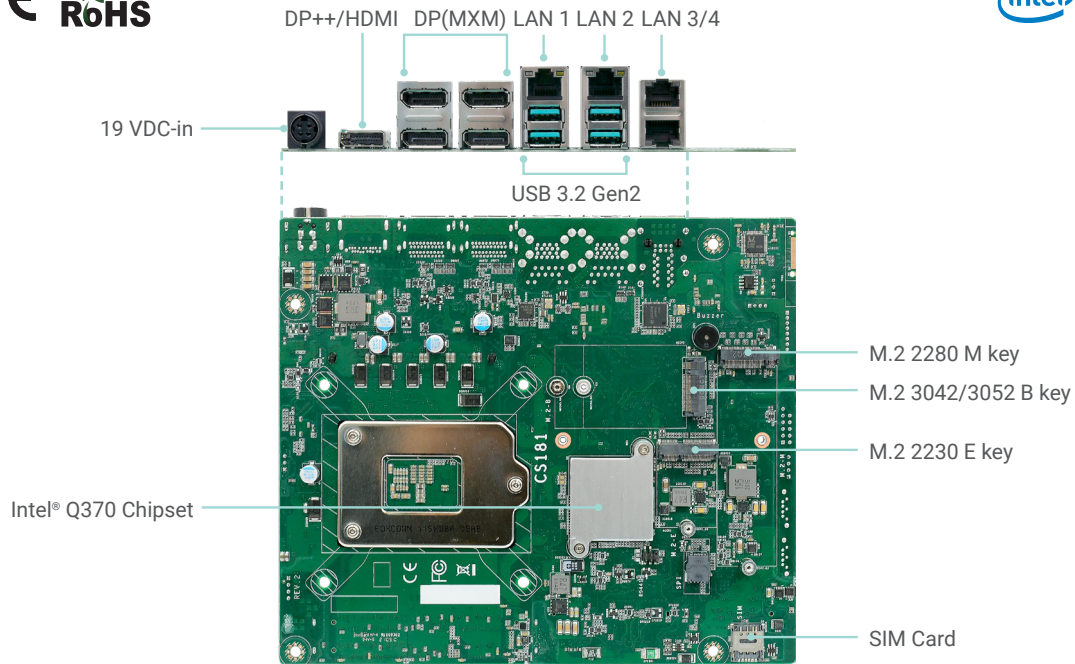
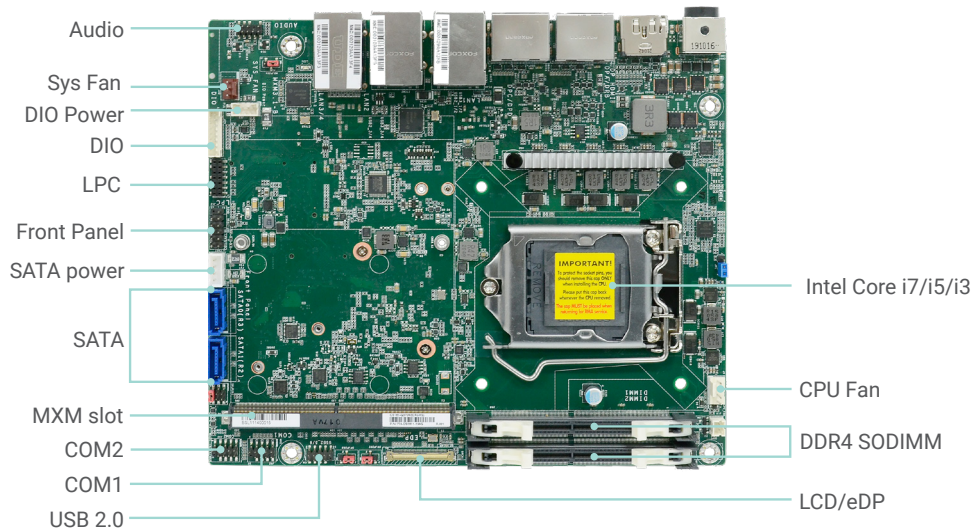


# CS181-H310 Desktop

9th/8th Gen Intel® Core™  
Mini-ITX



**Bottom View**



**Top View**

\* The photo above refers to CS181-Q370.

