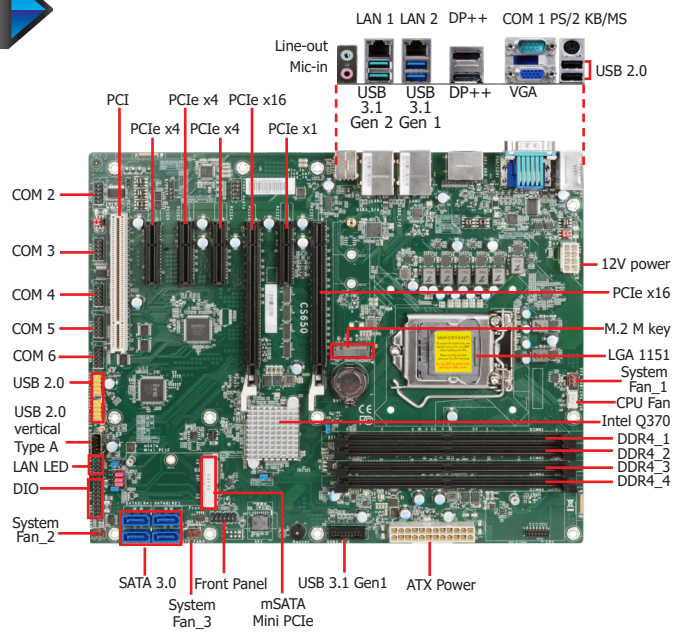


# CS650-Q370

Desktop

Q370



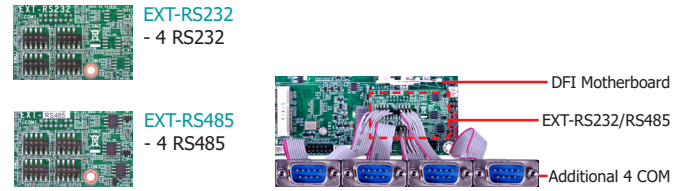
## Features

- 4 DDR4 DIMM up to 128GB
- 3 independent displays: VGA + DP++ + DP++
- DP++ resolution up to 4096x2160 @ 60Hz
- Multiple expansion: 2 PCIe x16 (1 x16 signal or 2 x8 signals), 3 PCIe x4, 1 PCIe x1, 1 PCI, 1 Full-sized Mini PCIe, 1 M.2 M key
- Rich I/O: 2 Intel GbE, 6 COM, 2 USB 3.1 Gen 2, 4 USB 3.1 Gen 1, 6 USB 2.0



DFI's Proprietary Technology

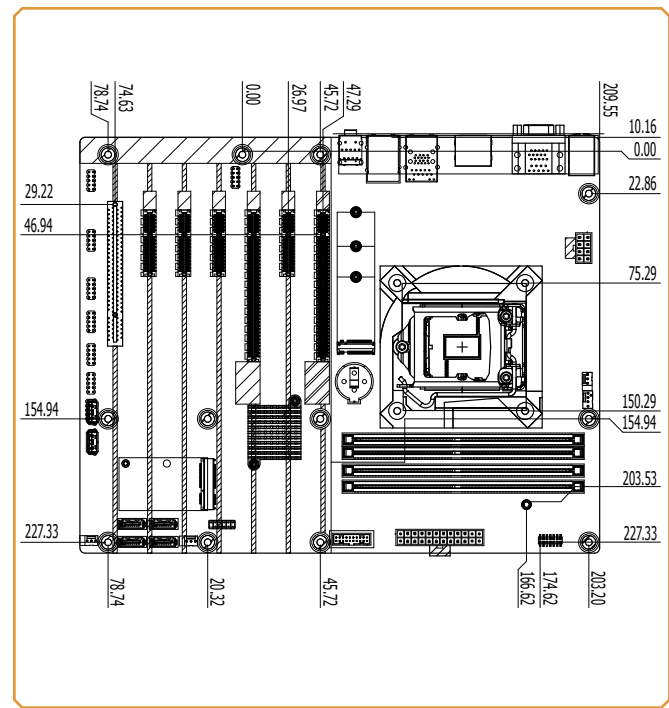
## 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



