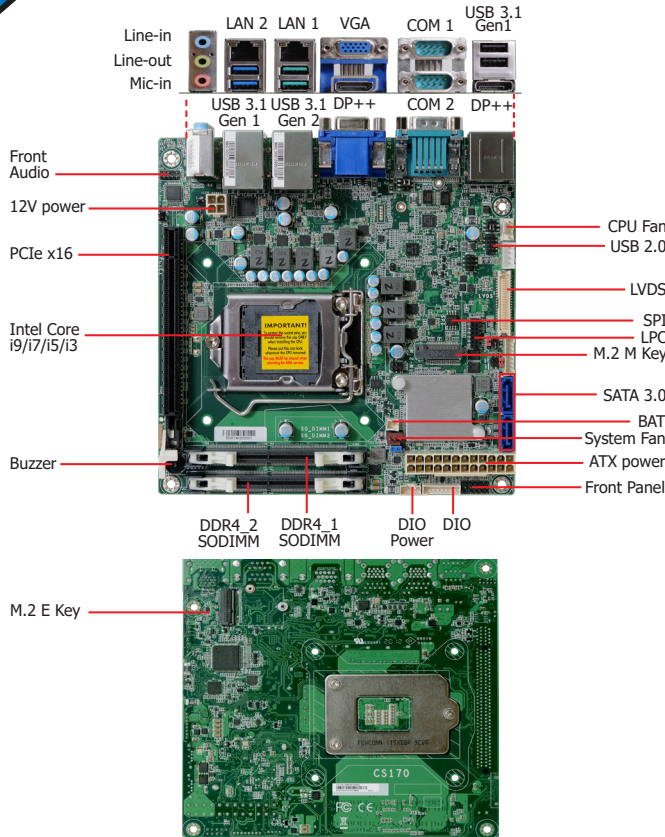


# CS170 -Q370/C246

Desktop

Q370  
C246



## Features

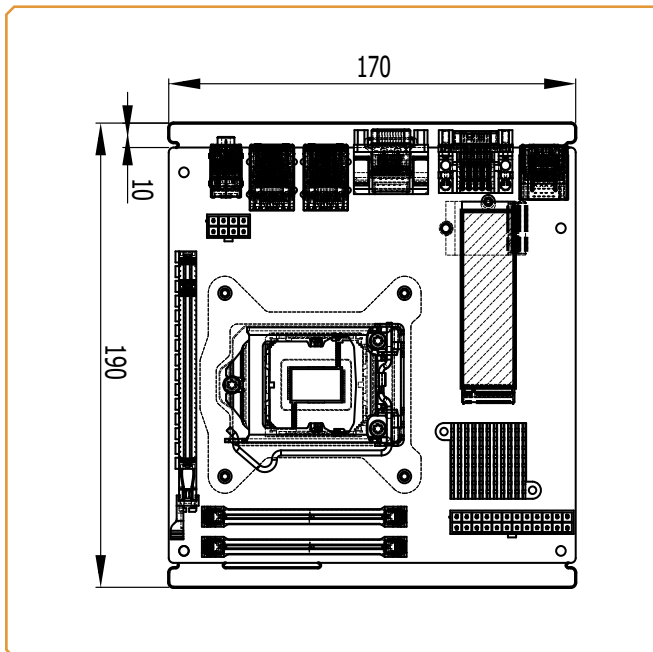
- 2 DDR4 2400/2666MHz SODIMM up to 32GB
- Three independent display: LVDS + VGA + DP++, LVDS + DP++ + DP++, VGA + DP++ + DP++
- DP++ resolution supports up to 4096x2304 @ 60Hz
- Multiple Expansions:  
1 PCIe x16 Gen 3, 1 M.2 2230 E Key, 1 M.2 2280 M Key
- Storage: 2 SATA 3.0
- Rich I/O: 2 Intel GbE, 2 COM, 2 USB 3.1 Gen 2, 4 USB 3.1 Gen 1



