



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

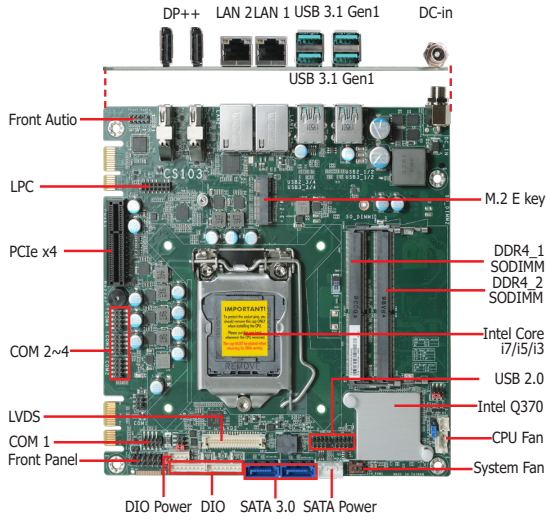


**CS103-H310**

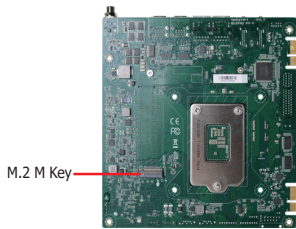
Desktop

**Features**

- 2 DDR4 2666MHz SODIMM up to 32GB
- Dual independent displays: LVDS + DP++, DP++ + DP++
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple Expansions: 1 PCIe x4 Gen 3, 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



Top View



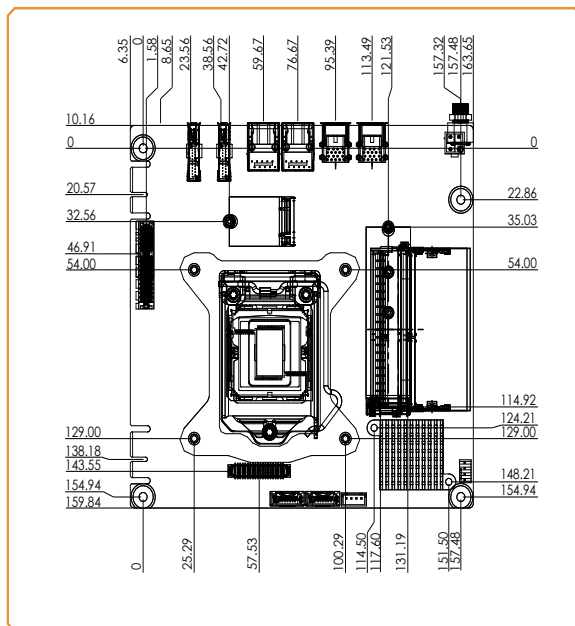
Bottom View

\*The photos above refer to C103-Q370.

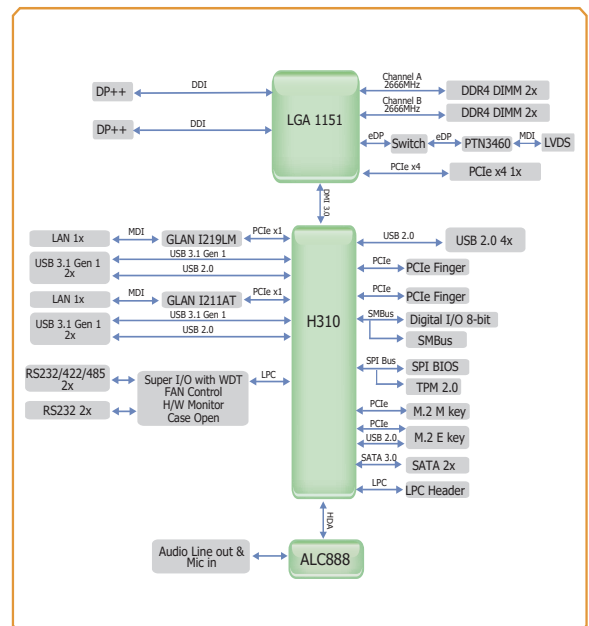
**Ordering Information**

Model Name	P/N	Memory	LVDS	DP++	GbE	RS-232	RS-232/422/485	USB 3.1 Gen 1	USB 2.0	SATA 3.0	TPM	Power	Temp.
CS103-H310	770-CS1031-000G	2 SODIMM	1	2	2	2	2	4	4	2	2.0	9-36V DC	0 to 60°C

