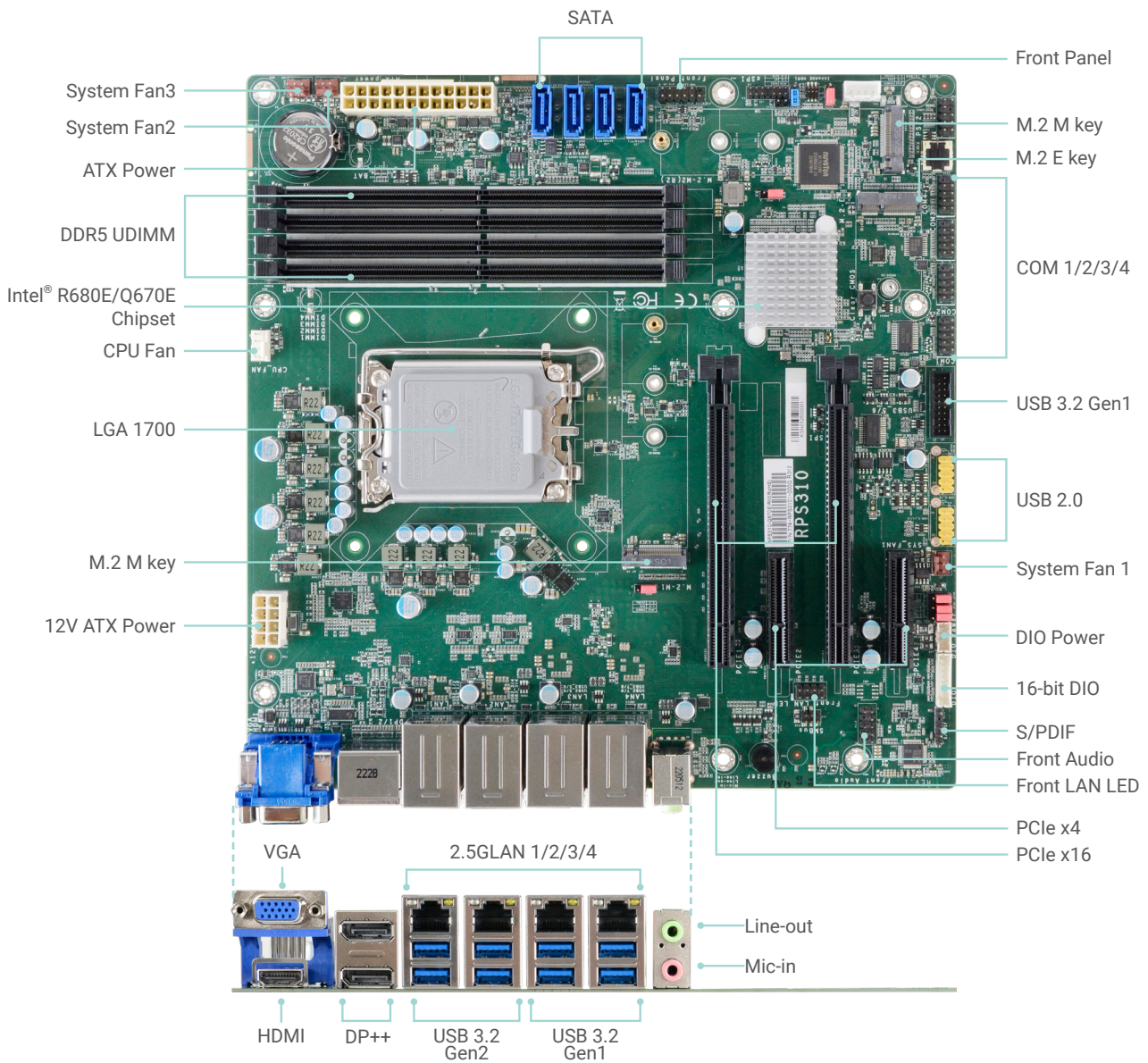


# RPS310-R680E/Q670E

14th/13th/12th Gen Intel® Core™  
Desktop  
microATX



Top View

## KEY FEATURES



### DDR5

4 DDR5 UDIMM up to 192GB



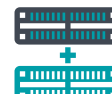