## KEY FEATURES



### DDR4

2 DDR4 SODIMM up to 64GB



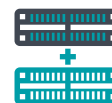
### 4K High Resolution

Supports 4K/ 2K resolution



### Multiple Displays

1 eDP  
1 DP++/HDMI (auto-detection)  
4 DP (MXM)



### Multiple Expansion

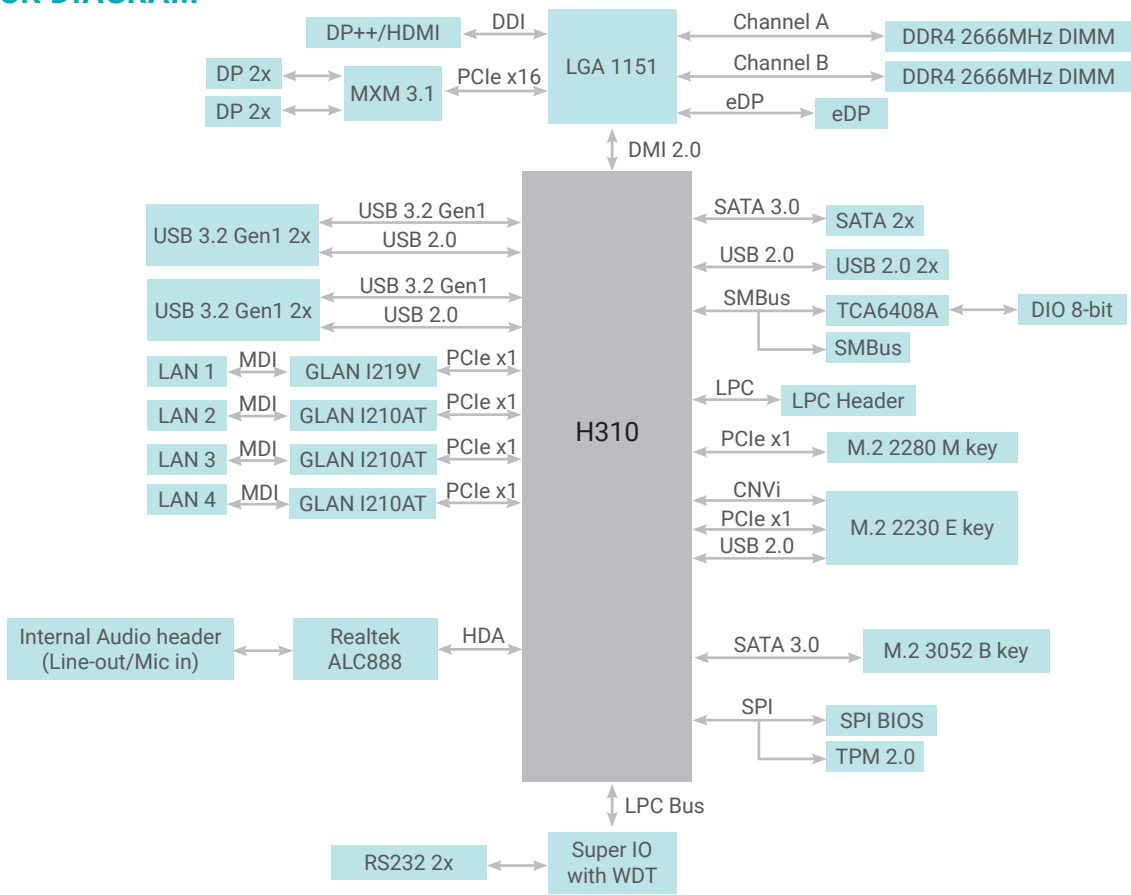
1 MXM Type-A/B/B+/C,  
1 M.2 M Key,  
1 M.2 B Key,  
1 M.2 E Key



