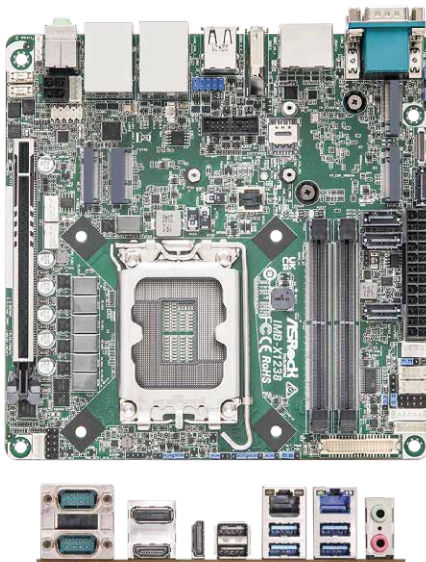




# IMB-X1238

## Mini-ITX Motherboard

### KEY FEATURES

- Intel® Core™ Processor Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen (Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S) Core™ Processors with W680 chipset
- 2 x 262-pin ECC/non-ECC SO-DIMM DDR5 4800/5600 MHz, up to 96GB (48GB per DIMM)
- 1 x PCIe x16 (Gen5), 4 x USB 3.2 Gen2, 2 x USB 3.2 Gen1, 4 x USB 2.0, 1 x M.2 Key B, 1 x M.2 Key E, 2 x M.2 Key M, 4 x COM, 4 x SATA3
- 1 x Intel 2.5 Gigabit LAN, 1 x Intel 1 Gigabit LAN
- Supports Quad display, 1 x HDMI 2.0b, 1 x HDMI 1.4b, 1 x DP 1.4a, 1 x LVDS or eDP
- TPM 2.0 onboard IC
- Supports Intel® vPro, VMD RAID 0/1/5/10
- ATX-PWR (24+4-pin) and +12V DC-In co-design

### SPECIFICATIONS

#### Form Factor

|                    |                                                                 |
|--------------------|-----------------------------------------------------------------|
| Dimensions (LxWxH) | Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 3.8 cm) |
|--------------------|-----------------------------------------------------------------|

#### Processor System

|         |                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU     | Intel® Core™ Processor Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen (Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S) Core™ Processors, up to 65W |
| Chipset | Intel® W680                                                                                                                                             |
| Socket  | LGA1700                                                                                                                                                 |
| BIOS    | AMI SPI 256 Mbit                                                                                                                                        |

#### Memory

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technology | Dual Channel ECC/non-ECC DDR5 4800/5600 MHz*<br>*Actual memory frequency depends on the CPU types and DRAM modules, for more information refer to <a href="https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&amp;faq_id=90">https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&amp;faq_id=90</a> technical FAQ<br>*If motherboard ambient temp. is over 55°C, the memory thermal solution should be added to avoid thermal issue |
| Capacity   | 96 GB (48 GB per DIMM)                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Socket     | 2 x 262-pin SO-DIMM                                                                                                                                                                                                                                                                                                                                                                                                                                   |

#### Graphics

|              |                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------|
| Controller   | Intel® UHD Graphics                                                                                  |
| HDMI         | HDMI 2.0b<br>Max resolution up to 4096x2160@60Hz<br>HDMI 1.4b<br>Max resolution up to 4096x2160@30Hz |
| DisplayPort  | DisplayPort 1.4a, DP++<br>Max resolution up to 4096x2160@60Hz                                        |
| LVDS         | Dual channel 24 bit up to 1920x1200@60Hz (Connector shared with eDP)                                 |
| eDP          | Max resolution up to 1920 x 1200@60Hz (Connector shared with LVDS)                                   |
| MultiDisplay | Quad Display                                                                                         |

#### Expansion Slot

|            |                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| PCIe       | 1 x PCIe x16 (Gen5, Support riser card x8/x8)                                                                                                         |
| M.2        | 1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVi for Wireless<br>1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G |
| SIM Socket | 1 x Socket connected to M.2 Key B                                                                                                                     |

#### Audio

|           |                                                         |
|-----------|---------------------------------------------------------|
| Interface | Realtek ALC897, High Definition Audio. Line-out, Mic-in |
|-----------|---------------------------------------------------------|

#### Ethernet

|                   |                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------|
| Controller/ Speed | LAN1: Intel® I226V with 10/100/1000/2500 Mbps<br>LAN2: Intel® I219LM with 10/100/1000 Mbps, supports vPro |
| Connector         | 2 x RJ-45                                                                                                 |

#### Rear I/O

|             |                                          |
|-------------|------------------------------------------|
| HDMI        | 1 x HDMI 2.0b<br>1 x HDMI 1.4b           |
| DisplayPort | 1 x DP 1.4a++                            |
| Ethernet    | 1 x 2.5 Gigabit LAN<br>1 x 1 Gigabit LAN |
| USB         | 4 x USB 3.2 Gen2<br>2 x USB 2.0          |
| Audio       | 2 (Mic-in, Line-out)                     |
| COM         | COM1, COM2 (RS-232/422/485)              |

#### Internal Connector

|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| USB             | 2 x USB 3.2 Gen1 (1 x USB 3.2 header)<br>2 x USB 2.0 (1 x 2.54 pitch header) |
| COM             | COM3, COM4 (RS-232)                                                          |
| GPIO            | 4 x GPI, 4 x GPO                                                             |
| LVDS            | 1 (Connector with LVDS/eDP signal, switch by BIOS)                           |
| SATA PWR Output | 1                                                                            |
| Speaker Header  | 1                                                                            |

#### Storage

|      |                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M.2  | 1 x M.2 (Key M, 2242/2280) with PCIe Gen4 x4 for SSD<br>1 x M.2 (Key M, 2242) with PCIe Gen3x4 and SATA3 for SSD*<br>*Recommend using M2X4-SATA-4P module to support extra 4 SATA ports (Support by special BIOS) |
| SATA | 4 x SATA3 (6Gb/s)                                                                                                                                                                                                 |
| RAID | Intel® VMD RAID 0/1/5/10<br>**supported by identical interface (PCIe or SATA)<br>PCIe interface: M.2 Key B + M.2 Key M1/2 or 2*M.2 Key M<br>SATA interface: SATA por                                              |

#### Security

|     |                    |
|-----|--------------------|
| TPM | TPM 2.0 onboard IC |
|-----|--------------------|

#### Watchdog Timer

|          |                                  |
|----------|----------------------------------|
| Output   | From Super I/O to drag RESETCON# |
| Interval | 256 Segments, 0, 1, 2, ...255sec |

#### Power Requirements

|           |                                                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Input PWR | ATX PWR (24+4-pin) and +12V DC-In co-design                                                                               |
| Power On  | AT/ATX Supported<br>- AT : Directly PWR on as power input ready<br>- ATX : Press button to PWR on after power input ready |

#### Environment

|                    |              |
|--------------------|--------------|
| Operating Temp     | -20°C ~ 70°C |
| Storage Temp       | -40°C ~ 85°C |
| Operating Humidity | 5% ~ 90%     |
| Storage Humidity   | 5% ~ 90%     |

## BLOCK DIAGRAM

