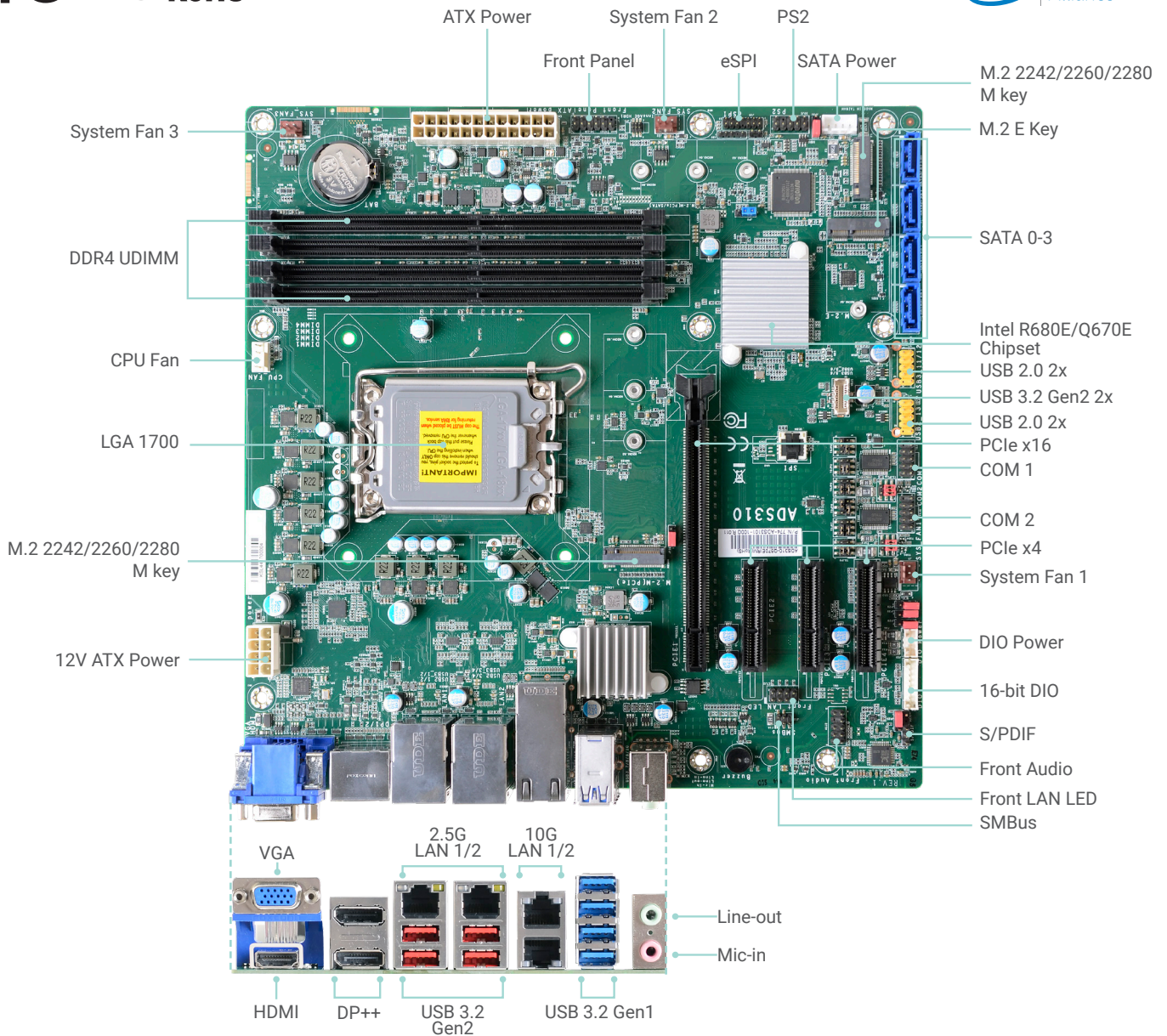


# ADS310-R680E/Q670E

12th Gen Intel® Core™  
Desktop  
microATX



Top View

## KEY FEATURES



### DDR4

4 DDR4 UDIMM up to 128GB



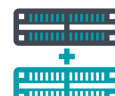