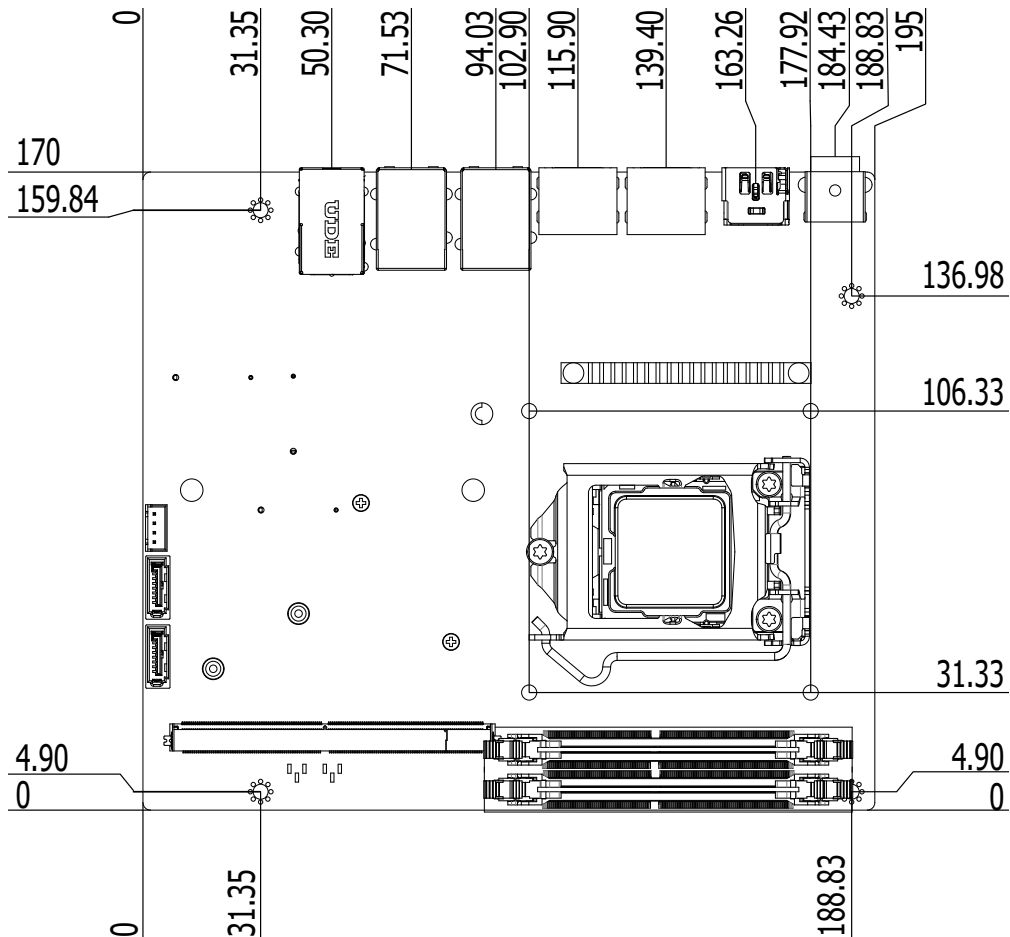
### Rich I/O

4 Intel GbE, 2 COM,  
4 USB 3.2 Gen1,  
2 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

SYSTEM	<b>Processor</b>	9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W 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) 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 65W 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>Chipset</b>	Intel® H310 Chipset
	<b>Memory</b>	Two 260-pin SODIMM up to 64GB Dual Channel DDR4 2400/2666MHz
	<b>BIOS</b>	AMI SPI 128Mbit
	<b>GRAPHICS</b>	<b>Controller</b>
	<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 eDP 1 x DP++/HDMI (auto-detection) 4 x DP (support by MXM Type-A/B module) eDP: resolution up to 4096x2304 @ 60Hz DP: resolution up to 4096x2304 @ 60Hz HDMI: resolution up to 4096x2160 @ 30Hz
	<b>Multiple Displays</b>	Onboard: eDP + DP++/HDMI Onboard+MXM module: eDP + DP++/HDMI + DP + DP + DP + DP
<b>EXPANSION</b>	<b>Interface</b>	1 x MXM Type-A/B/B+/C (support MXM module) (provide 4 x independent DP at rear side) 1 x M.2 2280 M Key (PCIe Gen2 x1) 1 x M.2 3042/3052 B Key (SATA 3.0) 1 x M.2 2230 E Key (USB2.0/PCIe x1 Gen2) (support BT/Wi-Fi module)
<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) 3 x Intel® I210AT PCIe (10/100/1000Mbps)
<b>REAR I/O</b>	<b>Ethernet</b>	4 x GbE (RJ-45)
	<b>USB</b>	4 x USB 3.2 Gen1 (dual type-A connector)
	<b>Power</b>	1 x DC Jack (mini-DIN)
	<b>Display</b>	1 x DP++/HDMI (auto-detection)
<b>INTERNAL I/O</b>	<b>Serial</b>	2 x RS232/RS422/RS485, select by BIOS
	<b>Display</b>	1 x eDP 1 x LCD/Inverter Power
	<b>Audio</b>	1 x Front Audio (2 x 5 10-pin 2.00mm pitch header)
	<b>USB</b>	2 x USB 2.0 (2 x 5 10-pin 2.00mm pitch header)
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s)
	<b>DIO</b>	1 x 8-bit DIO (1 x 8 8-pin 2.00mm pitch header) 1 x DIO Power (1x 4 4-pin 2.00mm pitch header)
