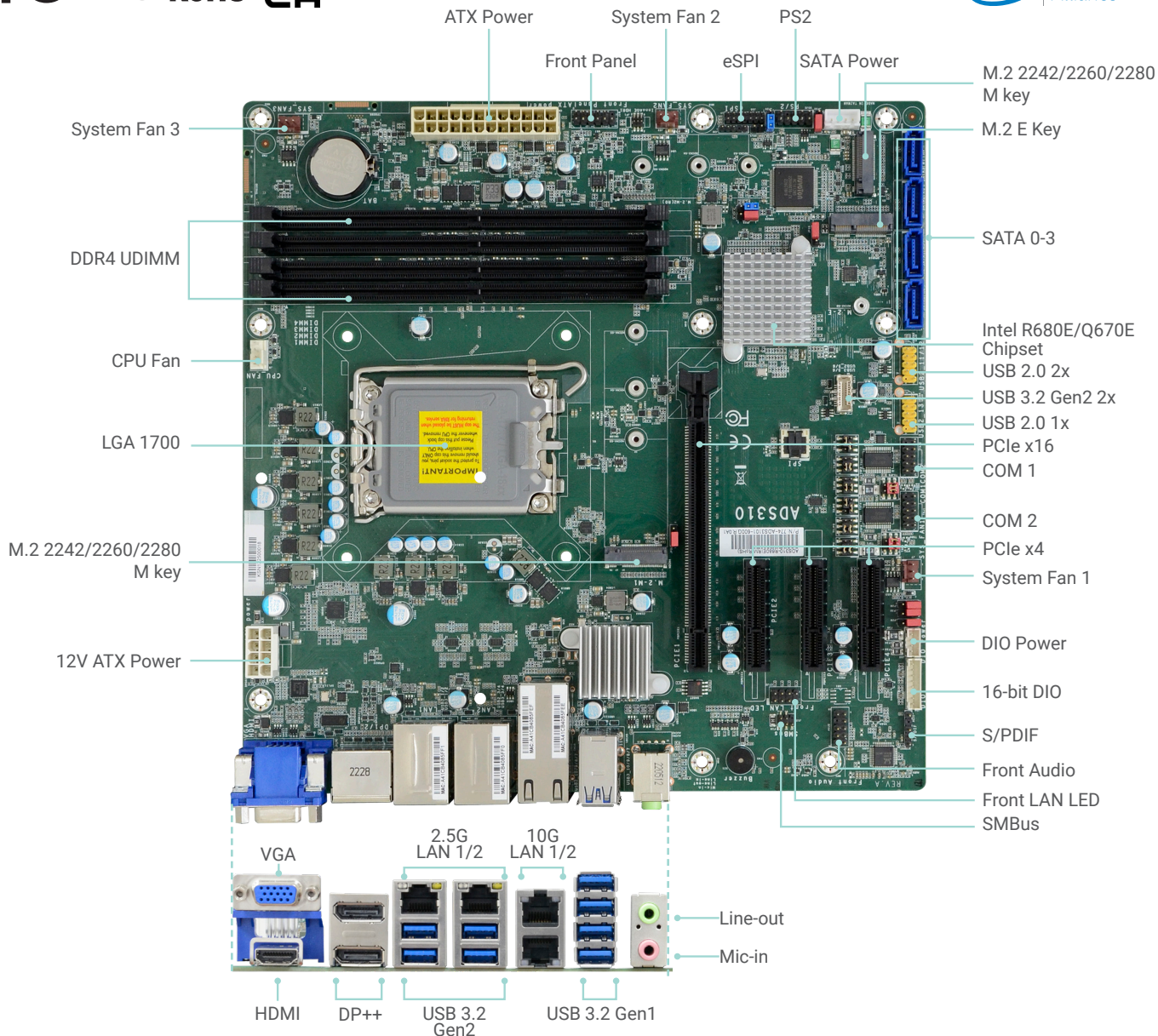


# ADS310-R680E ADS310-Q670E

Desktop

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



Top View  
(ADS310-R680E)