### 4K High Resolution

Supports 4K resolution



### Quad Displays

VGA, 2 DP++, HDMI 2.0a



### Multiple Expansion

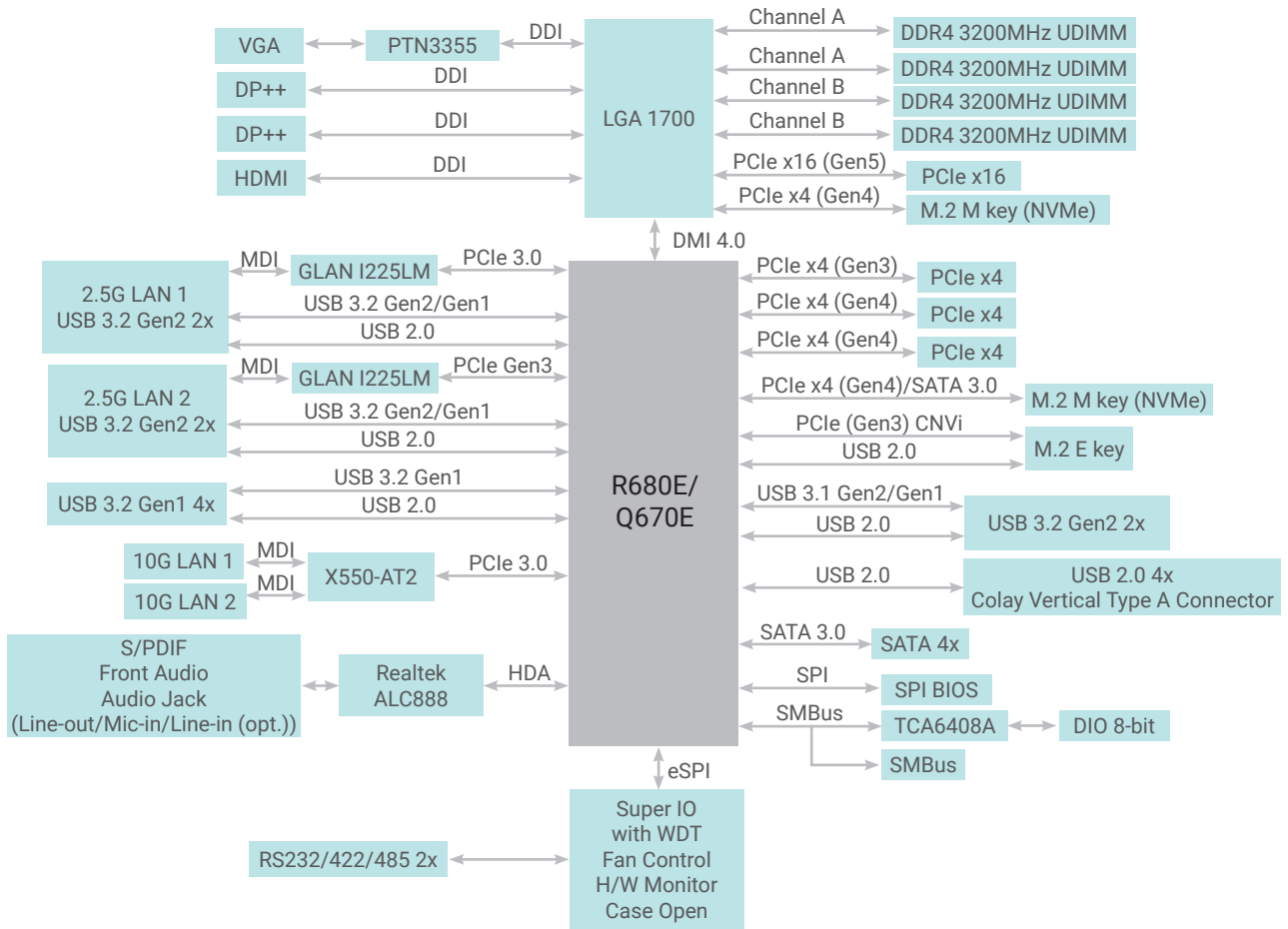
1 PCIe x16, 3 PCIe x4, 1 M.2 E key, 2 M.2 M key, 4 SATA 3.0



