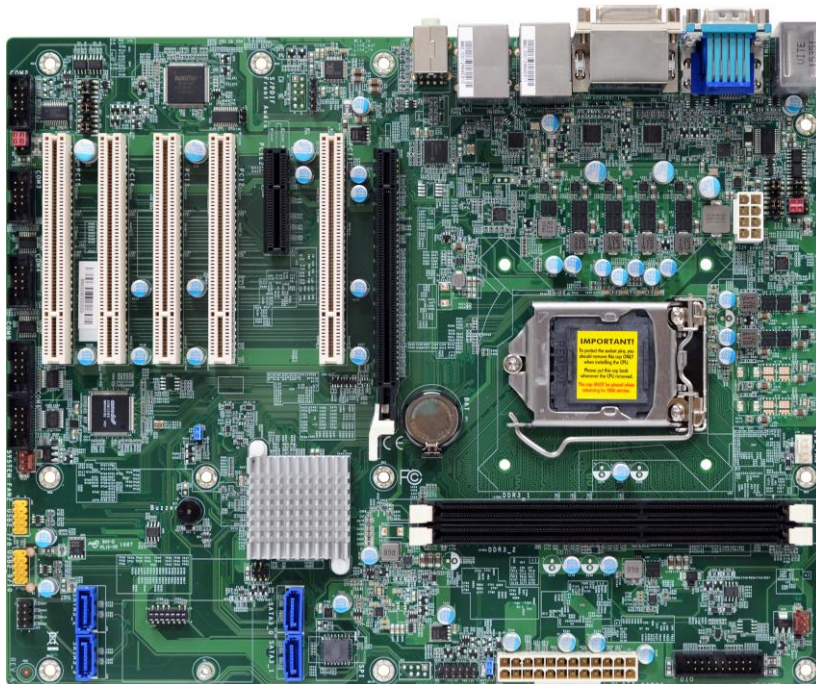


# MBU4102

## Industrial Motherboard Series

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# MBU4102

## PRODUCT HIGHLIGHTS

- ▶ Intel 6th/7th Gen Intel® Core™ with Intel® H110
- ▶ 2 DDR3L DIMM up to 16GB
- ▶ Multiple expansion: 1 PCIe x16, 1 PCIe x4, 5 PCI
- ▶ 2 independent displays: VGA + DVI-I + HDMI
- ▶ Rich I/O: 2 Intel GbE, 6 COM, 4 USB 3.0, 6 USB 2.0
- ▶ 15-Year CPU Life Cycle Support Until Q3' 30 (Based on Intel IOTG Roadmap)



## TECHNICAL INFORMATION

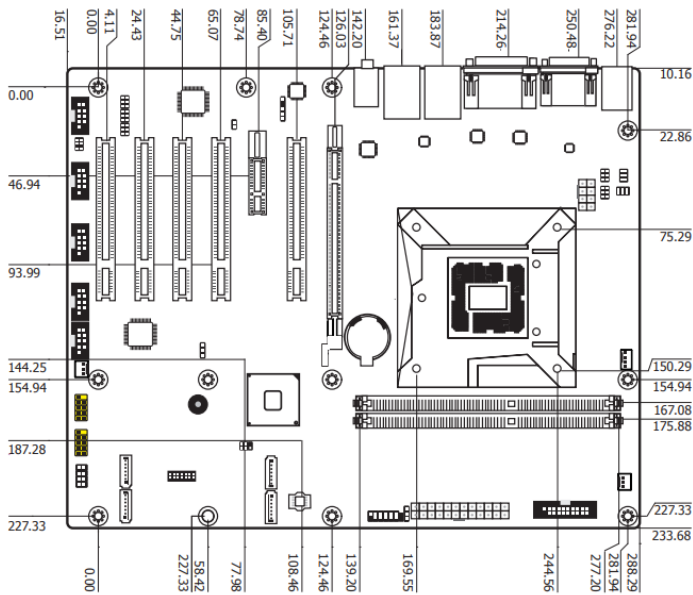
|           |               |                                                                                                                                                                                  |
|-----------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM    | PROCESSOR     | 6 <sup>th</sup> /7 <sup>th</sup> Generation Intel® Core™ /Pentium®/Celeron® LGA 1151 Socket Processors with TDP up to 65W:                                                       |
|           | CHIPSET       | Intel® H110 Chipset                                                                                                                                                              |
|           | MEMORY        | Two 240-pin DIMM up to 16GB<br>Dual Channel DDR3L 1600MHz                                                                                                                        |
|           | BIOS          | Insyde SPI 128Mbit                                                                                                                                                               |
| GRAPHICS  | CONTROLLER    | Intel® HD Gen 9 Graphics                                                                                                                                                         |
|           | FEATURE       | OpenGL 5.0, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264,MPEG2,VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9<br>HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9              |
|           | DISPLAY       | 1 x VGA<br>1 x DVI-I (DVI-D signal)<br>1 x HDMI<br>VGA: resolution up to 1920x1200 @ 60Hz<br>DVI-I: resolution up to 1920x1200 @ 60Hz<br>HDMI: resolution up to 4096x2160 @ 24Hz |
|           | DUAL DISPLAYS | VGA + DVI-I (DVI-D signal)<br>DVI-I (DVI-D signal) + HDMI<br>VGA + HDMI                                                                                                          |
| EXPANSION | INTERFACE     | 1 x PCIe x16 (Gen 3)<br>1 x PCIe x4 (Gen 2)<br>5 x PCI                                                                                                                           |
| AUDIO     | AUDIO CODEC   | Realtek ALC888S-VD2-GR                                                                                                                                                           |
| ETHERNET  | CONTROLLER    | 1 x Intel® I211AT PCIe (10/100/1000Mbps)<br>1 x Intel® I219V PCIe (10/100/1000Mbps)                                                                                              |
| REAR I/O  | ETHERNET      | 2 x GbE (RJ-45)                                                                                                                                                                  |
|           | SERIAL        | 1 x RS-232/422/485 (RS-232 w/power (DB-9)                                                                                                                                        |
|           | USB           | 4 x USB 3.0<br>2 x USB 2.0                                                                                                                                                       |
|           | PS/2          | 1 x PS/2 (mini-DIN-6)                                                                                                                                                            |
|           | DISPLAY       | 1 x VGA<br>1 x DVI-I (DVI-D signal)<br>1 x HDMI                                                                                                                                  |
|           | AUDIO         | 1 x Line-out, 1 x Mic-in, 1 x Line-in (opt., MOQ required)                                                                                                                       |

