

Desktop

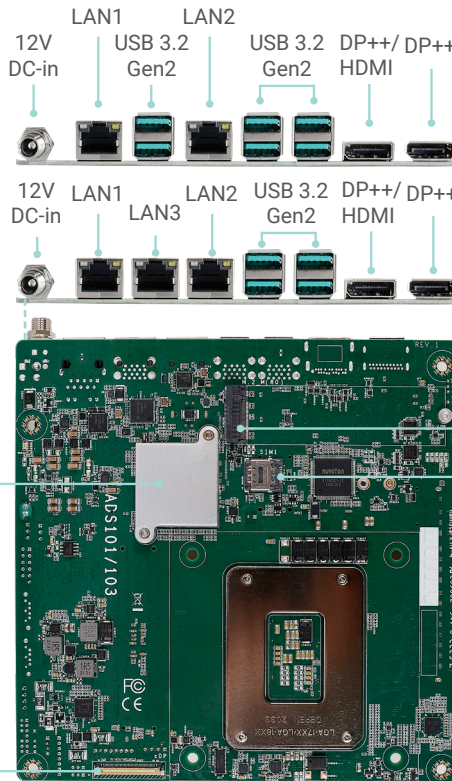
# ADS101/ADS103

13/12th Gen Intel® Core™  
Thin Mini-ITX

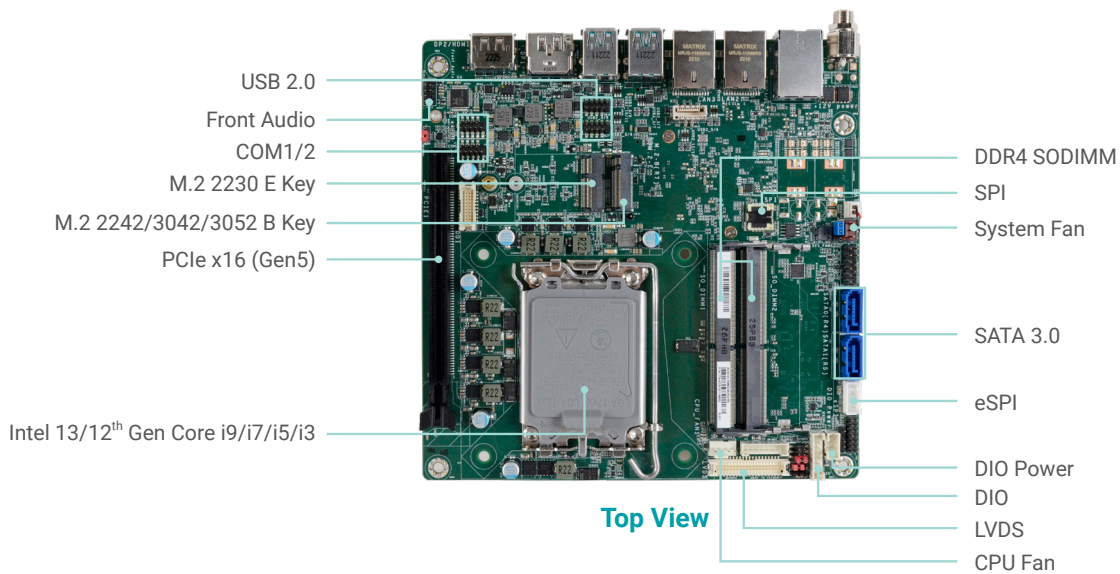


2 LAN / 6 USB

3 LAN / 4 USB



Bottom View



Top View

## KEY FEATURES



### DDR4

2 DDR4 SODIMM 3200 MHz up to 64GB