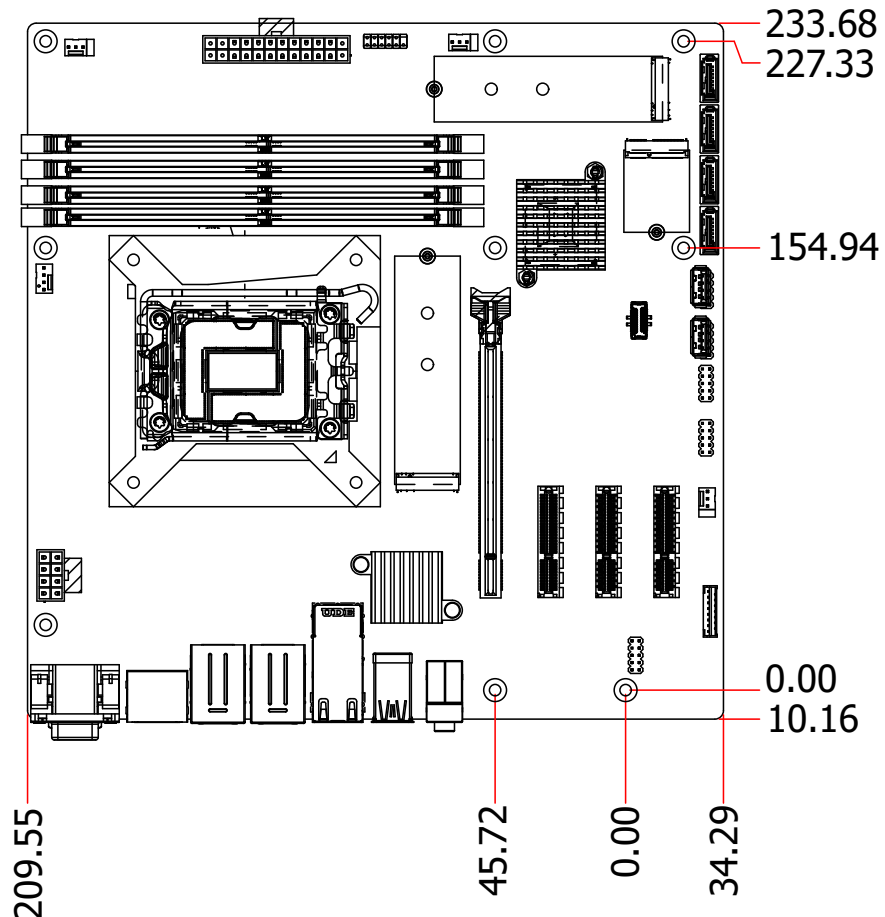
### Rich I/O

2 Intel 10GbE, 2 Intel 2.5GbE, 2 COM, 6 USB 3.2 Gen 2, 4 USB 3.2 Gen 1, 4 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

