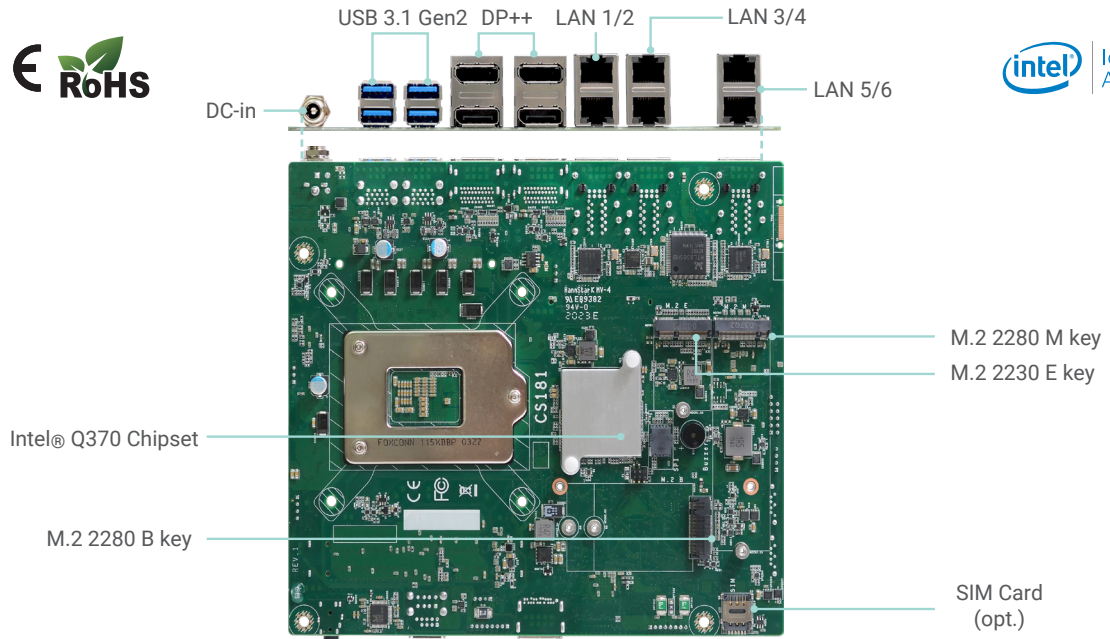
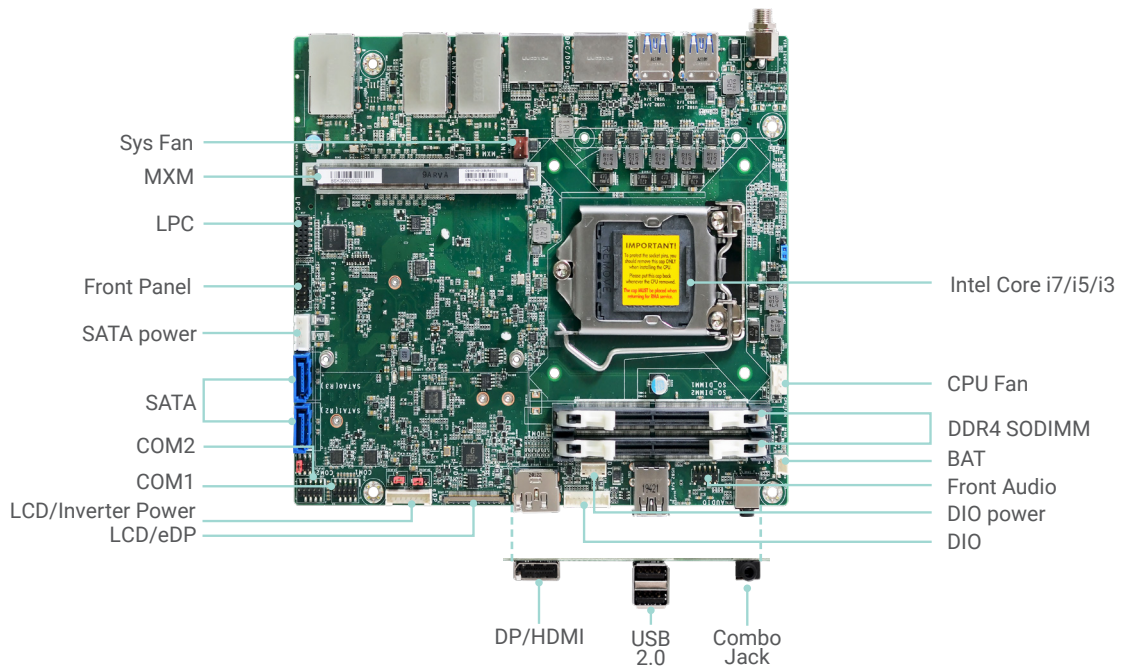


