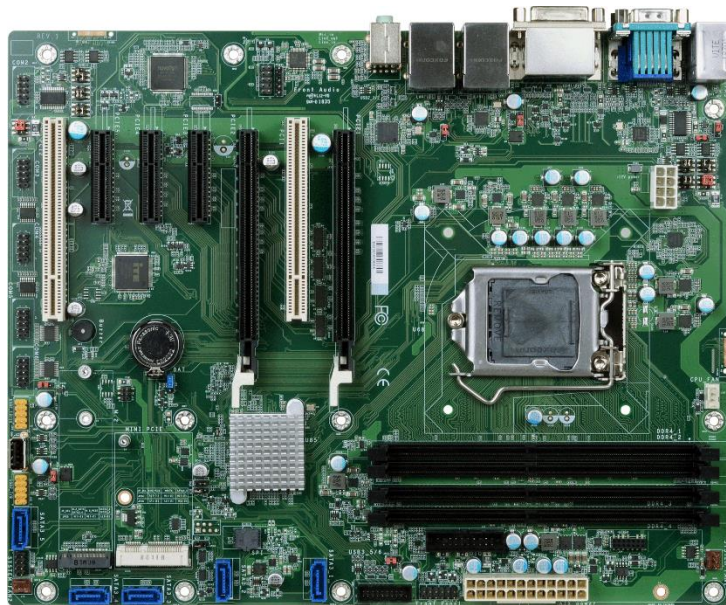


MBU4159

Industrial Motherboard Series



MBU4159

PRODUCT HIGHLIGHTS

- ▶ Intel 6th/7th Gen Intel® Xeon®/Core™ with Intel® C236
- ▶ 4 DDR4 ECC/Non-ECC UDIMM up to 64GB
- ▶ Multiple expansion: 2 PCIe x16, 3 PCIe x4, 2 PCI, 1 x M.2
- ▶ 3 independent displays: VGA + DVI-D + DP++
- ▶ Rich I/O: 2 Intel GbE, 6 COM, 6 USB 3.1, 7 USB 2.0
- ▶ 15-Year CPU Life Cycle Support Until Q1' 32 (Based on Intel IOTG Roadmap)



TECHNICAL INFORMATION

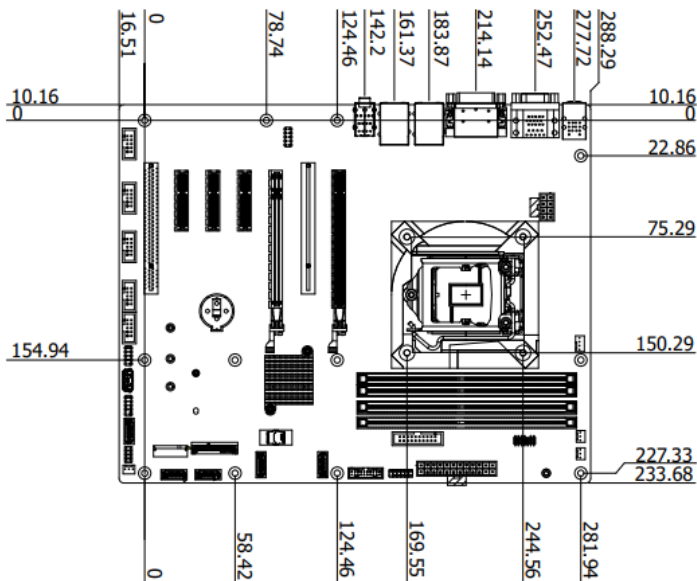
SYSTEM	PROCESSOR	6 th /7 th Generation Intel® Xeon®/Core™/Pentium®/Celeron® LGA 1151 Socket Processors with TDP up to 95W
	CHIPSET	Intel® C236 Chipset
	MEMORY	Four 288-pin ECC/Non-ECC UDIMM up to 64GB Dual Channel DDR4 2133/2400MHz (Core™ i5/i7 only support non-ECC)
	BIOS	Insyde SPI 128Mbit
GRAPHICS	CONTROLLER	Intel® HD Gen 9 Graphics
	FEATURE	OpenGL 5.0, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
	DISPLAY	1 x VGA 1 x DVI-I (DVI-D signal) 1 x DP++ VGA: resolution up to 1920x1200 @ 60Hz DVI-D: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2160 @ 60Hz
	TRIPLE DISPLAYS	VGA + DVI-I (DVI-D signal) + DP++
EXPANSION	INTERFACE	2 x PCIe x16 (1 x16 or 2 x8 signal) (Gen 3) 3 x PCIe x4 (Gen 3) 2 x PCI 1 x M.2 2260/2280 M key (SATA3.0/PCIe Gen3 x 2 NVMe) 1 x Mini PCIe (PCIe/mSATA/USB 2.0)
AUDIO	AUDIO CODEC	Realtek ALC888S-VD2-GR
ETHERNET	CONTROLLER	1 x Intel® I211AT PCIe (10/100/1000Mbps) 1 x Intel® I219LM PCIe with iAMT11.0 (10/100/1000Mbps) (only Core i7/i5 supports iAMT)
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 3.1 2 x USB 2.0
	PS/2	1 x PS/2 (mini-DIN-6)
	DISPLAY	1 x VGA 1 x DVI-I (DVI-D signal) 1 x DP++
	AUDIO	1 x Line-out, 1 x Mic-in, 1 x Line-in (opt., MOQ required)

