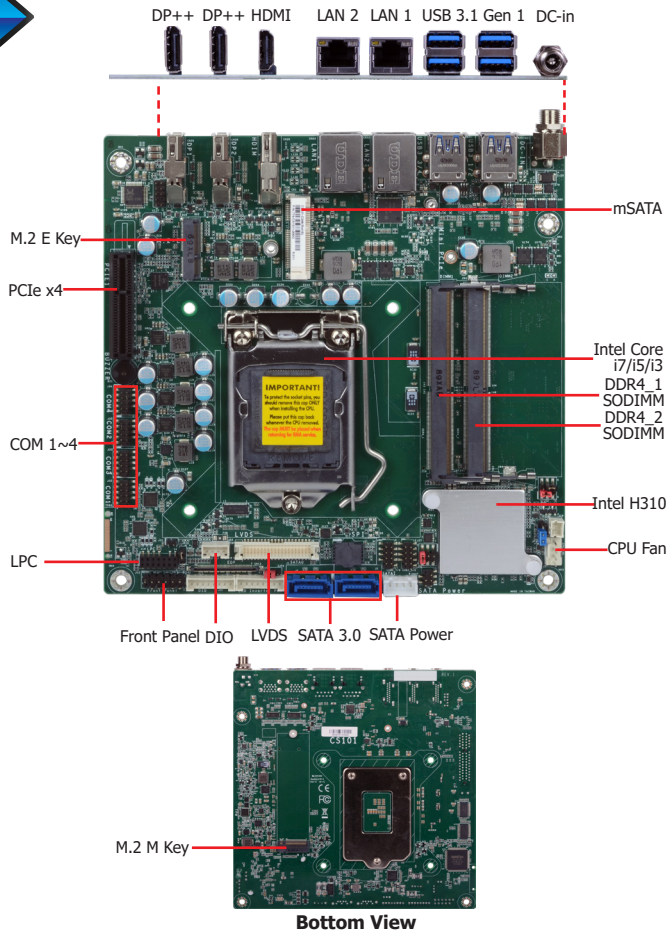


# CS101-H310

Desktop

H310



## Features

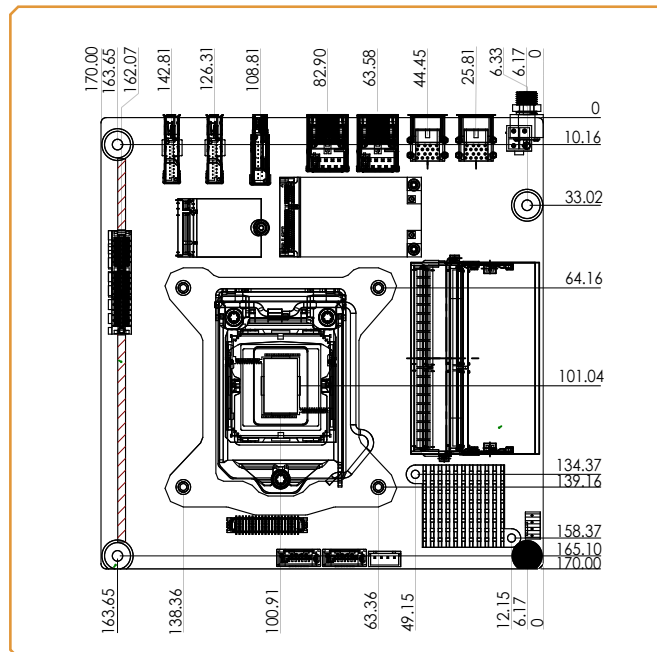
- 2 DDR4 2666MHz SODIMM up to 32GB
- Dual independent displays: DP++ + DP++, DP++ + HDMI, DP++ + LVDS/eDP, HDMI + LVDS/eDP
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple Expansions: 1 PCIe x4 Gen 3, 1 mSATA, 1 M.2 2280 M Key, 1 M.2 2230 E Key
- Storage: 2 SATA 3.0
- Rich I/O: 2 Intel GbE, 4 COM, 4 USB 3.1 Gen 1, 4 USB 2.0



