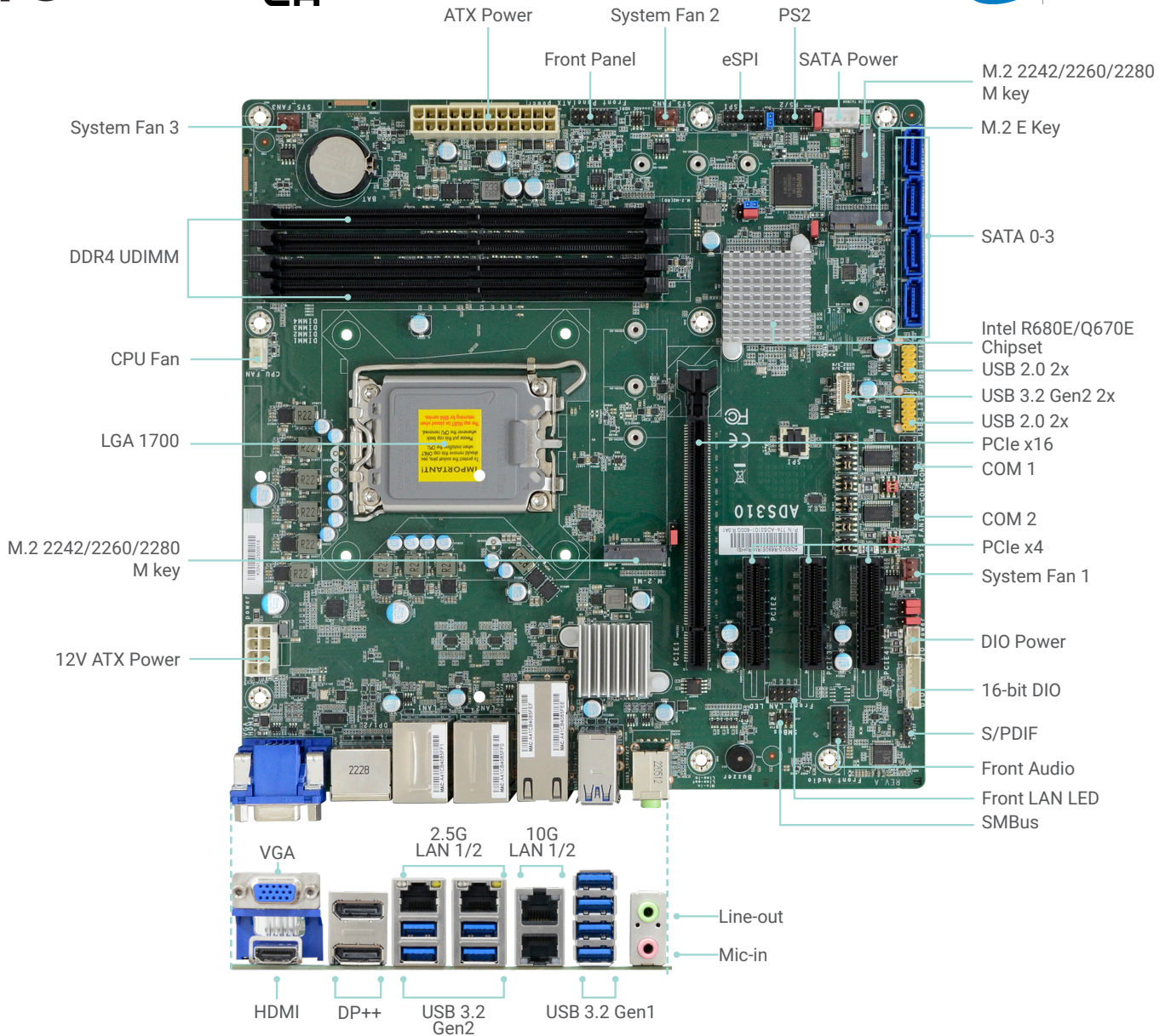


ADS310-R680E/Q670E

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



Top View

KEY FEATURES



DDR4

4 DDR4 UDIMM up to 128GB



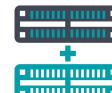