## KEY FEATURES



### DDR4

4 DDR4 UDIMM up to 128GB



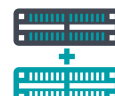
### 4K High Resolution

Supports 4K resolution



### Quad Displays

VGA, 2 DP++, HDMI 2.0a



### Multiple Expansion

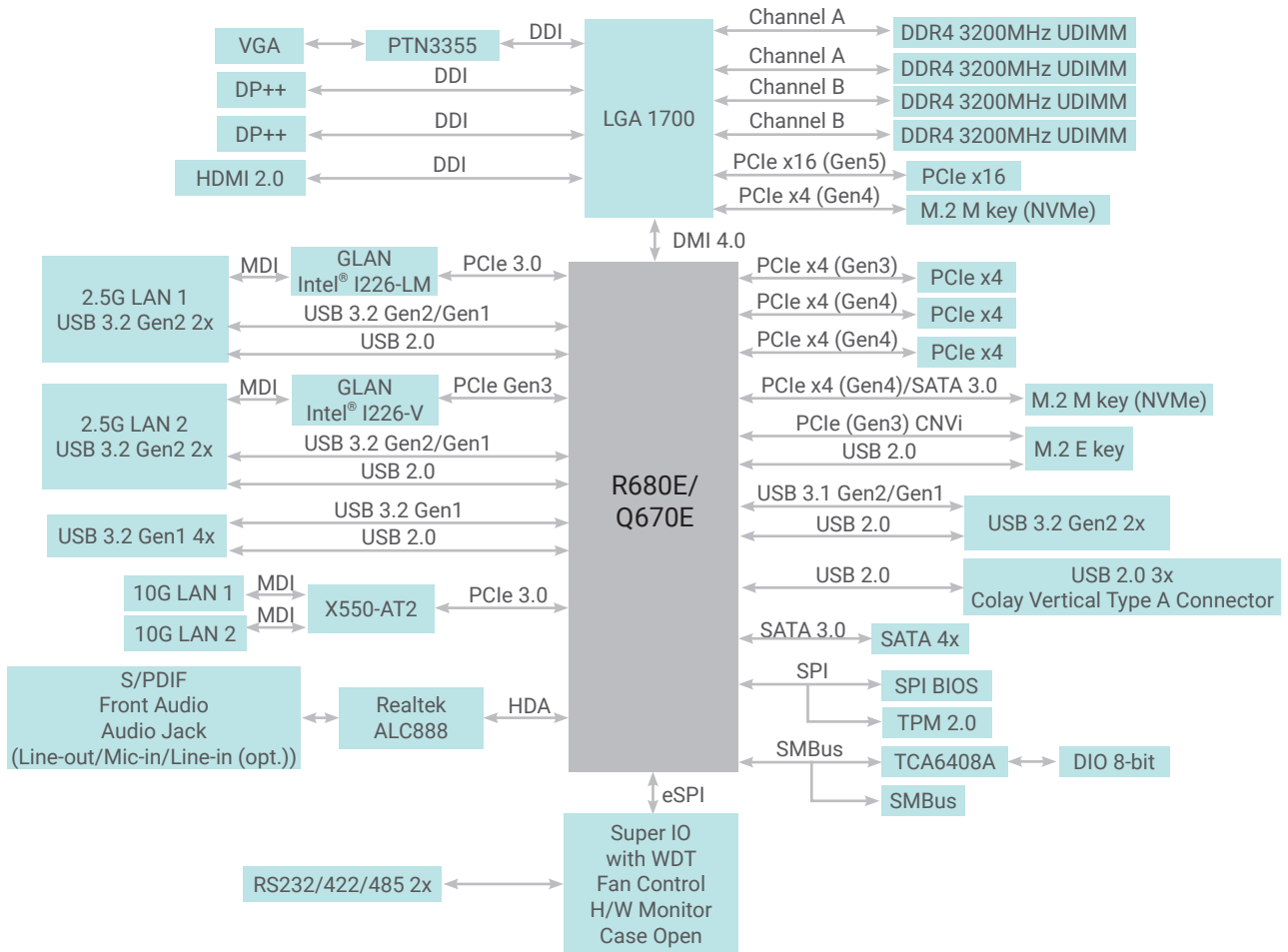
1 PCIe x16, 3 PCIe x4,  
1 M.2 E key, 2 M.2 M key,  
4 SATA 3.0