# CS181-Q370 Desktop

9th/8th Gen Intel® Core™  
Mini-ITX



**Bottom View**



**Top View**

## KEY FEATURES



### DDR4

2 DDR4 SODIMM up to 32GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Multiple Displays

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



### Multiple Expansion

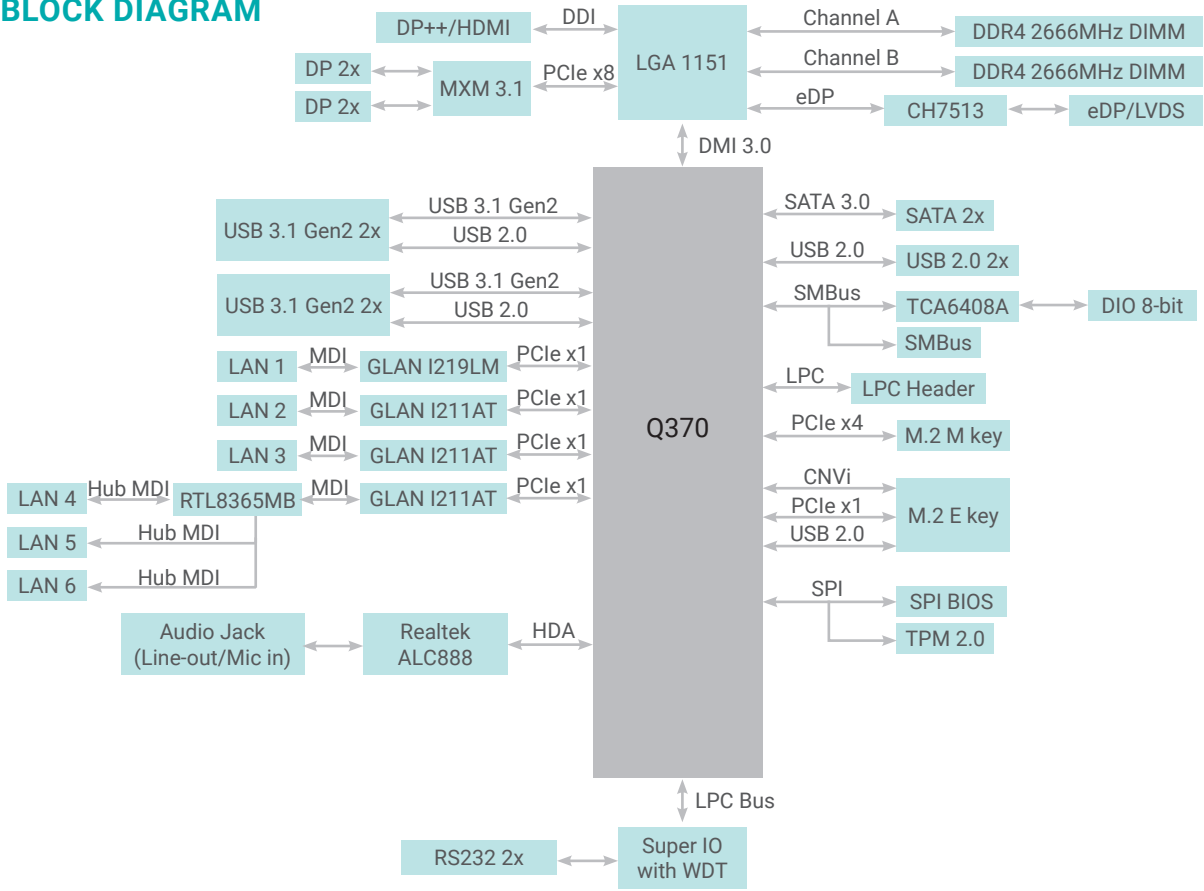
1 MXM Type-A/B,  
1 M.2 M Key,  
1 M.2 B Key,  
1 M.2 E Key