4K High Resolution

Supports 4K resolution



Quad Displays

VGA, 2 DP++, HDMI 2.0a



Multiple Expansion

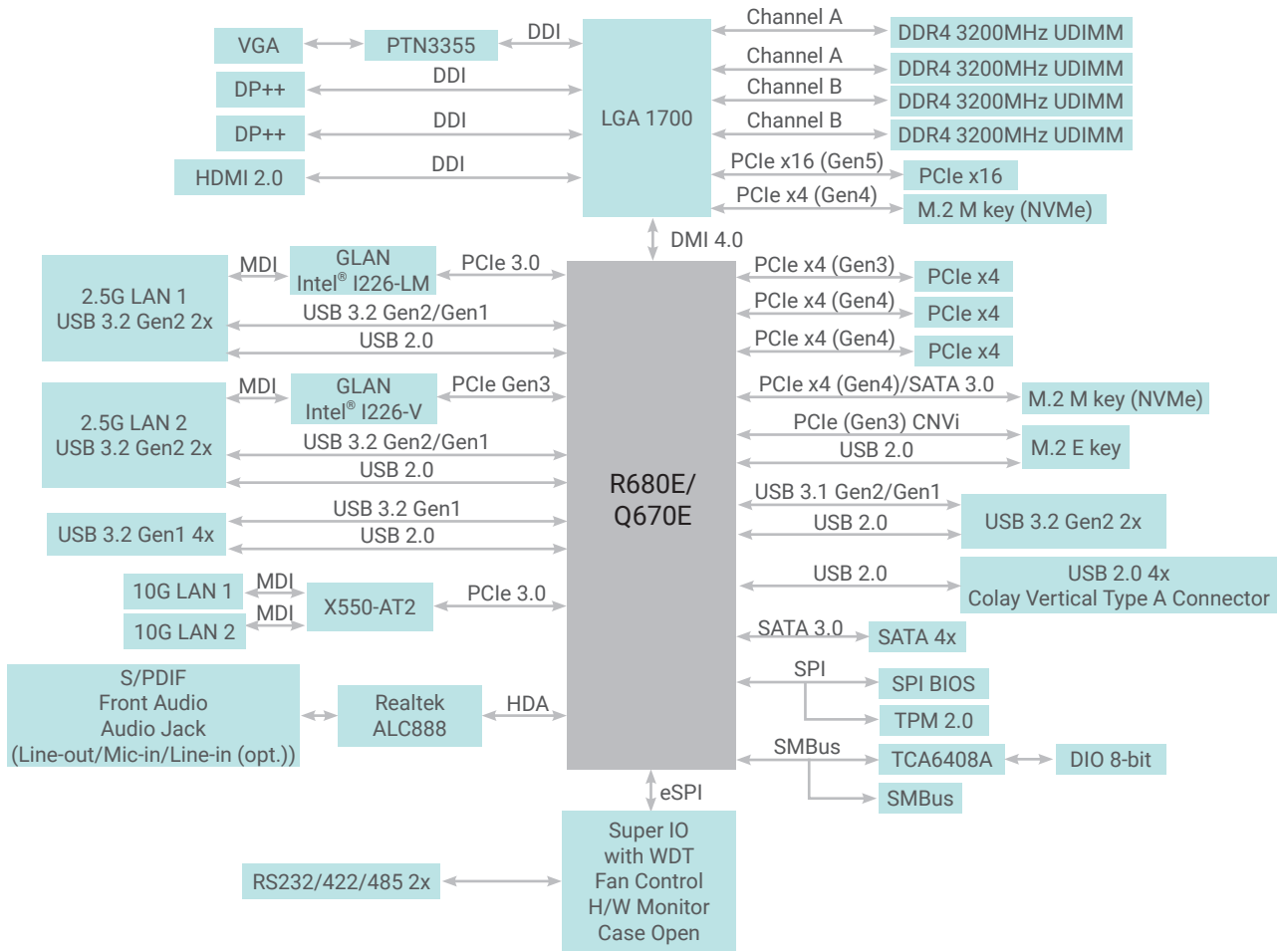
1 PCIe x16, 3 PCIe x4,
1 M.2 E key, 2 M.2 M key,
4 SATA 3.0