TECHNICAL INFORMATION (CONTINUED)

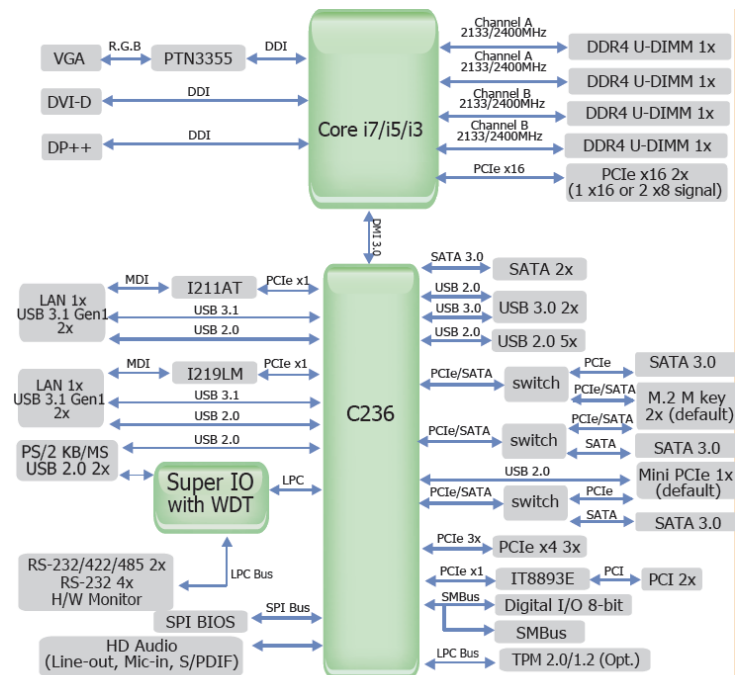
INTERNAL I/O	SERIAL	1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 4 x RS-232 (2.54mm pitch)
	USB	2 x USB 3.1 Gen1 4 x USB 2.0 + 1 x Vertical USB 2.0 (type A)
	AUDIO	1 x S/PDIF, 1 x Front Audio header
	SATA	5 x SATA 3.0 (up to 6Gb/s) (1 SATA shared with mini PCIe (SATA), default at mini PCIe/2 SATA shared with M.2, default at M.2) RAID 0/1/5/10
	DIO	1 x 8-bit DIO
	LPC	1 x LPC (supports LPC EXT-RS232/RS485 module)
	SMBUS	1 x SMBus
	OUTPUT & INTERVAL	System Reset, Programmable via Software from 1 to 255 Seconds
	SECURITY TPM	Infineon TPM2.0/1.2 (opt., MOQ required)
	TYPE	ATX
	CONNECTOR	8-pin ATX 12V power 24-pin ATX power
	CONSUMPTION	Typical: i7-7700: 3.3V @ 0.3422A (1.129Watt); 5V @ 0.5672A (2.836Watt); 12V @ 0.7255A (8.706Watt) Max.: i7-7700: 3.3V @ 0.3254A (1.0738Watt); 5V @ 0.5636A (2.818Watt); 12V @ 10.583A (126.996Watt)
	RTC BATTERY	CR2032 Coin Cell
OS SUPPORT		Windows 10 64-bit Windows 7 32/64-bit Windows 8.1 64-bit Linux (Note: 7 th Gen CPUs only support Windows 10 64-bit & Linux)
ENVIRONMENT	TEMPERATURE	Operating: 0 to 60°C Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery
	HUMIDITY	Operating: 5 to 90% RH Storage: 5 to 90% RH
	MTBF	537,588 hrs @ 25°C; 298,813 hrs @ 45°C; 184,762 hrs @ 60°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled
MECHANICAL	DIMENSIONS	ATX Form Factor 305mm (12") x 244mm (9.6")
	HEIGHT	PCB: 1.6mm Top Side: TBD Bottom Side: TBD
CERTIFICATIONS		CE, FCC Class B, RoHS