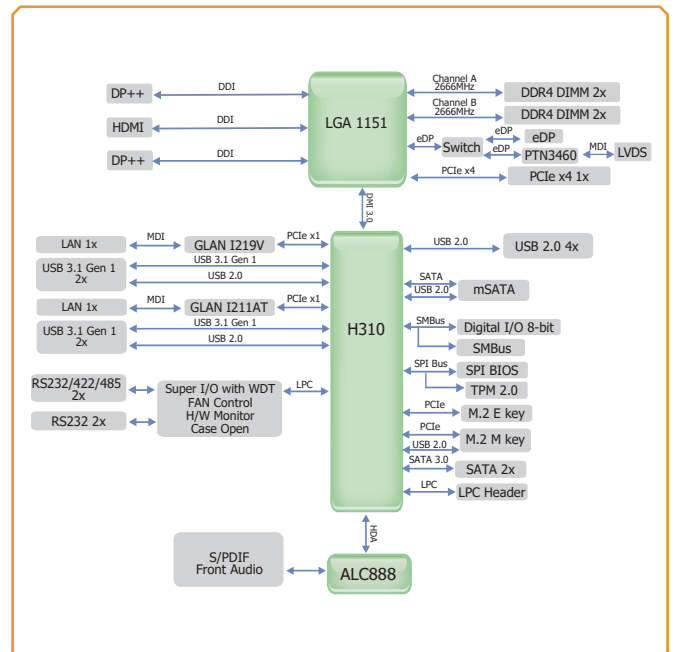
## Ordering Information

Model Name	P/N	Memory	LVDS/eDP	DP++	HDMI	GbE	RS-232	RS-232/422/485	USB 3.1 Gen 1	USB 2.0	SATA 3.0	TPM	Power	Temp.
CS101-H310	770-CS1011-000G	2 SODIMM	LVDS	2	1	2	2	2	4	4	2	2.0	12V DC	0 to 60°C

## Mechanical Drawing



## Block Diagram



## Specifications

<b>SYSTEM</b>	<b>Processor</b>	9th Generation Intel® Core™ Processors, LGA 1151 Socket 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 Intel® Xeon E-2176G Processor (Core 6; Max speed 4.7 GHz; TDP 80W) 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) Intel® Core™ i3-8100T Processor (Core 4; Max speed 3.1 GHz; TDP 35W) Intel® Pentium G5400 Processor (Core 2; Max speed 3.7 GHz; TDP 58W) Intel® Celeron G4900 Processor (Core 2; Max speed 3.1 GHz; TDP 54W)	
	<b>Memory</b>	Two 260-pin SODIMM up to 32GB	Dual Channel DDR4 2400/2666MHz
	<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 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/eDP (available upon request) 1 x HDMI 2 x DP++	LVDS: resolution up to 1920x1200 @ 60Hz eDP: resolution up to 4096x2304 @ 60Hz HDMI: resolution up to 4096x2160 @ 30Hz DP1.2: resolution up to 4096x2304 @ 60Hz
	<b>Dual Displays</b>	DP++ + DP++, DP++ + HDMI, DP++ + LVDS/eDP, HDMI+ LVDS/eDP	
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x4 (Gen 3) 1 x mSATA 1 x M.2 2280 M Key (PCIe x1) 1 x M.2 2230 E Key (USB/PCIe)	
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC888S-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	
	<b>Display</b>	1 x HDMI 2 x DP++	
<b>INTERNAL I/O</b>	<b>Serial</b>	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (RS-232 w/ power)(2.0mm pitch)	
	<b>Display</b>	1 x LVDS 1 x eDP (available upon request)	
	<b>Audio</b>	1 x Front Audio (2.0mm pitch)	
	<b>USB</b>	4 x USB 2.0 (2.0mm pitch)	
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power	RAID 0/1
	<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>	dTPM 2.0	
<b>POWER</b>	<b>Type</b>	Single 12V +/-5% DC	
	<b>Connector</b>	DC-in Jack	Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)
	<b>RTC Battery</b>	CR2032 Coin Cell	
	<b>Consumption</b>	Idle: i7-9700K 95W: 12V @ 0.96A (11.52W) Max: i7-9700K 95W: 12V @ 13.4A (160.8W)	
<b>OS SUPPORT</b>	<b>Microsoft/Linux</b>	Windows 10 IoT Enterprise 64-bit	Linux
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: 0 to 60°C	Storage: -40 to 85°C
	<b>Humidity</b>	Operating: 5 to 90% RH	Storage: 5 to 90% RH
	<b>MTBF</b>	CS101-H310: 593,477 hrs @ 25°C; 351,641 hrs @ 45°C; 226,946 hrs @ 60°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled	
<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>CERTIFICATION</b>	CE, FCC, RoHS, UL		

## Packing List

• 1 CS101 motherboard	
• 1 Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
• 1 COM port cable (Length: 250mm, 1 COM ports)	A81-015011-001G

## Optional Items

• USB port cable (Length: 200mm)	A81-001032-016G
• COM port cable (Length: 250mm, 1 COM port)	A81-015011-001G
• Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
• Serial ATA power cable	A81-002044-016G
• I/O shield	A49-CS1010-000G
• I/O shield (Thin type)	A49-CS1010-010G
• 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