### 4K High Resolution

Supports 4K resolution



### Quad Displays

VGA, 2 DP++, HDMI



### Multiple Expansion

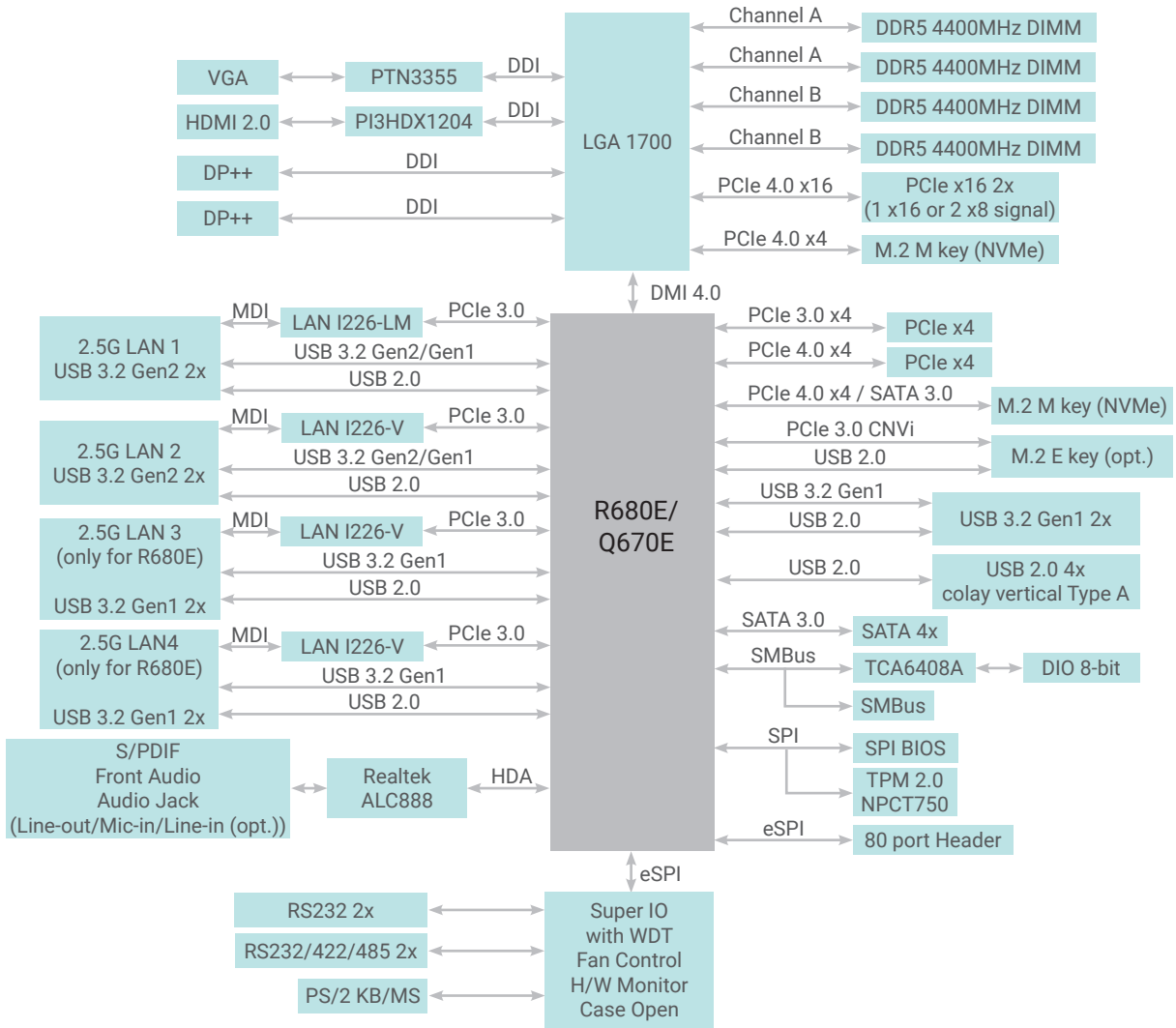
2 PCIe x16, 2 PCIe x4,  
1 M.2 E key, 2 M.2 M key,  
4 SATA 3.0