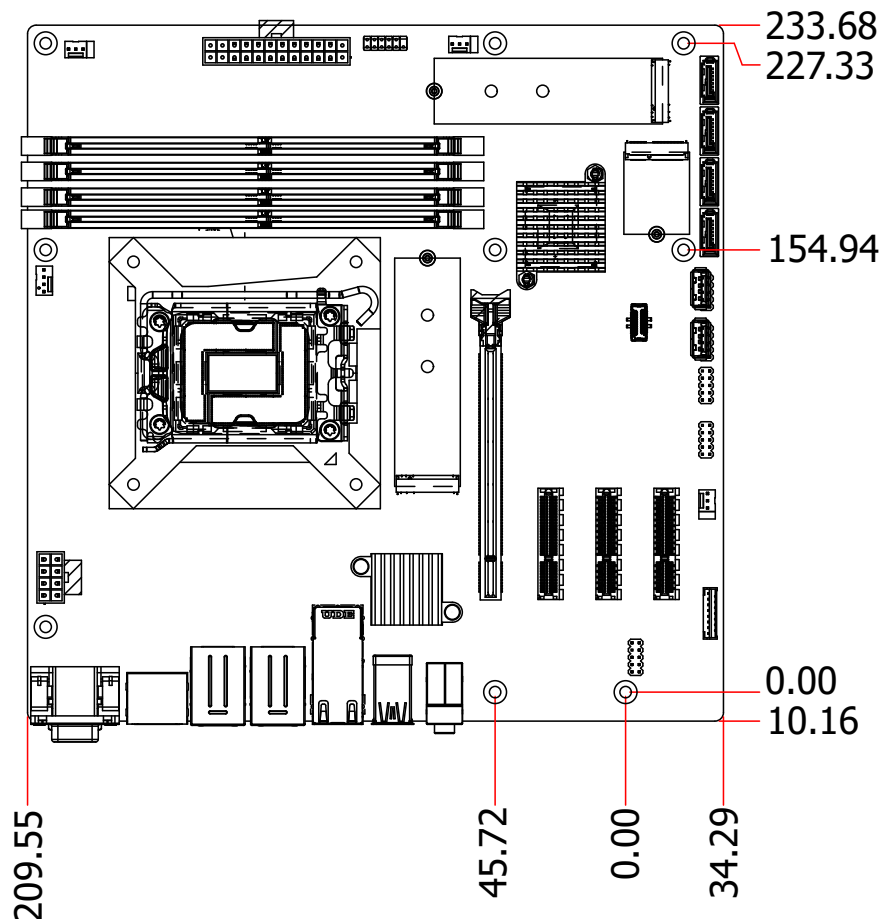
### Rich I/O

2 Intel 10GbE, 2 Intel 2.5GbE, 2 COM, 6 USB 3.2 Gen 2, 4 USB 3.2 Gen 1, 3 USB 2.0

## BLOCK DIAGRAM



## MECHANICAL DRAWING



## SPECIFICATION

Model Name		ADS310-R680E	ADS310-Q670E
SYSTEM	Processor	<p>14th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W</p> <p>Intel® Core™ I9-14900 (24 Cores, 36M Cache, up to 5.8 GHz); 65W            Intel® Core™ I9-14900T (24 Cores, 36M Cache, up to 5.5 GHz); 35W            Intel® Core™ I7-14700 (20 Cores, 33M Cache, up to 5.4 GHz); 65W            Intel® Core™ I7-14700T (20 Cores, 33M Cache, up to 5.2 GHz); 35W            Intel® Core™ I5-14500 (14 Cores, 24M Cache, up to 5 GHz); 65W            Intel® Core™ I5-14500T (14 Cores, 24M Cache, up to 4.8 GHz); 35W            Intel® Core™ I5-14400 (10 Cores, 20M Cache, up to 4.7 GHz); 65W            Intel® Core™ I5-14400T (10 Cores, 20M Cache, up to 4.5 GHz); 35W            Intel® Core™ I3-14100 (4 Cores, 12M Cache, up to 4.7 GHz); 60W            Intel® Core™ I3-14100T (4 Cores, 12M Cache, up to 4.4 GHz); 35W            Intel® Core™ I300 (2 Cores, 6M Cache, up to 3.9 GHz); 46W            Intel® Core™ I300T (2 Cores, 6M Cache, up to 3.4 GHz); 35W</p> <p>13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W</p> <p>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</p> <p>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 Chipset	Intel® Q670E Chipset
