



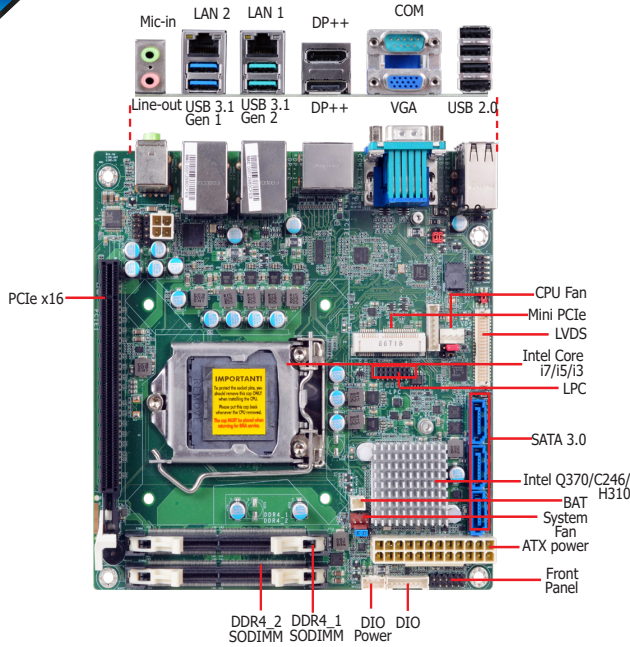
**9th/8th Gen Intel® Core™ Processor
Mini-ITX**



**CS100
-Q370/C246/H310**

Desktop

Q370
C246
H310

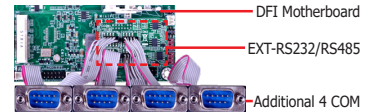


Features

- 2 DDR4 2400/2666MHz SODIMM up to 32GB
- Three independent display: LVDS+VGA+DP++, LVDS+DP++ +DP++, VGA+ DP++ +DP++
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple Expansions:
Q370/C246: 1 PCIe x16 (Gen 3), 1 Full-size Mini PCIe (& mSATA)
- H310: 1 PCIe x16 (Gen 3), 1 mSATA
- Storage: 3 SATA 3.0
- Rich I/O:
Q370/C246: 2 Intel GbE, 2 COM, 2 USB 3.1 Gen 2, 2 USB 3.1 Gen 1, 4 USB 2.0
H310: 2 Intel GbE, 2 COM, 4 USB 3.1 Gen 1, 4 USB 2.0