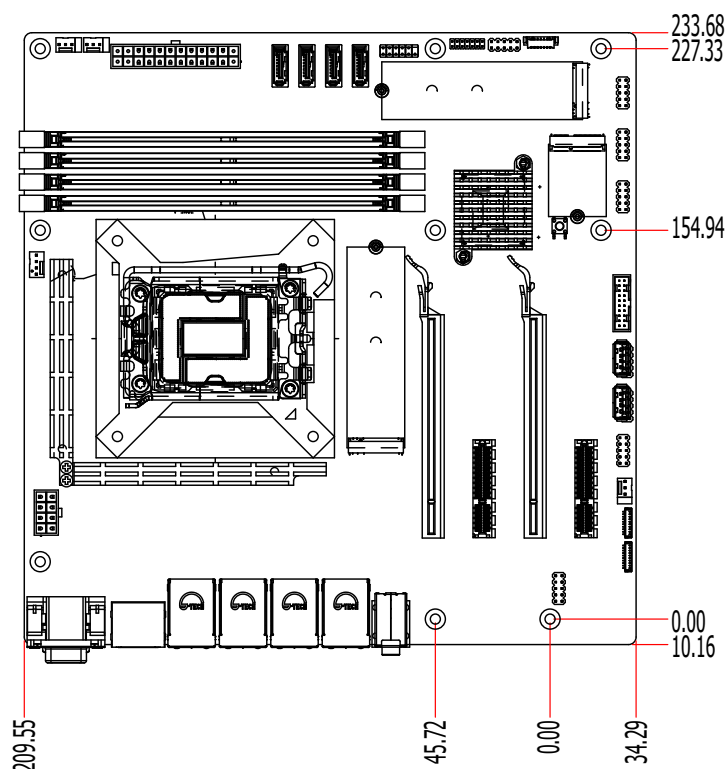
### Rich I/O

4 Intel 2.5GbE, 4 COM,  
4 USB 3.2 Gen 2,  
6 USB 3.2 Gen 1,  
4 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

SYSTEM	Processor	<p>14th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W            Intel® Core™ i9-14900 (24 Cores, 36M Cache, up to 2.0 GHz); 65W            Intel® Core™ i9-14900T (24 Cores, 36M Cache, up to 1.1 GHz); 35W            Intel® Core™ i7-14700 (20 Cores, 33M Cache, up to 2.1 GHz); 65W            Intel® Core™ i7-14700T (20 Cores, 33M Cache, up to 1.3 GHz); 35W            Intel® Core™ i5-14500 (14 Cores, 24M Cache, up to 2.6 GHz); 65W            Intel® Core™ i5-14500T (14 Cores, 24M Cache, up to 1.7 GHz); 35W            Intel® Core™ i3-14100 (4 Cores, 12M Cache, up to 3.5 GHz); 60W            Intel® Core™ i3-14100T (4 Cores, 12M Cache, up to 2.7 GHz); 35W            Intel® 300T (2 Cores, 6M Cache, up to 3.4 GHz); 35W</p> <p>13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W            Intel® Core™ i9-13900E (24 Cores, 36M Cache, up to 5.2 GHz); 65W            Intel® Core™ i9-13900TE (24 Cores, 36M Cache, up to 5.0 GHz); 35W            Intel® Core™ i7-13700E (16 Cores, 30M Cache, up to 5.1 GHz); 65W            Intel® Core™ i7-13700TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W            Intel® Core™ i7-13700T (16 Cores, 30M Cache, up to 4.9 GHz); 35W            Intel® Core™ i5-13500E (14 Cores, 24M Cache, up to 4.6 GHz); 65W            Intel® Core™ i5-13500TE (14 Cores, 24M Cache, up to 4.5 GHz); 35W            Intel® Core™ i5-13500T (14 Cores, 24M Cache, up to 4.6 GHz); 35W            Intel® Core™ i5-13400E (10 Cores, 20M Cache, up to 4.6 GHz); 65W            Intel® Core™ i3-13100E (4 Cores, 12M Cache, up to 4.4 GHz); 65W            Intel® Core™ i3-13100TE (4 Cores, 12M Cache, up to 4.1 GHz); 35W            Intel® Core™ i3-13100T (4 Cores, 12M Cache, up to 4.2 GHz); 35W</p> <p>12th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W            Intel® Core™ i9-12900E (16 Cores, 30M Cache, up to 5.0 GHz); 65W            Intel® Core™ i9-12900TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W            Intel® Core™ i7-12700E (12 Cores, 25M Cache, up to 4.8 GHz); 65W            Intel® Core™ i7-12700TE (12 Cores, 25M Cache, up to 4.6 GHz); 35W            Intel® Core™ i5-12500E (6 Cores, 18M Cache, up to 4.5 GHz); 65W            Intel® Core™ i5-12500TE (6 Cores, 18M Cache, up to 4.3 GHz); 35W            Intel® Core™ i3-12100E (4 Cores, 12M Cache, up to 4.2 GHz); 60W            Intel® Core™ i3-12100TE (4 Cores, 12M Cache, up to 4.0 GHz); 35W            Intel® Pentium® G7400E (2 Cores, 6M Cache, 3.6 GHz); 46W            Intel® Pentium® G7400TE (2 Cores, 6M Cache, 3.0 GHz); 35W            Intel® Celeron® G6900E (2 Cores, 4M Cache, 3.0 GHz); 46W            Intel® Celeron® G6900TE (2 Cores, 4M Cache, 2.4 GHz); 35W</p>	
	Chipset	Intel® R680E/Q670E Chipset	
	Memory	Four 288-pin UDIMM up to 192GB (ECC/Non-ECC) Dual Channel DDR5 up to 4400 MHz <b>*only R680E support ECC memory</b> <b>*Speed support list follow User's Manual</b>	
	BIOS	AMI SPI 256Mbit	
	GRAPHICS	Controller	Intel® HD Gen 9 Graphics
	Feature	OpenGL 4.5, 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	
	Display	1 x VGA	VGA: resolution up to 1920x1200 @ 60Hz
		2 x DP++	DP++: resolution up to 4096x2304 @ 60Hz
		1 x HDMI 2.0a	HDMI: resolution up to 4096x2160 @ 24Hz
	Quad Displays	VGA + 2 DP++ + HDMI	
EXPANSION	Interface	2 x PCIe x16 (Gen 4) (1 x16 signals or 2 x8 signals)	
		2 x PCIe x4 (Gen 4)	
		1 x M.2 2230 E key (opt. PCIe/USB 2.0/Intel CNVi support) (Discrete Wifi 6E support)	
		1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe/SATA support)	
		1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe support)	
AUDIO	Audio Codec	Realtek ALC888	
ETHERNET	Controller	1 x Intel® I226-LM (Core i9/i7/i5 support iAMT)	
		1 x Intel® I226-V 2 x Intel® I226-V (only R680E support)	
REAR I/O	Ethernet	2 x 2.5GbE (RJ-45) or 4 x 2.5GbE (RJ-45) (only R680E support)	
	USB	4 x USB 3.2 Gen 2 4 x USB 3.2 Gen 1	
	Display	2 x DP++ 1 x HDMI 2.0a 1 x VGA	
	Audio	1 x Line-out 1 x Mic-in	1 x Line-in (opt. by request, MOQ required)