	Memory	Four 288-pin DIMM up to 128GB (ECC/Non-ECC) Dual Channel DDR4 3200 MHz	Four 288-pin DIMM up to 128GB (Non-ECC) Dual Channel DDR4 3200 MHz
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
	GRAPHICS	Controller	Intel® UHD Graphics 700 series
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 <b>HW Encode:</b> MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9	OpenGL 4.5, DirectX 12, OpenCL 2.1 <b>HW Decode:</b> AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 <b>HW Encode:</b> MPEG2, AVC/H264, JPEG, HEVC/H265, VP8, VP9
	Display	1 x VGA 2 x DP++ 1 x HDMI 2.0a <b>VGA:</b> resolution up to 1920x1200 @ 60Hz <b>DP++:</b> resolution up to 4096x2304 @ 60Hz <b>HDMI:</b> resolution up to 4096x2160 @ 24Hz	1 x VGA 2 x DP++ 1 x HDMI 2.0a <b>VGA:</b> resolution up to 1920x1200 @ 60Hz <b>DP++:</b> resolution up to 4096x2304 @ 60Hz <b>HDMI:</b> resolution up to 4096x2160 @ 24Hz
	Quad Displays	VGA + 2 DP++ + HDMI	VGA + 2 DP++ + HDMI
EXPANSION	Interface	1 x PCIe x16 (Gen 5) 2 x PCIe x4 (Gen 4) <b>1 x PCIe x4 (Gen 3) (x4 signal)</b>	1 x PCIe x16 (Gen 5) 2 x PCIe x4 (Gen 4) <b>1 x PCIe x4 (Gen 3) (x1 signal)</b>
	M.2	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)	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	Realtek ALC888