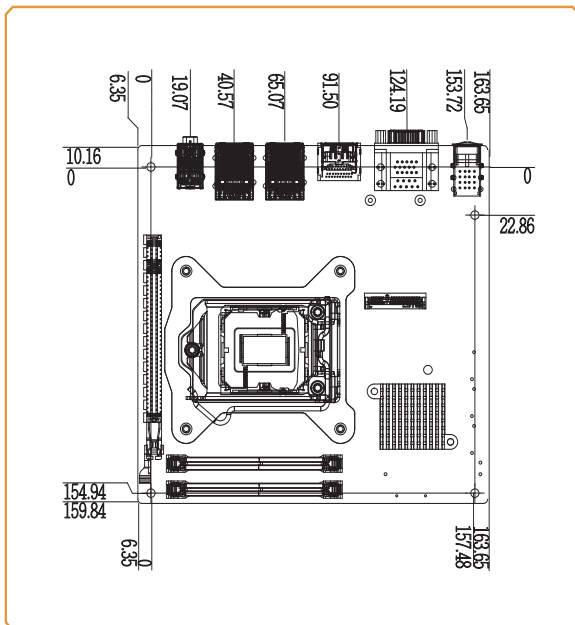


2 Extension Modules for Additional 4 COM Ports (via the LPC connector)

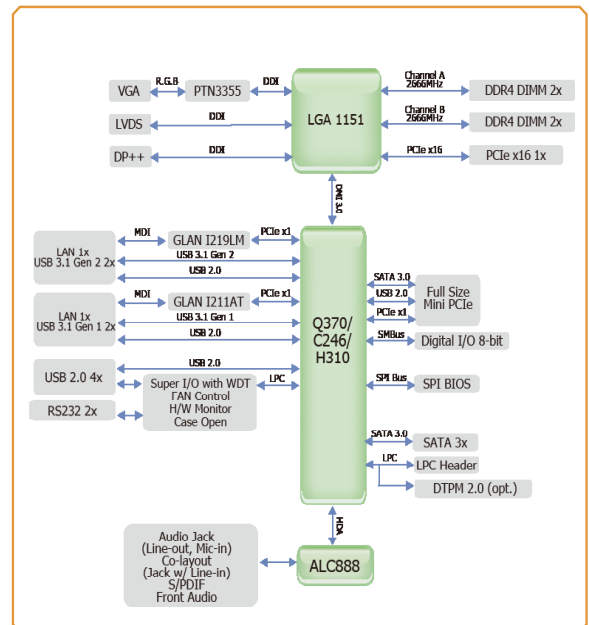


Model Name	P/N	Memory	LVDS	VGA	DP++	GbE	RS-232	USB 3.1 Gen 2	USB 3.1 Gen 1	USB 2.0	SATA 3.0	TPM	Thermal	Temp.
CS100-H310D	770-CS1001-000G	2 SODIMM	1	1	2	2	2	0	4	4	3	0	Cooler	0 to 60°C
CS100-Q370D	770-CS1001-100G	2 SODIMM	1	1	2	2	2	2	2	4	3	0	Cooler	0 to 60°C
CS100-C246D	770-CS1001-200G	2 SODIMM	1	1	2	2	2	2	2	4	3	0	Cooler	0 to 60°C
CS100-H310D	770-CS1001-300G	2 SODIMM	1	1	2	2	2	0	4	4	3	1	Cooler	0 to 60°C
CS100-Q370DRM	770-CS1001-400G	2 SODIMM	1	1	2	2	2	2	2	4	3	1	Cooler	0 to 60°C
CS100-C246DRM	770-CS1001-500G	2 SODIMM	1	1	2	2	2	2	2	4	3	1	Cooler	0 to 60°C

