



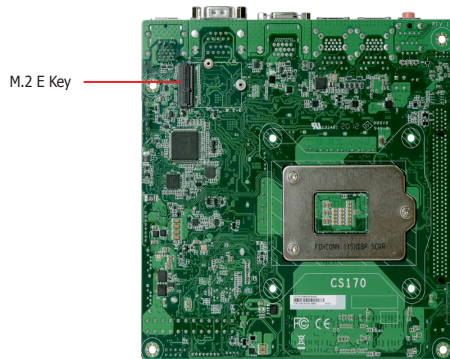
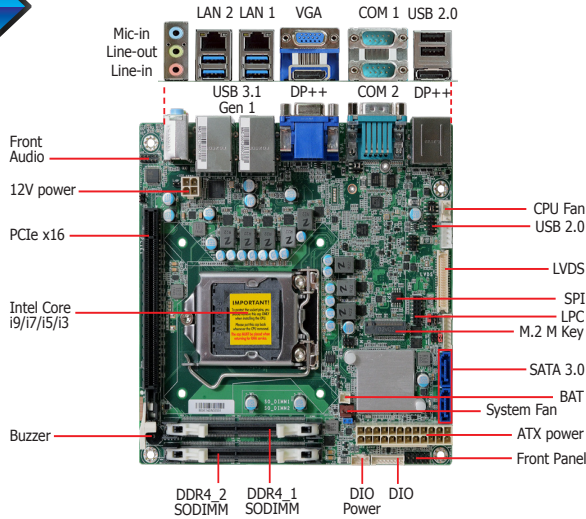
**9th/8th Gen Intel® Core™ Processor  
Mini-ITX**



**CS170-H310**

Desktop

H310

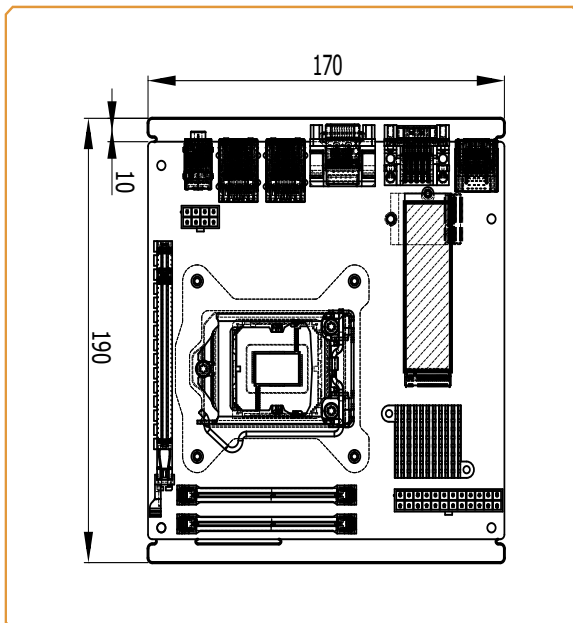


**Features**

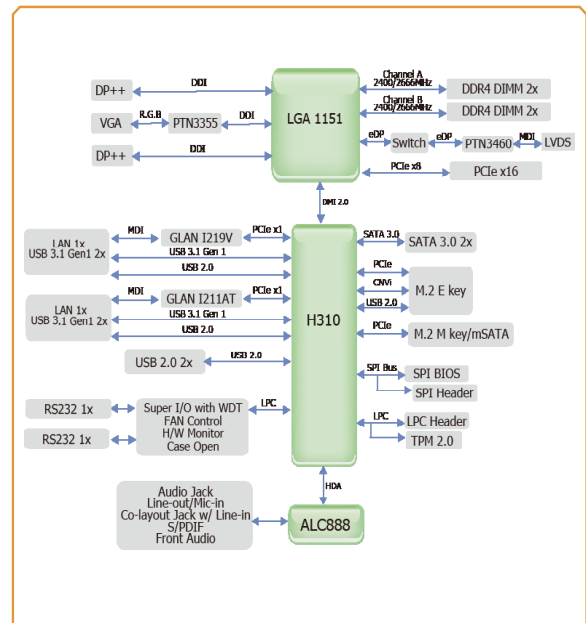
- **2 DDR4 2400/2666MHz SODIMM up to 32GB**
- **Dual independent display: LVDS + VGA, LVDS + DP++, VGA + DP++, DP++ + DP++**
- **DP++ resolution supports up to 4096x2304 @ 60Hz**
- **Multiple Expansions: 1 PCIe x16 Gen 3, 1 M.2 2230 E Key, 1 M.2 2280 M Key**
- **Storage: 2 SATA 3.0**
- **Rich I/O: 2 Intel GbE, 2 COM, 4 USB 3.1 Gen 1, 2 USB 2.0**