**Mechanical Drawing**



**Block Diagram**





**Specifications**

<b>SYSTEM</b>	<b>Processor</b>	9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W Intel® Core i7-9700TE Processor (Core 8; Max speed 3.8GHz; TDP 35W) Intel® Core i5-9500E Processor (Core 6; Max speed 4.2GHz; TDP 65W) Intel® Core i5-9500TE Processor (Core 6; Max speed 3.6GHz; TDP 35W) Intel® Core i3-9100E Processor (Core 4; Max speed 3.7GHz; TDP 65W) Intel® Core i3-9100TE Processor (Core 4; Max speed 3.2GHz; TDP 35W) 8th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W Intel® Core™ i7-8700 Processor (Core 6; Max speed 4.6GHz; TDP 65W) Intel® Core™ i7-8700T Processor (Core 6; Max speed 4.0GHz; TDP 35W) Intel® Core™ i5-8500 Processor (Core 6; Max speed 4.1GHz; TDP 65W) Intel® Core™ i5-8500T Processor (Core 6; Max speed 3.5GHz; TDP 35W) Intel® Core™ i3-8100 Processor (Core 4; Max speed 3.6GHz; TDP 65W) Intel® Core™ i3-8100T Processor (Core 4; Max speed 3.1GHz; TDP 35W) Intel® Pentium G5400 Processor (Core 2; Max speed 3.7GHz; TDP 58W) Intel® Celeron G4900 Processor (Core 2; Max speed 3.1GHz; TDP 54W)	
	<b>Memory</b>	Two 260-pin SODIMM up to 32GB	Dual Channel DDR4 2666MHz (C246 support ECC)
	<b>Chipset</b>	Intel® H310 Chipset	
	<b>BIOS</b>	AMI SPI 128Mbit	
	<b>GRAPHICS</b>	<b>Controller</b>	Intel® UHD Graphics 630 (only Pentium G5400, Celeron G4900 support 610 )
	<b>Feature</b>	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	
	<b>Display</b>	1 x LVDS 2 x DP++	LVDS: resolution up to 1920x1200 @ 60Hz DP1.2: resolution up to 4096x2304 @ 60Hz
	<b>Dual Displays</b>	DP+++ + LVDS, DP+++ + DP+++	
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x4 (Gen 3) 2 x DFI proprietary extension bus for PCIe/PCI expansion 1 x M.2 2230 E Key (USB/PCIe) 1 x M.2 2280 M Key (PCIe Gen2 x1)	
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC888S-VD2-GR	
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I219LM PHY 1 x Intel® I211AT PCIe (10/100/1000Mbps)	
<b>REAR I/O</b>	<b>Ethernet</b>	2 x GbE (RJ-45)	
	<b>USB</b>	4 x USB3.1 Gen1 Type A Connector	
	<b>Display</b>	2 x DP+++	
<b>INTERNAL I/O</b>	<b>Serial</b>	2 x RS-232/422/485 (2.0mm pitch) 2 x RS-232 (2.0mm pitch)	
	<b>Display</b>	1 x LVDS Connector	
	<b>Audio</b>	1 x Front Audio	
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power	
	<b>DIO</b>	1 x 8-bit DIO	
	<b>SMBus</b>	1 x SMBus	
	<b>USB</b>	4 x USB 2.0	
<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>	9-36V DC-in	
	<b>Connector</b>	DC jack colay 4 pins power connector (opt.)	
	<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: -10 to 70°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
	<b>Height</b>	PCB: 1.6mm	Top Side: 20mm, Bottom Side: 3mm

**Packing List**

• 1 CS103 motherboard	
• 1 Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
• 1 COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G

**Optional Items**

• USB 2.0 port cable (Length: 200mm)	332-753059-000G
• COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
• I/O shield	TBD
• Thermal solution (For 35W, Height: 37.3mm)	A71-103004-000G
• Thermal solution (For 65W, Height: 72.8mm)	552-200049-000G

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