## ► TECHNICAL INFORMATION (CONTINUED)

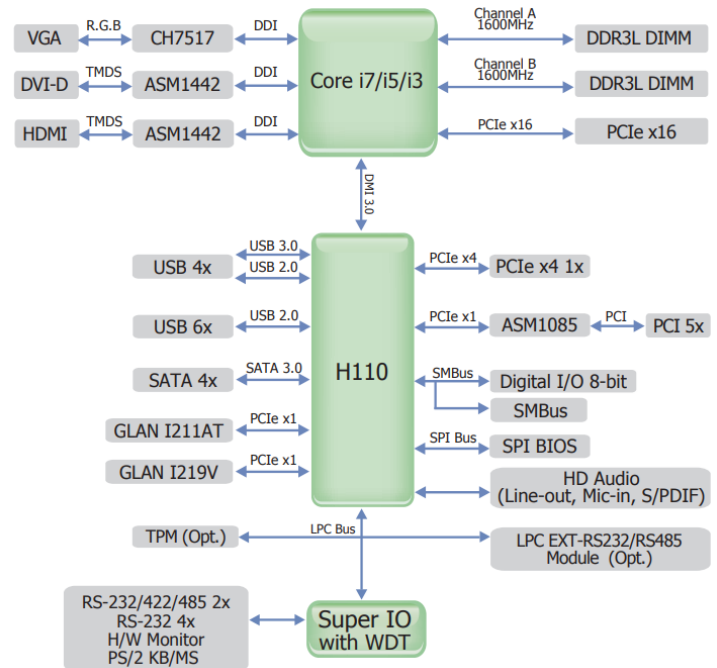
|                       |                              |                                                                                                                                                                      |
|-----------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>INTERNAL I/O</b>   | <b>SERIAL</b>                | 1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)<br>4 x RS-232 (2.54mm pitch)                                                                                     |
|                       | <b>USB</b>                   | 4 x USB 2.0 (2.54mm pitch) or<br>2 x USB 2.0 (2.54mm pitch) + 1 x Vertical USB 2.0 (type A) (opt., MOQ required)                                                     |
|                       | <b>AUDIO</b>                 | 1 x S/PDIF, 1 x Audio (Line-out/Mic-in) (opt., MOQ required)                                                                                                         |
|                       | <b>SATA</b>                  | 4 x SATA 3.0                                                                                                                                                         |
|                       | <b>DIO</b>                   | 1 x 8-bit DIO                                                                                                                                                        |
|                       | <b>LPC</b>                   | 1 x LPC (supports LPC EXT-RS232/RS485 module)                                                                                                                        |
|                       | <b>SMBUS</b>                 | 1 x SMBus                                                                                                                                                            |
|                       | <b>OUTPUT &amp; INTERVAL</b> | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                        |
|                       | <b>SECURITY TPM</b>          | Infineon TPM2.0/1.2 (opt., MOQ required)                                                                                                                             |
|                       | <b>TYPE</b>                  | ATX                                                                                                                                                                  |
|                       | <b>CONNECTOR</b>             | 8-pin ATX 12V power<br>24-pin ATX power                                                                                                                              |
|                       | <b>CONSUMPTION</b>           | Typical: i7 65W: 12V @ 2.39A (28.64Watt)<br>Max.: i7 65W: 12V @ 5.71A (68.48Watt)                                                                                    |
|                       | <b>RTC BATTERY</b>           | CR2032 Coin Cell                                                                                                                                                     |
| <b>OS SUPPORT</b>     |                              | Windows 7 32/64-bit<br>Window 8.1 64-bit<br>Windows 10 64-bit<br>Linux<br>Note: 7th Gen CPU SKU ONLY support Windows 10 64-bit & Ubuntu 16.04.                       |
| <b>ENVIRONMENT</b>    | <b>TEMPERATURE</b>           | Operating: 0 to 60°C<br>Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery                                                                       |
|                       | <b>HUMIDITY</b>              | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH                                                                                                                       |
|                       | <b>MTBF</b>                  | 398,776 hrs @ 25°C; 231,301 hrs @ 45°C; 147,462 hrs @ 60°C<br>Calculation Model: Telcordia Issue 2, Method Case 3<br>Environment: GB, GC – Ground Benign, Controlled |
| <b>MECHANICAL</b>     | <b>DIMENSIONS</b>            | ATX Form Factor 305mm (12") x 244mm (9.6")                                                                                                                           |
|                       | <b>HEIGHT</b>                | PCB: 1.6mm<br>Top Side: 31.47mm<br>Bottom Side: 4.40mm                                                                                                               |
| <b>CERTIFICATIONS</b> |                              | CE, RoHS                                                                                                                                                             |