SYSTEM	<b>Processor</b>	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		
	<b>Chipset</b>	Intel® R680E/Q670E Chipset		
	<b>Memory</b>	Four 288-pin DIMM up to 128GB	Dual Channel DDR4 3200 MHz (ECC support: R680E only)	
	<b>BIOS</b>	AMI SPI 256Mbit		
	GRAPHICS	<b>Controller</b>	Intel® HD Gen 9 Graphics	
<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: MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9		
<b>Display</b>		1 x VGA 2 x DP++ 1 x HDMI 2.0a	VGA: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2304 @ 60Hz HDMI: resolution up to 4096x2160 @ 24Hz	
<b>Quad Displays</b>		VGA + 2 DP++ + HDMI		
EXPANSION		<b>Interface</b>	1 x PCIe x16 (Gen 5) 2 x PCIe x4 (Gen 4) 1 x PCIe x4 (Gen 3) (R680E: x4 signal; Q670E: x1 signal) 1 x M.2 2230 E key (PCIe/USB 2.0/Intel CNVi support) (Discrete Wifi 6E support) 1 x M.2 2242/2260/2280 M key (PCIe x4 Gen3 NVMe/SATA/Intel Optane Memory support) 1 x M.2 2242/2260/2280 M key (only R680E support, PCIe x4 Gen3 NVMe/Intel Optane Memory support)	
	<b>Audio Codec</b>	Realtek ALC888		
	ETHERNET	<b>Controller</b>	2 x Intel® I225LM PCIe (10M/100M/1000Mbps/2.5G) (only Xeon, Core i9/i7/i5 support iAMT) 2 x Intel® x550-AT2 (10 GBASE-T/1 GbE/100 Mbps)	
		<b>Ethernet</b>	2 x 2.5GbE 2 x 10GbE	
	REAR I/O	<b>USB</b>	4 x USB 3.2 Gen 2 4 x USB 3.2 Gen 1	
		<b>Display</b>	2 x DP++ 1 x HDMI 2.0a 1 x VGA	
<b>Audio</b>		1 x Line-out 1 x Mic-in	1 x Line-in (opt. by request, MOQ required)	
INTERNAL I/O		<b>Serial</b>	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)	
	<b>USB</b>	2 x USB 3.2 Gen2 Key B box header 4 x USB 2.0 (2.54mm pitch) (colay vertical Type A, 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)	RAID 0/1/5/10	
	<b>PS/2</b>	1 x PS/2 (2.54mm pitch)		
	<b>DIO</b>	1 x 8-bit 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	
SECURITY	<b>TPM</b>	Nuvoton TPM 2.0 (opt., MOQ required)		
POWER	<b>Type</b>	ATX		
	<b>Connector</b>	8-pin ATX 12V power 24-pin ATX power		
	<b>Consumption</b>	TBD		
	<b>RTC Battery</b>	CR2032 Coin Cell		
OS SUPPORT	<b>Microsoft</b>	Windows 10 IoT Enterprise 64-bit		
	<b>Linux</b>	Linux		

## SPECIFICATION

ENVIRONMENT	Temperature	Operating: -5 to 65°C Storage: -30 to 60°C with RTC Battery; -40 to 85°C without RTC Battery
	Humidity	Operating: 5 to 95% RH Storage: 5 to 95% RH
	MTBF	TBD
MECHANISM	Dimensions	microATX Form Factor 244mm (9.6") x 244mm (9.6")
	Height	PCB: 1.6mm Top Side: TBD Bottom Side: TBD
	Certifications	CE, FCC Class B, RoHS

## ORDERING INFORMATION

Model Name	P/N	Memory	2.5 GbE	10 GbE	RS-232/422/485	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0	TPM 2.0	Power	Thermal	Temp.
ADS310-R680EIRM	770-ADS3101-000G	4 UDIMM	2	-	2	6	10	14	-	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-100G	4 UDIMM	2	-	2	6	10	14	-	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-200G	4 UDIMM	2	2	2	6	10	14	-	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-300G	4 UDIMM	2	2	2	6	10	14	-	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-400G	4 UDIMM	2	-	2	6	10	14	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-500G	4 UDIMM	2	-	2	6	10	14	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-600G	4 UDIMM	2	2	2	6	10	14	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-700G	4 UDIMM	2	2	2	6	10	14	1	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C

## PACKING LIST

1 ADS310-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	2LAN: A49-ADS630-010G 4LAN: A49-ADS630-000G

## 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: 125.3mm)	A71-101138-000G
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