Mechanical Drawing



Block Diagram





Specifications

SYSTEM	Processor	9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W Intel® Core i7-9700TE Processor (Core 8; Max speed 3.8 GHz; TDP 35W) Intel® Core i5-9500E Processor (Core 6; Max speed 4.2 GHz; TDP 65W) Intel® Core i5-9500TE Processor (Core 6; Max speed 3.6 GHz; TDP 35W) Intel® Core i3-9100E Processor (Core 4; Max speed 3.7 GHz; TDP 65W) Intel® Core i3-9100TE Processor (Core 4; Max speed 3.2 GHz; TDP 35W) 8th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 80W Intel® Xeon E-2176G Processor (Core 6; Max speed 4.7 GHz; TDP 80W) (support ECC Memory) Intel® Core™ i7-8700 Processor (Core 6; Max speed 4.6 GHz; TDP 65W) Intel® Core™ i5-8500 Processor (Core 6; Max speed 4.1 GHz; TDP 65W) Intel® Core™ i3-8100 Processor (Core 4; Max speed 3.6 GHz; TDP 65W) (support ECC Memory) Intel® Pentium G5400 Processor (Core 2; Max speed 3.7 GHz; TDP 58W) (support ECC Memory) Intel® Celeron G4900 Processor (Core 2; Max speed 3.1 GHz; TDP 54W) (support ECC Memory)	
	Memory	Two 260-pin SODIMM up to 32GB	Dual Channel DDR4 2400/2666MHz (C246 support ECC)
	Chipset	Intel® Q370/C246/H310 Chipset	
	BIOS	AMI SPI 128Mbit	
	GRAPHICS	Controller	Intel® UHD Graphics 630 (Pentium G5400, Celeron G4900 support Intel® UHD Graphics 610)
	Feature	OpenGL 4.4, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9	
	Display	1 x LVDS 1 x VGA 2 x DP++	LVDS: resolution up to 1920x1200 @ 60Hz VGA: resolution up to 1920x1200 @ 60Hz DP: resolution up to 4096x2304 @ 60Hz
	Triple Displays	LVDS+VGA+DP++, LVDS+DP++ +DP++, VGA+ DP++ +DP++	
EXPANSION	Interface	Q370/C246: 1 x PCIe x16 (Gen 3) 1 x Full-size Mini PCIe (& mSATA)	H310: 1 x PCIe x16 (Gen 3) 1 x mSATA
AUDIO	Audio Codec	Realtek ALC888S-VD2-GR	
ETHERNET	Controller	C246/Q370: 1 x Intel® I219LM PHY, 1 x Intel® I211AT PCIe (10/100/1000Mbps) (only Core i7/i5 support iAMT) H310: 1 x Intel® I219V PHY, 1 x Intel® I211AT PCIe (10/100/1000Mbps)	
REAR I/O	Ethernet	2 x GbE (RJ-45)	
	USB	Q370/C246: 2 x USB 3.1 Gen2 2 x USB 3.1 Gen1 4 x USB 2.0	H310: 4 x USB 3.1 Gen1 4 x USB 2.0
	Display	1 x VGA 2 x DP++	
	Serial	1 x RS-232 (DB-9)	
	Audio	1 x Line-in (available upon request)	1 x Line-out, 1 x Mic-in
INTERNAL I/O	Serial	1 x RS-232 (RS-232 w/ power)(2.0mm pitch)	
	Display	1 x LVDS LCD Panel Connector	1 x LCD/Inverter Power
	Audio	1 x S/PDIF	1 x Front Audio
	SATA	3 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5
	DIO	1 x 8-bit DIO	
	LPC	1 x LPC (support LPC EXT-RS232/RS485 module)	
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	
SECURITY	TPM	dTPM2.0 (available upon request)	
POWER	Type	ATX	
	Connector	4-pin ATX 12V power	24-pin ATX power
	RTC Battery	CR2032 Coin Cell	
	Consumption	Idle: i7-8700 65W: 12V @ 0.39A (4.68W), 5V @ 0.53A (2.65W), 3.3V @ 0.23A (0.795W) Max: i7-8700 65W: 12V @ 11.24A (134.88W), 5V @ 1.14A (5.7W), 3.3V @ 0.25A (0.825W)	
OS SUPPORT	Microsoft/Linux	Windows 10 IoT Enterprise 64-bit	Linux
ENVIRONMENT	Temperature	Operating: 0 to 60°C	Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH	Storage: 5 to 90% RH
	MTBF	CS100-C246: 639,615 hrs @ 25°C; 393,053 hrs @ 45°C ; 259,094 hrs @ 60°C CS100-Q370: 639,615 hrs @ 25°C; 393,053 hrs @ 45°C ; 259,094 hrs @ 60°C CS100-H310: 640,703 hrs @ 25°C; 393,874 hrs @ 45°C ; 259,692 hrs @ 60°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled	
	MECHANICAL	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")
	Height	PCB: 1.6mm	Top Side: 20mm, Bottom Side: 3mm
CERTIFICATIONS	CE, FCC Class B, RoHS, KCC		

Packing List

• 1 CS100 motherboard	
• 1 COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• 1 I/O shield	A49-CS1000-000G
• 1 Serial ATA data with power cable (Length: 500mm)	332-553001-005G

Optional Items

• USB port cable (Length: 200mm)	A81-001032-016G
• COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• Serial ATA data with power cable (Length: 500mm)	332-553001-005G
• Thermal solution (For 35W, Height: 37.3mm)	A71-103004-000G
• Thermal solution (For 65W, Height: 72.8mm)	552-200049-000G
• Thermal solution (For 80W, Height: 77.1mm)	761-103001-000G
• LPC EXT-RS232 module (4 x RS232 ports)	770-EXTRS1-000G
• LPC EXT-RS485 module (4 x RS485 ports)	770-EXTRS1-100G

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