|---|---|
| Alder Lake-S | i9-12900K | 16 | 2.4GHz | 30MB | 125 | 1.00.10 |
| Alder Lake-S | i9-12900E | 16 | 2.3GHz | 30MB | 65 | 1.00.10 |
| Alder Lake-S | i9-12900 | 16 | 2.4GHz | 30MB | 65 | 1.00.10 |
| Alder Lake-S | i9-12900TE | 16 | 1.1GHz | 30MB | 35 | 1.00.10 |
| Alder Lake-S | i7-12700K | 12 | 2.7GHz | 25MB | 125 | 1.00.10 |
| Alder Lake-S | i7-12700E | 12 | 2.1GHz | 25MB | 65 | 1.00.10 |
| Alder Lake-S | i7-12700 | 12 | 1.6GHz | 25MB | 65 | 1.00.10 |
| Alder Lake-S | i7-12700TE | 12 | 1.4GHz | 25MB | 35 | 1.00.10 |
| Alder Lake-S | i5-12500E | 6 | 2.9GHz | 18MB | 65 | 1.00.10 |
| Alder Lake-S | i5-12500 | 6 | 3.0GHz | 18MB | 65 | 1.00.10 |
| Alder Lake-S | i5-12500TE | 6 | 1.9GHz | 18MB | 35 | 1.00.10 |
| Alder Lake-S | i5-12400 | 6 | 2.5GHz | 18MB | 65 | 1.00.10 |
| Alder Lake-S | i3-12100E | 4 | 3.2GHz | 12MB | 60 | 1.00.10 |
| Alder Lake-S | i3-12100 | 4 | 3.3GHz | 12MB | 60 | 1.00.10 |
| Alder Lake-S | i3-12100TE | 4 | 2.1GHz | 12MB | 35 | 1.00.10 |
| Alder Lake-S | G7400E | 2 | 3.6GHz | 6MB | 46 | 1.00.10 |
| Alder Lake-S | G7400TE | 2 | 3.0GHz | 6MB | 35 | 1.00.10 |
| Alder Lake-S | G6900E | 2 | 3.0GHZ | 4MB | 46 | 1.00.10 |
| Alder Lake-S | G6900TE | 2 | 2.4GHz | 4MB | 35 | 1.00.10 |

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