**Mechanical Drawing**



**Block Diagram**





**Specifications**

<b>SYSTEM</b>	<b>Processor</b>	9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 95W Intel® Xeon E-2278GE Processor (Core 8; Max speed 4.7 GHz; TDP 80W) (support ECC memory) Intel® Core i9-9900K Processor (Core 8; Max speed 5.0 GHz; TDP 95W) (Non-LTS) Intel® Core i7-9700E Processor (Core 8; Max speed 4.4 GHz; TDP 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) (support ECC memory) Intel® Core i3-9100TE Processor (Core 4; Max speed 3.2 GHz; TDP 35W) (support ECC memory) 8th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 95W 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™ i7-8700T Processor (Core 6; Max speed 4.0 GHz; TDP 35W) Intel® Core™ i5-8500 Processor (Core 6; Max speed 4.1 GHz; TDP 65W) Intel® Core™ i5-8500T Processor (Core 6; Max speed 3.5 GHz; TDP 35W) Intel® Core™ i3-8100 Processor (Core 4; Max speed 3.6 GHz; TDP 65W) (support ECC memory) Intel® Core™ i3-8100T Processor (Core 4; Max speed 3.1 GHz; TDP 35W) (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)		
	<b>Memory</b>	Dual Channel DDR4 2400/2666MHz Two 260-pin non-ECC SODIMM up to 32GB		
	<b>Chipset</b>	Intel® H310 Chipset		
	<b>BIOS</b>	AMI SPI 128Mbit		
	<b>GRAPHICS</b>	<b>Controller</b>	Intel® UHD Graphics 630 (Pentium G5400 and Celeron G4900 support Intel® UHD Graphics 610)	
	<b>Feature</b>	OpenGL 4.5, 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		
	<b>Display</b>	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	
	<b>Dual Displays</b>	LVDS + VGA, LVDS + DP++, VGA + DP++, DP++ + DP++		
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x16 (Gen 3) 1 x M.2 2280 M Key (PCIe) (support NVMe) 1 x M.2 2230 E Key (USB/PCIe)		
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC887S-VD2-GR		
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I219V PHY (10/100/1000Mbps) 1 x Intel® I210AT PCIe (10/100/1000Mbps)		
<b>REAR I/O</b>	<b>Ethernet</b>	2 x GbE (RJ-45)		
	<b>USB</b>	4 x USB 3.1 Gen1 2 x USB 2.0		
	<b>Display</b>	1 x VGA (DB-15) 2 x DP++		
	<b>Serial</b>	2 x RS-232 (DB-9)		
	<b>Audio</b>	1 x Line-out, 1 x Mic-in	1 x Line-in (available upon request)	
<b>INTERNAL I/O</b>	<b>Display</b>	1 x LVDS	1 x LCD/Inverter Power	
	<b>Audio</b>	1 x Front Audio (2.00mm pitch)		
	<b>USB</b>	2 x USB 2.0 (2.00mm pitch)		
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5	
	<b>DIO</b>	1 x 8-bit DIO	1 x DIO Power	
	<b>LPC</b>	1 x LPC		
	<b>SMBus</b>	1 x SMBus		
<b>WATCHDOG TIMER</b>	<b>Output &amp; Interval</b>	System Reset, Programmable via Software from 1 to 255 Seconds		
<b>SECURITY</b>	<b>TPM</b>	dTPM2.0 (available upon request)		
<b>POWER</b>	<b>Type</b>	ATX		
	<b>Connector</b>	4-pin ATX 12V power	24-pin ATX power	
	<b>RTC Battery</b>	CR2032 Coin Cell		
	<b>Consumption</b>	TBD		
<b>OS SUPPORT</b>	<b>Microsoft/Linux</b>	Windows 10 IoT Enterprise 64-bit	Linux	
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: -5 to 65°C	Storage: -40 to 85°C	
	<b>Humidity</b>	Operating: 5 to 90% RH	Storage: 5 to 90% RH	
	<b>MTBF</b>	TBD		
<b>MECHANICAL</b>	<b>Dimensions</b>	Mini-ITX Form Factor	170mm (6.7") x 170mm (6.7")	
	<b>Height</b>	PCB: 1.6mm	Top Side: 20mm, Bottom Side: 3mm	
<b>CERTIFICATIONS</b>	CE, FCC Class B, RoHS			

**Packing List**

• 1 CS170 motherboard	
• 1 Serial ATA data cable (Length: 500mm)	332-553001-005G
• 1 I/O shield	A49-CVL000-A10G

**Optional Items**

• USB port cable (Length: 200mm)	A81-001032-016G
• Serial ATA data 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

## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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