## SPECIFICATION

Model Name		ADS310-R680E	ADS310-Q670E
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)	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		
REAR I/O	Ethernet	2 x 2.5GbE 2 x 10GbE	2 x 2.5GbE 2 x 10GbE
	USB	4 x USB 3.2 Gen 2 4 x USB 3.2 Gen 1	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	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)	1 x Line-out 1 x Mic-in 1 x Line-in (opt. by request, MOQ required)
INTERNAL I/O	Serial	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)	2 x RS-232/422/485 (RS-232 w/ power) (2.54mm pitch)
	USB	2 x USB 3.2 Key B box header (Gen2) 3 x USB 2.0 (2.54mm pitch) (colay vertical Type A, MOQ required)	2 x USB 3.2 Key B box header (Gen1) 3 x USB 2.0 (2.54mm pitch) (colay vertical Type A, MOQ required)
	Audio	1 x Front Audio Header 1 x S/PDIF	1 x Front Audio Header 1 x S/PDIF
	SATA	4 x SATA 3.0 (up to 6Gb/s) RAID 0/1/5/10	4 x SATA 3.0 (up to 6Gb/s) RAID 0/1/5/10
	PS/2	1 x PS/2 (2.54mm pitch)	1 x PS/2 (2.54mm pitch)
	DIO	1 x 8-bit DIO	1 x 8-bit DIO
	SMBus	1 x SMBus	1 x SMBus
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	Nuvoton TPM 2.0	Nuvoton TPM 2.0
POWER	Type	ATX	ATX
	Connector	8-pin ATX 12V power 24-pin ATX power	8-pin ATX 12V power 24-pin ATX power
	Consumption	<b>Typical:</b> i9-12900E: 3.3V @ 0.090A (0.30W); 5V @ 1.848A (9.24W); 12V @ 1.291A (15.50W) <b>Max.:</b> i9-12900E: 3.3V @ 0.951A (3.14W); 5V @ 4.220A (21.10W); 12V @ 21.833A (262.00W)	<b>Typical:</b> i9-12900E: 3.3V @ 0.090A (0.30W); 5V @ 1.848A (9.24W); 12V @ 1.291A (15.50W) <b>Max.:</b> i9-12900E: 3.3V @ 0.951A (3.14W); 5V @ 4.220A (21.10W); 12V @ 21.833A (262.00W)
		<b>Typical:</b> i5-12500E: 3.3V @ 0.081A (0.27W); 5V @ 1.962A (9.81W); 12V @ 1.250A (15.00W) <b>Max.:</b> i5-12500E: 3.3V @ 1.021A (3.37W); 5V @ 0.580A (20.90W); 12V @ 13.000A (156.00W)	<b>Typical:</b> i5-12500E: 3.3V @ 0.081A (0.27W); 5V @ 1.962A (9.81W); 12V @ 1.250A (15.00W) <b>Max.:</b> i5-12500E: 3.3V @ 1.021A (3.37W); 5V @ 0.580A (20.90W); 12V @ 13.000A (156.00W)
RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell	
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit Windows 11 Enterprise	Windows 10 IoT Enterprise 64-bit Windows 11 Enterprise
	Linux	Linux	Linux
ENVIRONMENT	Temperature	<b>Operating:</b> -5°C ~ 65°C <b>Storage:</b> -30°C ~ 60°C with RTC Battery; -40°C ~ 85°C without RTC Battery	<b>Operating:</b> -5°C ~ 65°C <b>Storage:</b> -30°C ~ 60°C with RTC Battery; -40°C ~ 85°C without RTC Battery
	Humidity	<b>Operating:</b> 5% ~ 95% RH <b>Storage:</b> 5% ~ 95% RH	<b>Operating:</b> 5% ~ 95% RH <b>Storage:</b> 5% ~ 95% RH
	MTBF	490,119 hrs @ 25°C; 270,102 hrs @ 45°C; 165,635 hrs @ 60°C; 118,767 hrs @ 70°C <b>Calculation Model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC - Ground Benign, Controlled	490,119 hrs @ 25°C; 270,102 hrs @ 45°C; 165,635 hrs @ 60°C; 118,767 hrs @ 70°C <b>Calculation Model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC - Ground Benign, Controlled
MECHANISM	Dimensions	microATX Form Factor 244mm (9.6") x 244mm (9.6")	microATX Form Factor 244mm (9.6") x 244mm (9.6")
	Height	<b>PCB:</b> 1.6mm <b>Top Side:</b> TBD <b>Bottom Side:</b> TBD	<b>PCB:</b> 1.6mm <b>Top Side:</b> TBD <b>Bottom Side:</b> TBD
STANDARDS AND CERTIFICATIONS	Certifications	CE, FCC Class B, RoHS, UKCA	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	3	N/A	24-pin ATX/ 8-pin ATX 12V	Active	-5 to 65°C
ADS310-Q670EIRM	770-ADS3101-100G			-					N/A			
ADS310-R680EIRM	770-ADS3101-200G			2					N/A			
ADS310-Q670EIRM	770-ADS3101-300G			2					N/A			
ADS310-R680EIRM	770-ADS3101-400G			-					dTPM			
ADS310-Q670EIRM	770-ADS3101-500G			-					dTPM			
ADS310-R680EIRM	770-ADS3101-600G			2					dTPM			
ADS310-Q670EIRM	770-ADS3101-700G			2					dTPM			

## 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	
-2 LAN	A49-ADS630-010G
-4 LAN	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