# MBU4102

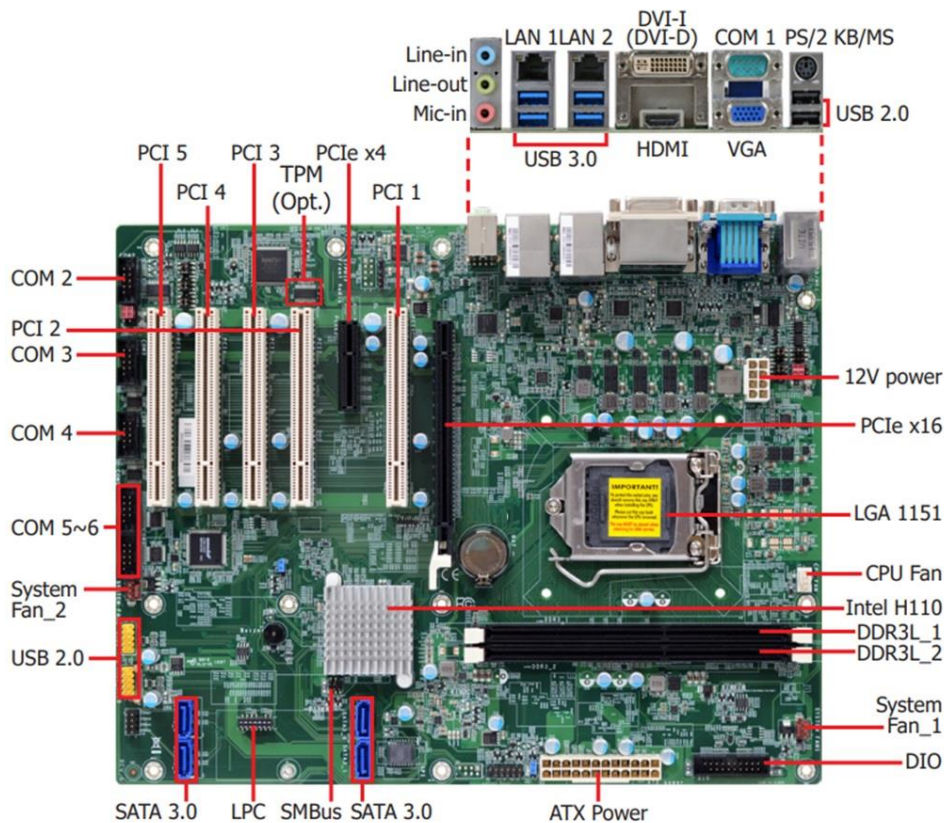
## MECHANICAL DRAWING



## BLOCK DIAGRAM



## MOTHERBOARD LAYOUT



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