	<b>LPC</b>	1 x LPC (2 x 7 14-pin 2.00mm pitch female header)
	<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 (default)
<b>POWER</b>	<b>Type</b>	Single 19V +/-5% DC
	<b>Connector</b>	DC-in Jack (mini-DIN)
	<b>Consumption</b>	Idle: i7-8700 65W: 19V @ 0.91A (17.29W) Max: i7-8700 65W: 19V @ 7.34A (139.46W)
	<b>RTC Battery</b>	CR2032 Coin Cell
<b>OS SUPPORT</b>	<b>Microsoft</b>	Windows 10 IoT Enterprise 64-bit

## SPECIFICATION

ENVIRONMENT	Temperature	Operating: -5 to 65°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
	MTBF	538,449 hrs @ 25°C; 324,118 hrs @ 45°C; 213,302 hrs @ 60°C; Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled
MECHANISM	Dimensions	195mm (7.7") x 170mm (6.7")
	Height	PCB: 1.6mm Top Side: 26mm, Bottom Side: 10mm
	Certification	CE, FCC, RoHS

## ORDERING INFORMATION

Model Name	P/N	Description
CS181-H310NB	770-CS1811-000G	2 DDR4 SODIMM, 1 DP++/HDMI, 4 DP++ by MXM, 4 Intel GbE, 2 COM, 4 USB 3.2 Gen 1, 2 USB 2.0, 2 SATA 3.0, -5 to 65°C

## PACKING LIST

1 CS181 motherboard	
1 Serial ATA data with power cable (Length: 300mm)	A81-002013-000G
1 COM port cable (Length: 250mm, 1 COM port)	A81-015011-001G
1 USB port cable (Length: 200mm)	A81-001032-016G
1 I/O shield	A49-CS1811-100G

## OPTIONAL ITEMS

COM port cable (Length: 250mm, 1 COM port)	A81-015011-001G
Serial ATA data cable (Length: 500mm)	332-553001-005G
Serial ATA power cable (Length: 300mm)	A81-002044-016G
Thermal solution (For 35W, Height: 37.3mm)	A71-103004-000G
Thermal solution (For 65W, Height: 45.3mm)	A71-103005-000G
MXM Quadro P2000 (58W, 0~55°C)	612-EGXMXM-100G
MXM Quadro RTX 3000 (80W, 0~55°C)	612-M3T300-000G
Fan PWR Y-cable for MXM(RTX3000) (1*3P/2.5mm TO 1*3P/2.54mm to 1*4P/1.25mm, L=50mm)	A81-009614-016G
RTX3000 MXM COOLER (87 x 106.35 x 34mm)	A71-110100-000G