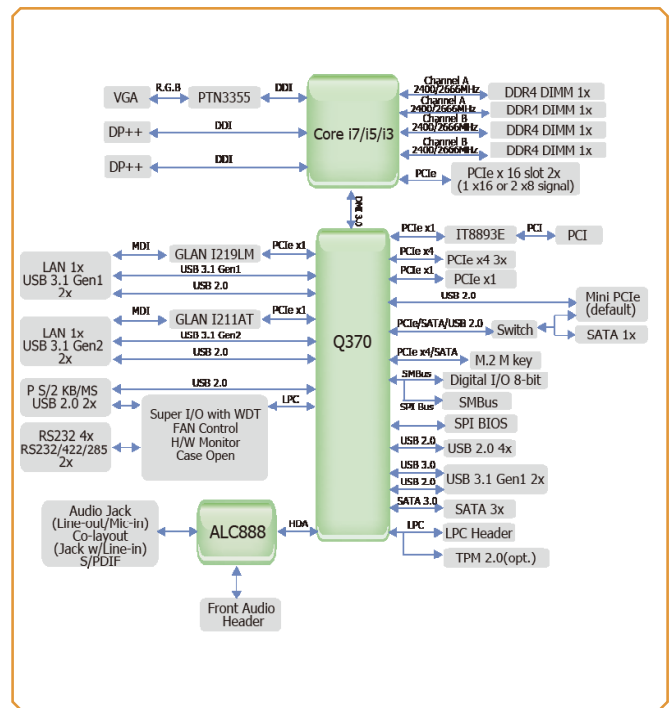
## Ordering Information

Model Name	P/N	Memory	GbE	RS-232/422/485	RS-232	USB3.1 Gen 2	USB3.1 Gen 1	USB 2.0	Power	Thermal	Temp.
CS650-Q370CRM	770-CS6501-100G	4 DIMM	2	2	4	2	4	6	24-pin ATX	Active	-5 to 65°C