## SPECIFICATION

<b>INTERNAL I/O</b>	<b>Serial</b>	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch) 2 x RS-232 (2.54mm pitch)	
	<b>USB</b>	2 x USB 3.2 Gen1 4 x USB 2.0 (2.54mm pitch) (1 x USB 2.0 colay vertical Type A)	
	<b>Audio</b>	1 x Front Audio Header	1 x S/PDIF
	<b>SATA</b>	4 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5/10
	<b>PS/2</b>	1 x PS/2 (2.54mm pitch)	
	<b>DIO</b>	4-IN / 8-OUT DIO	
	<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>	Nuvoton TPM 2.0	
<b>POWER</b>	<b>Type</b>	ATX	
	<b>Connector</b>	8-pin ATX 12V power 24-pin ATX power	
	<b>Consumption</b>	Typical: i9-13900K: 3.3V @ 0.31A (1.023W); 5V @ 1.50A (7.5W); 12V @ 7.78A (93.36W) Max.: i9-13900K: 3.3V @ 1.16A (3.828W); 5V @ 2.71A (13.55W); 12V @ 26.34A (316.08W)	
	<b>RTC Battery</b>	CR2032 Coin Cell	
<b>OS SUPPORT</b>	<b>Microsoft</b>	Windows 10 IoT Enterprise 64-bit Windows 11 Enterprise	
	<b>Linux</b>	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>	477,165 hrs @ 25°C; 271,824 hrs @ 45°C; 171,335 hrs @ 60°C; 124,964 hrs @ 70°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled		
<b>MECHANISM</b>	<b>Dimensions</b>	microATX Form Factor	244mm (9.6") x 244mm (9.6")
	<b>Height</b>	PCB: 1.6mm	
		Top Side: TBD Bottom Side: TBD	
<b>STANDARDS AND CERTIFICATIONS</b>	<b>Certifications</b>	CE, FCC Class B, RoHS	

## ORDERING INFORMATION

Model Name	P/N	Memory	2.5 GbE	RS-232/422/485	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0	TPM 2.0	Power	Thermal	Temp.
RPS310-Q670E	770-RPS3101-000G	4 UDIMM	2	2	4	6	4	dTPM	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C
RPS310-R680E	770-RPS3101-100G	4 UDIMM	4	2	4	6	4	dTPM	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C
RPS310-Q670E	770-RPS3101-200G	4 UDIMM	2	2	4	6	4	fTPM	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C
RPS310-R680E	770-RPS3101-300G	4 UDIMM	4	2	4	6	4	fTPM	24-pin ATX/8-pin ATX 12V	Active	-5 to 65°C

## PACKING LIST

1 RPS310-R680E/Q670E motherboard	
1 COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
1 Serial ATA data cable (Length: 500mm)	332-553001-005G
1 I/O shield	A49-RPS310-000G

## OPTIONAL ITEMS

USB 2.0 port cable (Length: 350/398mm)	A81-001066-016G
USB 3.2 Gen2 port cable (Length: 350mm)	A81-001075-017G
COM port cable (Length: 300mm, 2 x COM ports)	A81-015026-023G
Serial ATA data cable (Length: 500mm, W/LOCK)	332-553001-005G
Serial ATA data cable (Length: 500mm, W/LOCK, 90D)	A81-002128-017G
Thermal solution (For 35W, Height: 29.39mm)	A71-101136-000G
Thermal solution (For 65W, Height: 46mm)	A71-101137-000G
Thermal solution (For 95W/125W, Height: 110mm)	A71-101145-000G
DP to HDMI Dongle	612-D2H13M-000G
M.2-COM4 (M.2 serial port module)	770-M2COM1-000G
M.2-2LAN (M.2 LAN port module)	770-M22LN1-000G
M.2-2PSE (M.2 PSE module)	770-M22PS1-000G