MBU4159

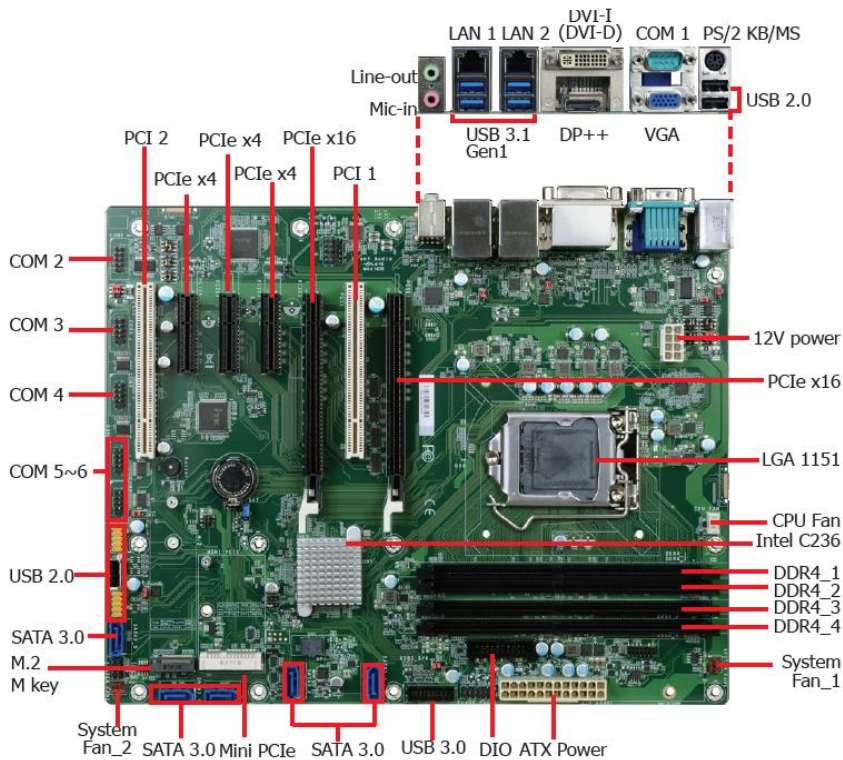
MECHANICAL DRAWING



BLOCK DIAGRAM



MOTHERBOARD LAYOUT



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