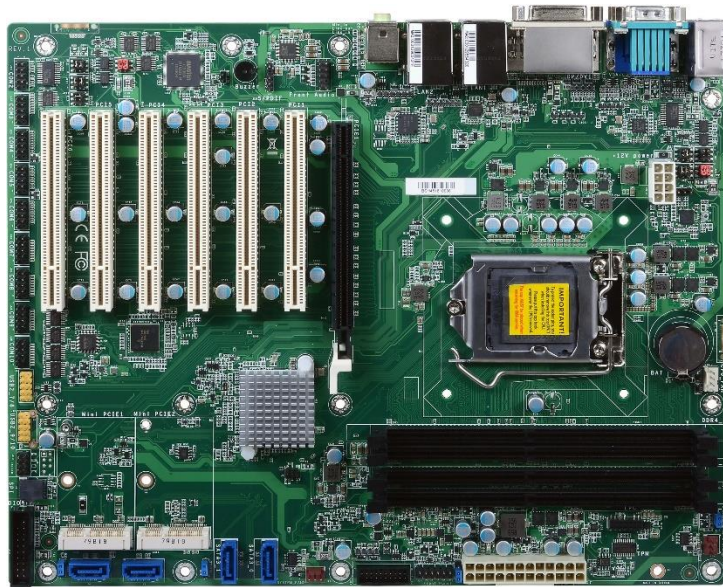


MBU4156

Industrial Motherboard Series



MBU4156

PRODUCT HIGHLIGHTS

- ▶ Intel 6th/7th Gen Intel® Core™ with Intel® Q170
- ▶ 4 DDR4 DIMM up to 64GB
- ▶ Multiple expansion: 1 PCIe x16, 6 PCI, 1 x Mini-PCIe
- ▶ 3 independent displays: VGA + DVI-D + DP++
- ▶ Rich I/O: 2 Intel GbE, 10 COM, 6 USB 3.0, 6 USB 2.0
- ▶ 15-Year CPU Life Cycle Support Until Q1' 32 (Based on Intel IOTG Roadmap)



TECHNICAL INFORMATION

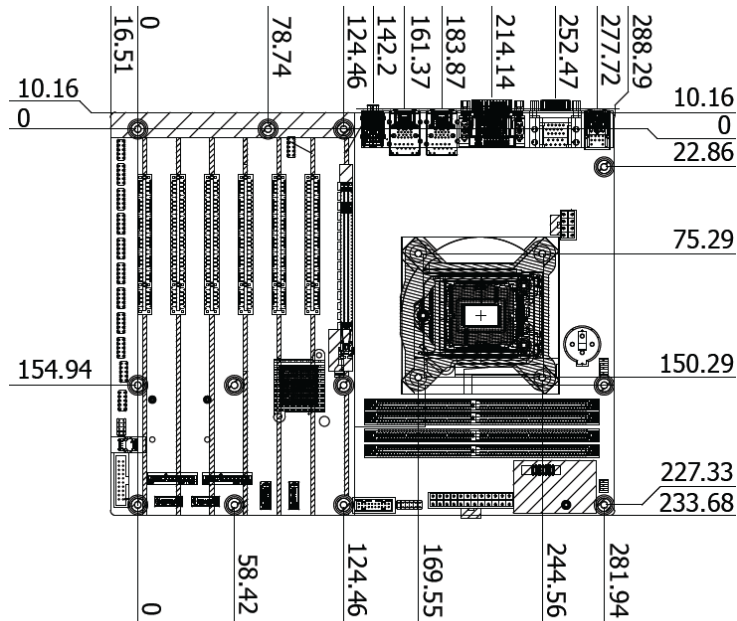
SYSTEM	PROCESSOR	6 th /7 th Generation Intel® Core™/Pentium®/Celeron® LGA 1151 Socket Processors with TDP up to 95W
	CHIPSET	Intel® Q170 Chipset
	MEMORY	Four 288-pin DIMM up to 64GB Dual Channel DDR4 2133/2400MHz
	BIOS	Insyde SPI 128Mbit
GRAPHICS	CONTROLLER	Intel® HD Gen 9 Graphics
	FEATURE	OpenGL 5.0, 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	1 x PCIe x16 6 x PCI 1 x Mini PCIe
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 3.0 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)