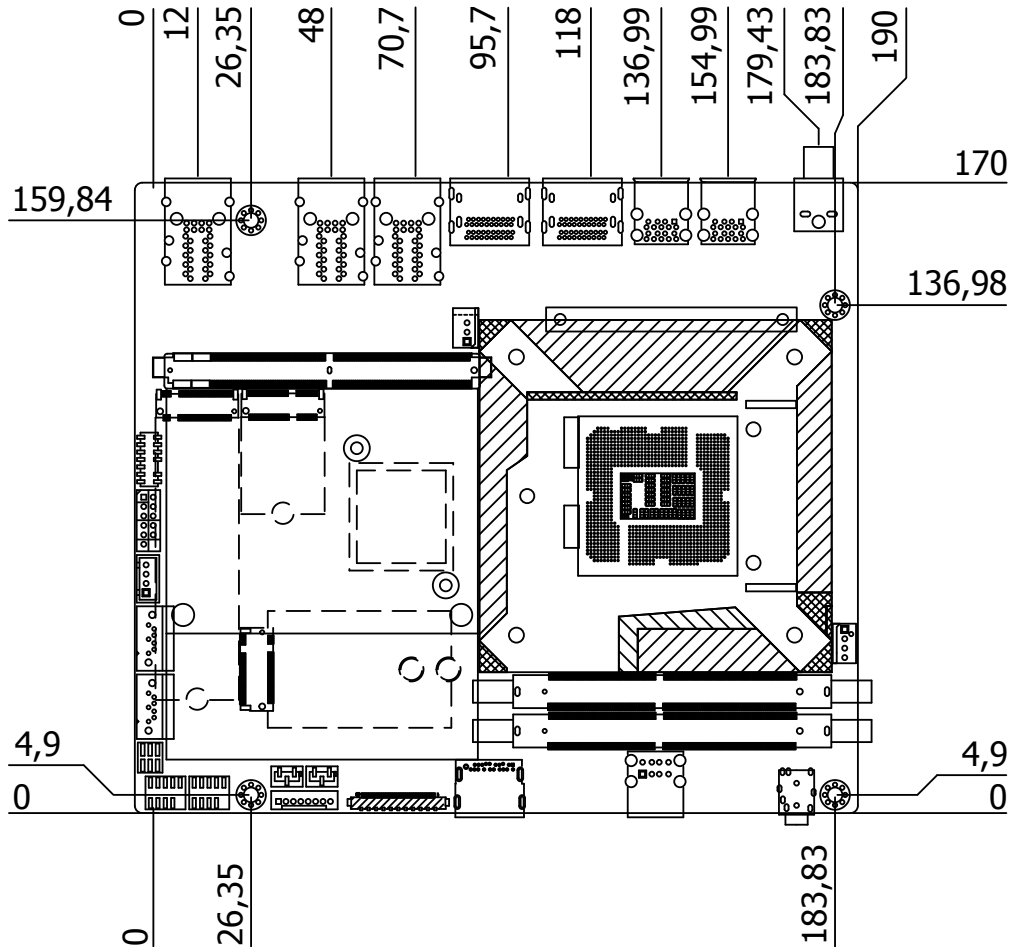
### Rich I/O

6 Intel GbE, 2 COM,  
4 USB 3.1 Gen2,  
6 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

|                   |                   |  |
|-------------------|-------------------|--|
| System            | Processor         | 9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W<br>Intel® Core i7-9700E Processor (Core 8; Max speed 4.4 GHz; TDP 65W)<br>Intel® Core i7-9700TE Processor (Core 8; Max speed 3.8 GHz; TDP 35W)<br>Intel® Core i5-9500E Processor (Core 6; Max speed 4.2 GHz; TDP 65W)<br>Intel® Core i5-9500TE Processor (Core 6; Max speed 3.6 GHz; TDP 35W)<br>Intel® Core i3-9100E Processor (Core 4; Max speed 3.7 GHz; TDP 65W)<br>Intel® Core i3-9100TE Processor (Core 4; Max speed 3.2 GHz; TDP 35W)<br>8th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W<br>Intel® Core™ i7-8700 Processor (Core 6; Max speed 4.6 GHz; TDP 65W)<br>Intel® Core™ i7-8700T Processor (Core 6; Max speed 4.0 GHz; TDP 35W)<br>Intel® Core™ i5-8500 Processor (Core 6; Max speed 4.1 GHz; TDP 65W)<br>Intel® Core™ i5-8500T Processor (Core 6; Max speed 3.5 GHz; TDP 35W)<br>Intel® Core™ i3-8100 Processor (Core 4; Max speed 3.6 GHz; TDP 65W)<br>Intel® Core™ i3-8100T Processor (Core 4; Max speed 3.1 GHz; TDP 35W)<br>Intel® Pentium G5400 Processor (Core 2; Max speed 3.7 GHz; TDP 58W)<br>Intel® Celeron G4900 Processor (Core 2; Max speed 3.1 GHz; TDP 54W) |
|                   | Chipset           | Intel® Q370 Chipset  |
|                   | Memory            | Two 260-pin SODIMM up to 32GB<br>Dual Channel DDR4 2400/2666MHz  |
|                   | BIOS              | AMI SPI 128Mbit  |
|                   | Graphics          | Controller   |
| Feature           |                   | OpenGL 4.5, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9<br>HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9   |
| Display           |                   | 1 x LVDS/eDP (control by BIOS)<br>1 x DP++/HDMI (auto-detection) (located at front site)<br>4 x DP (support by MXM Type-A/B module) (located at rear site)<br>LVDS: resolution up to 1920x1200 @ 60Hz<br>eDP: resolution up to 4096x2304 @ 60Hz<br>DP: resolution up to 4096x2304 @ 60Hz<br>HDMI: resolution up to 4096x2160 @ 30Hz  |
| Multiple Displays |                   | Onboard: LVDS/eDP + DP++/HDMI<br>Onboard+MXM module: LVDS/eDP + DP++/HDMI + DP + DP + DP + DP  |
| Expansion         |                   | Interface  |
| Audio             | Audio Codec       | Realtek ALC888S-VD2-GR   |
| Ethernet          | Controller        | 1 x Intel® I219LM PHY (10/100/1000Mbps)<br>5 x Intel® I211AT PCIe (10/100/1000Mbps) (port4~port6 provide by Lan hub)   |
| Rear I/O          | Ethernet          | 6 x GbE (RJ-45) (dual type connector) (port4~port6 provide by Lan hub)   |