## Mechanical Drawing



## Block Diagram



## Specifications

<b>SYSTEM</b>	<b>Processor</b>	8th Generation Intel® Core™/Pentium®/Celeron® LGA 1151 Socket Processors: Intel® Core™ i7-8700K (6 Cores, 12M Cache, up to 4.7 GHz); 95W (Non-LTS) Intel® Core™ i7-8700 (6 Cores, 12M Cache, up to 4.6 GHz); 65W Intel® Core™ i7-8700T (6 Cores, 12M Cache, up to 4.0 GHz); 35W Intel® Core™ i5-8500 (6 Cores, 9M Cache, up to 4.1 GHz); 65W Intel® Core™ i5-8500T (6 Cores, 9M Cache, up to 3.5 GHz); 35W Intel® Core™ i3-8100 (4 Cores, 6M Cache, 3.6 GHz); 65W Intel® Core™ i3-8100T (4 Cores, 6M Cache, to 3.1 GHz); 35W Intel® Pentium® G5400 (2 Cores, 4M Cache, 3.7 GHz); 58W Intel® Pentium® G5400T (2 Cores, 4M Cache, 3.1 GHz); 35W Intel® Celeron® G4900 (2 Cores, 2M Cache, 3.1 GHz); 54W Intel® Celeron® G4900T (2 Cores, 2M Cache, 2.9 GHz); 35W	9th Generation Intel® Core™ LGA 1151 Socket Processors: Intel® Core™ i9-9900K (8 Cores, 16M Cache, up to 5.0 GHz); 95W (Non-LTS) Intel® Core™ i7-9700K (8 Cores, 12M Cache, up to 4.9 GHz); 95W (Non-LTS) Intel® Core™ i7-9700E (8 Cores, 12M Cache, up to 4.4 GHz); 65W Intel® Core™ i7-9700TE (8 Cores, 12M Cache, up to 3.8 GHz); 35W Intel® Core™ i5-9500E (6 Cores, 9M Cache, up to 4.2 GHz); 65W Intel® Core™ i5-9500TE (6 Cores, 9M Cache, up to 3.6 GHz); 35W Intel® Core™ i3-9100E (4 Cores, 6M Cache, 3.7 GHz); 65W Intel® Core™ i3-9100TE (4 Cores, 6M Cache, to 3.2 GHz); 35W
	<b>Chipset</b>	Intel® Q370 Chipset	
	<b>Memory</b>	Four 288-pin DIMM up to 128GB Dual Channel DDR4 2400/2666MHz	
	<b>BIOS</b>	AMI SPI 128Mbit	
	<b>GRAPHICS</b>	<b>Controller</b> Intel® HD Gen 9 Graphics	
	<b>Feature</b> OpenGL 5.0, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9		
	<b>Display</b> 1 x VGA 2 x DP++ VGA: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2160 @ 60Hz		
	<b>Triple Displays</b> VGA + DP++ + DP++		
<b>EXPANSION</b>	<b>Interface</b> 1 x Full-sized Mini PCIe (PCIe/SATA/USB2.0), share with SATA 3(R5) 1 x M.2 2242/2260/2280 M key (PCIe Gen3 x 4 NVMe/SATA) 2 x PCIe x16 (Gen 3) (1 x16 signal or 2 x8 signals) 3 x PCIe x4 (Gen 3) 1 x PCIe x1 (Gen 3) 1 x PCI		
<b>AUDIO</b>	<b>Audio Codec</b> Realtek ALC888		
<b>ETHERNET</b>	<b>Controller</b> 1 x Intel® I211AT PCIe (10/100/1000Mbps) 1 x Intel® I219LM PCIe with iAMT12.0 (10/100/1000Mbps) (only Core i7/i5 supports iAMT)		
<b>REAR I/O</b>	<b>Ethernet</b> 2 x GbE (RJ-45)		
	<b>USB</b> 2 x USB 3.1 Gen2 2 x USB 2.0 2 x USB 3.1 Gen1		
	<b>Serial</b> 1 x RS-232/422/485 (RS-232 w/ power) (DB-9)		
	<b>PS/2</b> 1 x PS/2 (mini-DIN-6)		
	<b>Display</b> 1 x VGA 2 x DP++		
	<b>Audio</b> 1 x Line-out, 1 x Mic-in, 1 x Line-in (opt., MOQ required)		
<b>INTERNAL I/O</b>	<b>Serial</b> 1 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 4 x RS-232 (2.54mm pitch)		
	<b>USB</b> 2 x USB 3.1 Gen 1 (2.00mm pitch) 4 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A) (opt., MOQ required)		
	<b>Audio</b> 1 x Front Audio Header 1 x S/PDIF		
	<b>SATA</b> 4 x SATA 3.0 (up to 6Gb/s, SATA 3(R5) shared with mini PCIe (SATA), default at mini PCIe) RAID 0/1/5/10		
	<b>DIO</b> 1 x 8-bit DIO		
	<b>LPC</b> 1 x LPC (supports LPC EXT-RS232/RS485 module)		
	<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> Infineon TPM2.0 (opt., MOQ required)		
<b>POWER</b>	<b>Type</b> ATX		
	<b>Connector</b> 8-pin ATX 12V power 24-pin ATX power		
	<b>Consumption</b> Typical: i7-8700K: 3.3V @ 0.34A (1.122Watt); 5V @ 0.58A (2.9Watt); 12V @ 0.65A (7.8Watt) Max.: i7-8700K: 3.3V @ 0.52A (1.716Watt); 5V @ 1.27A (6.35Watt); 12V @ 13.01A (156.12Watt)		
	<b>RTC Battery</b> CR2032 Coin Cell		
<b>OS SUPPORT</b>	Windows 10 IoT Enterprise 64-bit Linux		
<b>ENVIRONMENT</b>	<b>Temperature</b> Operating: -5 to 65°C Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery		
	<b>Humidity</b> Operating: 5 to 95% RH Storage: 5 to 95% RH		
	<b>MTBF</b> 534,017 hrs @ 25°C; 298,488 hrs @ 45°C ; 184,547 hrs @ 60°C ; 133,068 hrs @ 70°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled		
<b>MECHANICAL</b>	<b>Dimensions</b> ATX Form Factor 305mm (12") x 244mm (9.6")		
	<b>Height</b> PCB: 1.6mm Top Side: 32mm Bottom Side: 4.4mm		
<b>CERTIFICATIONS</b>	CE, FCC Class B, RoHS, KCC		

## Packing List

• 1 CS650-Q370 motherboard	
• 1 COM port cables (Length: 300mm, 2 x COM ports)	A81-015026-023G
• 1 Serial ATA data cable (Length: 500mm)	332-553001-005G
• 1 I/O shield	A49-CS6310-000G
• 1 mini PCIe screw	A32-112016-041G

## Optional Items

• USB 2.0 port cable (Length: 350mm)	A81-001066-016G
• USB 3.1 Gen1 port cable (Length: 320mm)	A81-001052-023G
• COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
• Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
• Thermal solution (For 35W, Height: 37.3mm)	A71-101107-000G
• Thermal solution (For 65W, Height: 72.8mm)	552-200049-000G
• Thermal solution (For 95W, Height: 69.3mm)	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
• DP to HDMI dongle	612-D2H13M-000G