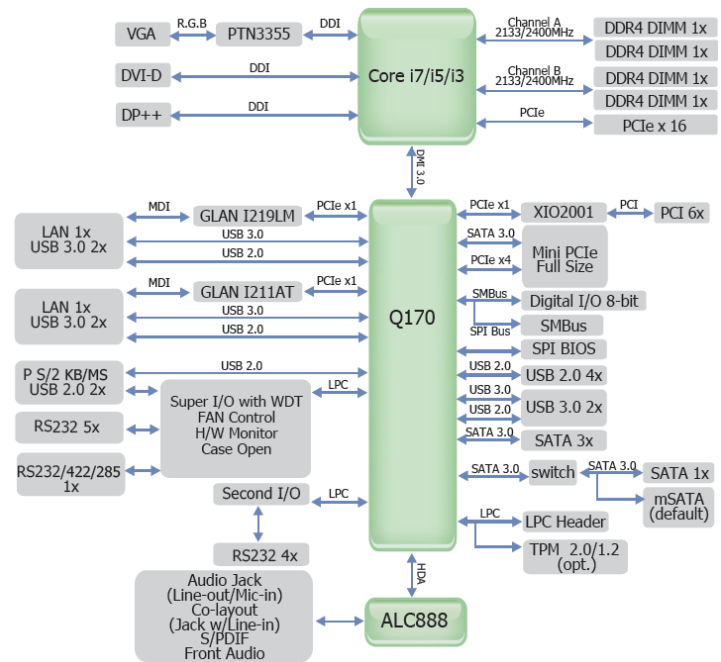
INTERNAL I/O	SERIAL	1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 8 x RS-232 (2.54mm pitch)
	USB	2 x USB 3.0 (2.00mm pitch) 4 x USB 2.0 (2.54mm pitch)
	AUDIO	1 x S/PDIF, 1 x Front Audio header
	SATA	4 x SATA 3.0 (up to 6Gb/s) 1 x mSATA (co-lay with SATA_4) RAID 0/1/5/10
	DIO	1 x 8-bit DIO
	LPC	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 @ 0.45A (1.485Watt); 5V @ 0.64A (3.2Watt); 12V @ 0.59A (7.08Watt) Max.: i7-7700: 3.3V @ 0.44A (1.452Watt); 5V @ 0.76A (3.8Watt); 12V @ 7.41A (88.92Watt)
	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	489,358 hrs @ 25°C; 269,297 hrs @ 45°C; 165,958 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: 37.35mm Bottom Side: 4.4mm
CERTIFICATIONS		CE, RoHS

MBU4156

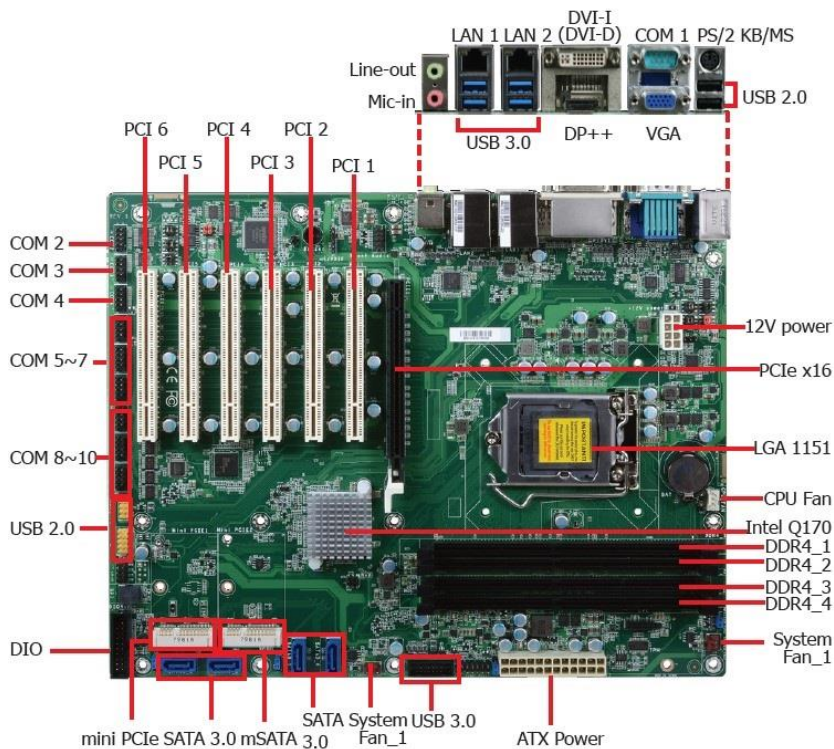
MECHANICAL DRAWING



BLOCK DIAGRAM



MOTHERBOARD LAYOUT



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