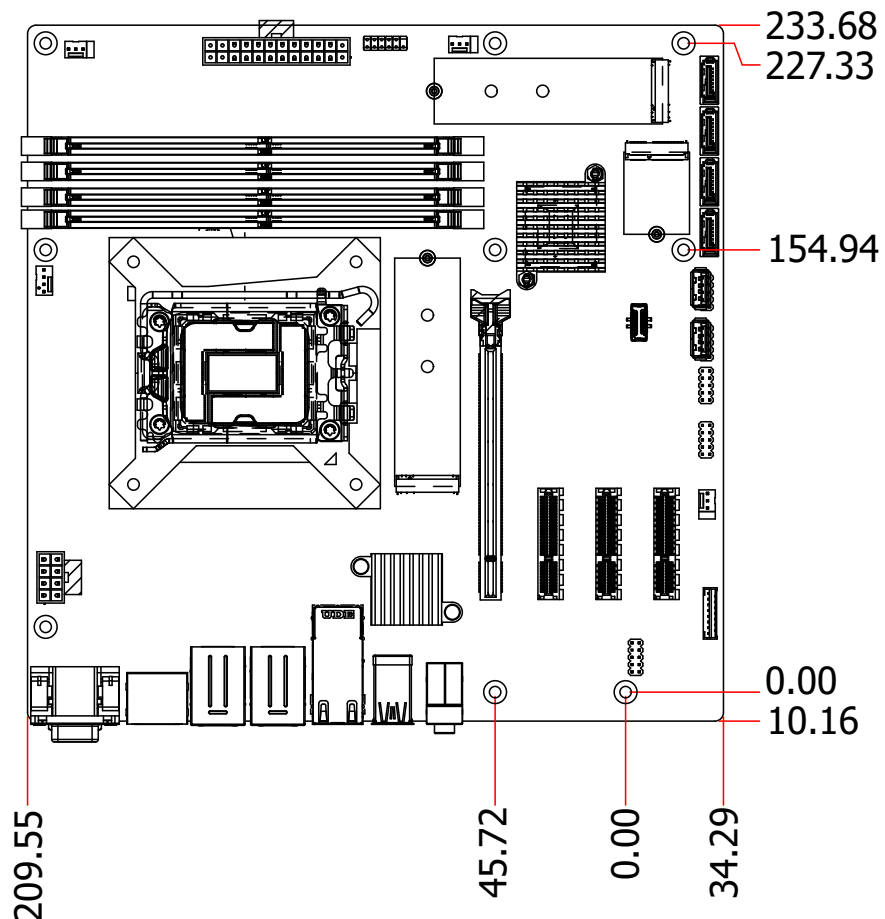
Rich I/O

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	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™ i5-14400 (10 Cores, 20M Cache, up to 2.5 GHz); 65W Intel® Core™ i5-14400T (10 Cores, 20M Cache, up to 1.5 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® 300 (2 Cores, 6M Cache, up to 3.9 GHz); 46W 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 DIMM up to 128GB	Dual Channel DDR4 3200 MHz (ECC support: R680E only)
	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	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 2242/2260/2280 M key (PCIe x4 Gen4 NVMe) 1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe/SATA) 1 x M.2 2230 E key (PCIe/USB 2.0/Intel CNVi support) (Discrete Wifi 6E support)	
AUDIO	Audio Codec	Realtek ALC888	
ETHERNET	Controller	1 x Intel® I226-LM PCIe (10M/100M/1000Mbps/2.5G) (only Xeon, Core i9/i7/i5 support iAMT) 1 x Intel® I226-V PCIe (10M/100M/1000Mbps/2.5G) 2 x Intel® x550-AT2 (10 GBASE-T/1 GbE/100 Mbps) (no support WOL)	
REAR I/O	Ethernet	2 x 2.5GbE 2 x 10GbE	
	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

INTERNAL I/O	Serial	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)	
	USB	2 x USB 3.2 Key B box header (R680E Gen2 ; Q670E Gen1)	
		4 x USB 2.0 (2.54mm pitch) (colay vertical Type A, MOQ required)	
	Audio	1 x Front Audio Header	1 x S/PDIF
	SATA	4 x SATA 3.0 (up to 6Gb/s)	RAID 0/1/5/10
	PS/2	1 x PS/2 (2.54mm pitch)	
	DIO	1 x 8-bit DIO	
	SMBus	1 x SMBus	
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	
SECURITY	TPM	Nuvoton TPM 2.0	
POWER	Type	ATX	
	Connector	8-pin ATX 12V power	
		24-pin ATX power	
	Consumption	Typical: i9-12900E: 3.3V @ 0.090A (0.30W); 5V @ 1.848A (9.24W); 12V @ 1.291A (15.50W) Max.: i9-12900E: 3.3V @ 0.951A (3.14W); 5V @ 4.220A (21.10W); 12V @ 21.833A (262.00W) Typical: i5-12500E: 3.3V @ 0.081A (0.27W); 5V @ 1.962A (9.81W); 12V @ 1.250A (15.00W) Max.: i5-12500E: 3.3V @ 1.021A (3.37W); 5V @ 0.580A (20.90W); 12V @ 13.000A (156.00W)	
RTC Battery	CR2032 Coin Cell		
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit Windows 11 Enterprise	
	Linux	Linux	
ENVIRONMENT	Temperature	Operating: -5°C ~ 65°C	
		Storage: -30°C ~ 60°C with RTC Battery; -40°C ~ 85°C without RTC Battery	
	Humidity	Operating: 5% ~ 95% RH Storage: 5% ~ 95% RH	
	MTBF	490,119 hrs @ 25°C; 270,102 hrs @ 45°C; 165,635 hrs @ 60°C; 118,767 hrs @ 70°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled	
MECHANISM	Dimensions	microATX Form Factor	
		244mm (9.6") x 244mm (9.6")	
	Height	PCB: 1.6mm Top Side: TBD Bottom Side: TBD	
STANDARDS AND CERTIFICATIONS	Certifications	CE, FCC Class B, RoHS, UKCA	

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	4	6	4	N/A	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-100G	4 UDIMM	2	-	2	4	6	4	N/A	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-200G	4 UDIMM	2	2	2	4	6	4	N/A	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-300G	4 UDIMM	2	2	2	4	6	4	N/A	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-400G	4 UDIMM	2	-	2	4	6	4	dTPM	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-500G	4 UDIMM	2	-	2	4	6	4	dTPM	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-R680EIRM	770-ADS3101-600G	4 UDIMM	2	2	2	4	6	4	dTPM	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-700G	4 UDIMM	2	2	2	4	6	4	dTPM	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: 110mm)	A71-101145-000G
Thermal solution (For 10GbE LAN X550 IC Cooler, Height: 35mm) (Standard X550 default have heatsink, only when with 125W CPU, need change heatsink to cooler.)(opt., MOQ required)	A71-100201-000G
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