|                   | USB               | 4 x USB 3.1 Gen2 (dual type-A connector)   |
| Front I/O         | Power             | 1 x DC Jack  |
|                   | Display           | 1 x DP++/HDMI (auto-detection)   |
|                   | USB               | 2 x USB2.0 (dual type-A connector)   |
| Internal I/O      | Audio             | 1 x Audio Combo Jack   |
|                   | Serial            | 2 x RS-232 (support 5V/12V power) (2 x 5 10-pin 2.0mm pitch header)  |
|                   | Display           | 1 x LVDS/eDP (control by BIOS)<br>1 x LCD/Inverter Power   |
|                   | Audio             | 1 x Front Audio (2 x 5 10-pin 2.00mm pitch header)   |
|                   | USB               | 2 x USB 2.0 (2 x 5 10-pin 2.00mm pitch header)   |
|                   | SATA              | 2 x SATA 3.0 (up to 6Gb/s)<br>RAID 0/1/5   |
|                   | DIO               | 1 x 8-bit DIO (1 x 8 8-pin 2.00mm pitch header)<br>1 x DIO Power (1x 4 4-pin 2.00mm pitch header)  |
|                   | LPC               | 1 x LPC (2 x 7 14-pin 2.00mm pitch female header)  |
|                   | SMBus             | 1 x SMBus  |
| Watchdog Timer    | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds  |
| Security          | TPM               | dTPM2.0 (default)  |
| Power             | Type              | Single 12V +/-5% DC  |
|                   | Connector         | DC-in Jack<br>Right Angle Connector (4-pin) (available upon request)<br>Straight Type Connector (4-pin) (available upon request)   |
|                   | Consumption       | TBD  |
|                   | RTC Battery       | CR2032 Coin Cell   |
| OS Support        | Microsoft         | Windows 10 IoT Enterprise 64-bit   |
|                   | Linux             | Linux  |

|                    |                    |   |
|--------------------|--------------------|---|
| <b>Environment</b> | <b>Temperature</b> | Operating: -5 to 65°C<br>Storage: -40 to 85°C   |
|                    | <b>Humidity</b>    | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH  |
|                    | <b>MTBF</b>        | TBD   |
| <b>Mechanism</b>   | <b>Dimensions</b>  | 195mm (7.7") x 170mm (6.7")                     |
|                    | <b>Height</b>      | PCB: 1.6mm<br>Top Side: 26mm, Bottom Side: 10mm |

## 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 Driver DVD (EVT/DVT stage only)                  |                 |
| 1 Bring Up (EVT/DVT stage only)                    | 931-000000-000G |

## OPTIONAL ITEMS

|  |                 |
|--|-----------------|
| I/O shield                                 |                 |
| 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: 72.8mm) | 552-200049-000G |