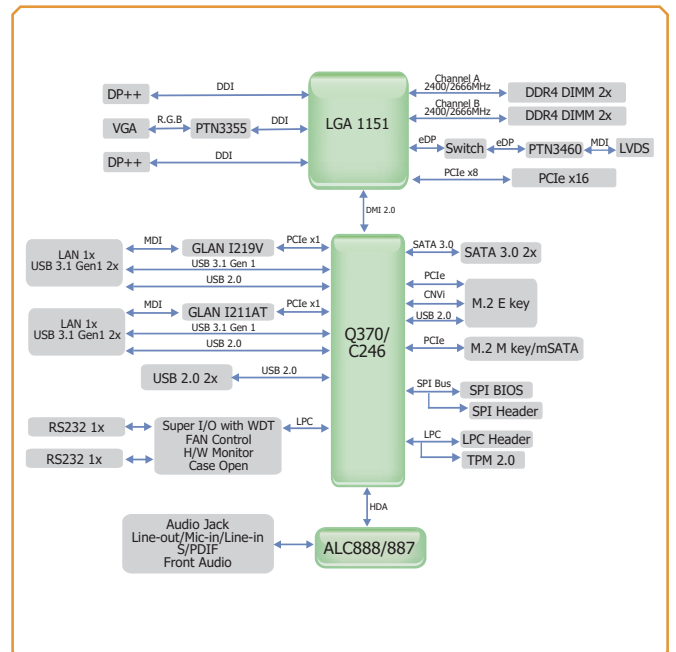
## Ordering Information

Model Name	P/N	Memory	LVDS/ eDP	Display	GbE	COM	USB 3.1 Gen 2	USB 3.1 Gen 1	USB 2.0	M.2 M	M.2 E	SATA 3.0	Power Conn	Temps
CS170-Q370DB	770-CS1701-100G	2 DDR4	LVDS	2HDMI/DP++	2	2	2	2	2	1	1	2	24-pin ATX	-5 to 65°C
CS170-C246DB	770-CS1701-200G	2 DDR4	LVDS	2HDMI/DP++	2	2	2	2	2	1	1	2	24-pin ATX	-5 to 65°C

## Mechanical Drawing



## Block Diagram



## Specifications

<b>SYSTEM</b>	<b>Processor</b>	9th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 95W Intel® Xeon E-2278G Processor (Core 8; Max speed 4.7 GHz; TDP 80W) (support ECC memory) Intel® Core i9-9900K Processor (Core 8, Max speed 5.0 GHz; TDP 95W) (Non-LTS) 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) (support ECC memory) Intel® Core i3-9100TE Processor (Core 4; Max speed 3.2 GHz; TDP 35W) (support ECC memory) 8th Generation Intel® Core™ Processors, LGA 1151 Socket, TDP up to 95W 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™ 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) (support ECC memory) Intel® Core™ i3-8100T Processor (Core 4; Max speed 3.1 GHz; TDP 35W) (support ECC memory) Intel® Pentium G5400 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)	
	<b>Memory</b>	Dual Channel DDR4 2400/2666MHz C246: Two 260-pin ECC/non-ECC SODIMM up to 32GB (Core™ i5/i7 only support non-ECC) Q370: Two 260-pin non-ECC SODIMM up to 32GB	
	<b>Chipset</b>	Intel® Q370/C246 Chipset	
	<b>BIOS</b>	AMI SPI 128Mbit	
	<b>GRAPHICS</b>	<b>Controller</b>	Intel® UHD Graphics 630 (Pentium G5400 and Celeron G4900 support Intel® 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 1 x VGA 2 x DP++	LVDS: resolution up to 1920x1200 @ 60Hz VGA: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2304 @ 60Hz
	<b>Triple Displays</b>	LVDS + VGA + DP++, LVDS + DP++ + DP++, VGA + DP++ + DP++	
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x16 (Gen 3) 1 x M.2 2280 M Key (PCIe x4/SATA) (support NVMe and Intel® Optane memory) 1 x M.2 2230 E Key (USB/PCIe) (bottom side)	
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC888/887	
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I219LM PHY with iAMT12 and vPro (10/100/1000Mbps) (Core i7/i5 supports iAMT) 1 x Intel® I210AT PCIe (10/100/1000Mbps)	
<b>REAR I/O</b>	<b>Ethernet</b>	2 x GbE (RJ-45)	
	<b>USB</b>	2 x USB 3.1 Gen2	4 x USB 3.1 Gen1
	<b>Display</b>	1 x VGA (DB-15)	2 x DP++
	<b>Serial</b>	2 x RS-232 (DB-9)	
	<b>Audio</b>	1 x Line-out 1 x Mic-in	1 x Line-in
<b>INTERNAL I/O</b>	<b>Display</b>	1 x LVDS	1 x LCD/Inverter Power
	<b>Audio</b>	1 x Front Audio (2.00mm pitch)	
	<b>USB</b>	2 x USB 2.0 (2.00mm pitch)	
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5
	<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>	dTPM2.0 (available upon request)	
<b>POWER</b>	<b>Type</b>	ATX	
	<b>Connector</b>	4-pin ATX 12V power	24-pin ATX power
	<b>RTC Battery</b>	CR2032 Coin Cell	
	<b>Consumption</b>	Idle: i7-8700K 3.3V @ 0.11A (0.363W), 5V @ 0.45A (2.25W), 12V @ 0.31A (3.72W) Max: i7-8700K 3.3V @ 0.13A (0.429W), 5V @ 1.2A (6W), 12V @ 10.35A (124.2W)	
<b>OS SUPPORT</b>	<b>Microsoft/Linux</b>	Windows 10 IoT Enterprise 64-bit Linux	
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: -5 to 65°C	Storage: -40 to 85°C
	<b>Humidity</b>	Operating: 5 to 90% RH	Storage: 5 to 90% RH
	<b>MTBF</b>	CS170-Q370: 634,945 hrs @ 25°C; 387,836 hrs @ 45°C; 254,993 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	

## Packing List

• 1 CS170 motherboard	
• 1 Serial ATA data cable (Length: 500mm)	332-553001-005G
• 1 I/O shield	A49-CVL000-A10G

## Optional Items

• USB port cable (Length: 200mm)	A81-001032-016G
• Serial ATA data 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