**Features**

- 2 DDR4 2400/2666MHz SODIMM up to 32GB
- Three independent display: LVDS+VGA+DP++, LVDS+DP++ +DP++, VGA+ DP++ + DP++
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple Expansions: Q370/C246: 1 PCIe x16 (Gen 3), 1 Full-size Mini PCIe (& mSATA)
- H310: 1 PCIe x16 (Gen 3), 1 mSATA
- Storage: 3 SATA 3.0
- Rich I/O:
  - Q370/C246: 2 Intel GbE, 2 COM, 2 USB 3.1 Gen 2, 2 USB 3.1 Gen 1, 4 USB 2.0
  - H310: 2 Intel GbE, 2 COM, 4 USB 3.1 Gen 1, 4 USB 2.0

**Mechanical Drawing**

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**Block Diagram**
Specifications

SYSTEM
- Processor: 9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 65W
  - Intel® Core™ i7-9700TE Processor (Core 8; Max speed 3.8 GHz; TDP 35W)
  - Intel® Core™ i5-9500TE Processor (Core 6; Max speed 4.2 GHz; TDP 65W)
  - 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 80W
  - 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™ i5-8500 Processor (Core 6; Max speed 4.1 GHz; TDP 65W)
  - Intel® Core™ i3-8100 Processor (Core 4; Max speed 3.6 GHz; TDP 65W) (support ECC Memory)
  - Intel® Pentium GS400 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)
- Memory: Two 260-pin SODIMM up to 32GB (Dual Channel DDR4 2400/2666MHz (C246 supoort ECC))
- Chipset: Intel® Q370/C246/H310 Chipset
- BIOS:AMI SPI 128Mbit

GRAPHICS
- Controller: Intel® UHD Graphics 630 (Pentium GS400, Celeron G4900 support Intel® UHD Graphics 610)
- Feature: OpenGL 4.4, DirectX 12, OpenCL 2.1
- H/W Decode: AVC/H.264, MPEG2, VCL(WMV), JPEG/MPEG, HEVC/H265, VP8, VP9
- H/W Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9
- Display: 1 x LVDS, 1 x VGA, 2 x DP++
- Triple Displays: LVDS+VGA+DP++, LVDS+DP++ +DP++, VGA+ DP++ +DP++

EXPANSION
- Interface: Q370/C246: 1 x PCIe x16 (Gen 3), 1 x Full-size Mini PCIe (& mSATA)
- Audio Codec: Realtek ALC888S-VD2-GR

ETHERNET
- Controller: C246/Q370: 1 x Intel® I219LM PHY, 1 x Intel® I211AT PCIe (10/100/1000Mbps) (only Core i7/i5 support iAMT)
- H310: 1 x Intel® I219V PHY, 1 x Intel® I211AT PCIe (10/100/1000Mbps)

REAR I/O
- Ethernet: 2 x GbE (RJ-45)
- USB: Q370/C246: 2 x USB 3.1 Gen2, 2 x USB 3.1 Gen1, 4 x USB 2.0
- Display: 1 x VGA, 2 x DP++
- Serial: 1 x RS-232 (DB-9)
- Audio: 1 x Line-in (available upon request)

INTERNAL I/O
- Serial: 1 x RS-232 (RS-232 w/ power)(2.0mm pitch)
- Display: 1 x LVDS LCD Panel Connector
- Audio: 1 x S/PDIF
- SATA: 3 x SATA 3.0 (up to 6Gb/s)
- DIO: 1 x 8-bit DIO
- LPC: 1 x LPC (support LPC EXT-RS232/RS485 module)

WATCHDOG TIMER
- Output & Interval: System Reset, Programmable via Software from 1 to 255 Seconds

SECURITY
- TPM: dtPM2.0 (available upon request)

POWER
- Type: ATX
- Connector: 4-pin ATX 12V power, 24-pin ATX power
- RTC Battery: CR2032 Coin Cell
- Consumption:
  - Idle: 7-8700 65W: 12V @ 0.39A (4.68W), 5V @ 0.53A (2.65W), 3.3V @ 0.23A (0.795W)
  - Max: 7-8700 65W: 12V @ 11.24A (134.88W), 5V @ 1.14A (5.7W), 3.3V @ 0.25A (0.825W)

OS SUPPORT
- Microsoft/Linux
- Windows 10 IoT Enterprise 64-bit
- Linux

ENVIRONMENT
- Temperature: Operating: 0 to 60°C Storage: -40 to 85°C
- Humidity: Operating: 5 to 90% RH Storage: 5 to 90% RH
- MTBF: CS100-C246: 639,615 hrs @ 25°C; 393,053 hrs @ 45°C; 259,094 hrs @ 60°C
  - CS100-Q370: 639,615 hrs @ 25°C; 393,053 hrs @ 45°C; 259,094 hrs @ 60°C
  - CS100-H310: 640,703 hrs @ 25°C; 393,874 hrs @ 45°C; 259,692 hrs @ 60°C

CALCULATION model: Telcordia Issue 4
- Environment: GB, GC – Ground Benign, Controlled

MECHANICAL
- Dimensions: Mini-ITX Form Factor 170mm (6.7”) x 170mm (6.7”)
- Height: PCB: 1.6mm Top Side: 20mm, Bottom Side: 3mm

CERTIFICATIONS
- CE, FCC Class B, RoHS, KCC

Packing List
- 1 x CS100 motherboard
- 1 x COM port cable (Length: 250mm, 1 x COM ports) A81-015011-001G
- 1 x I/O shield A49-CS1000-000G
- 1 x Serial ATA data with power cable (Length: 500mm) 332-553001-005G

Optional Items
- COM port cable (Length: 250mm, 1 x COM ports) A81-015011-001G
- Serial ATA data with power 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
- LPC EXT-RS232 module (4 x RS232 ports) 770-EXTRS1-000G
- LPC EXT- RS485 module (4 x RS485 ports) 770-EXTRS1-100G

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