### 4K High Resolution

Supports 4K/ 2K resolution



### Quad Displays

1 DP++, 1 DP++/HDMI, 1 LVDS/eDP, 1 DFI display extension port (DP/HDMI/VGA available)



### Multiple Expansion

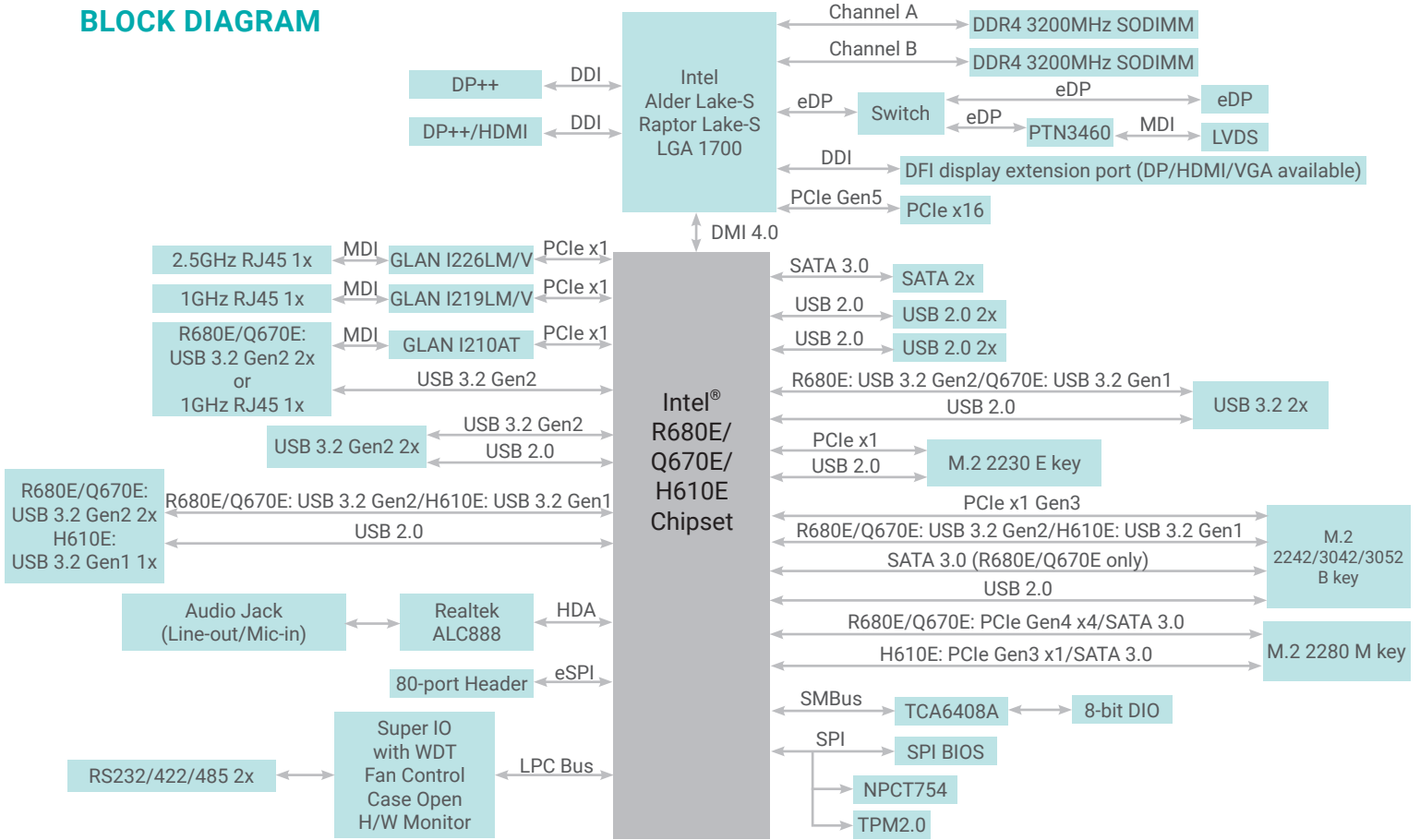
1 x PCIe x16, 1 x M.2 2230 E Key, 1 x M.2 2280 M Key, 1 x M.2 2242/3042/3052 B Key



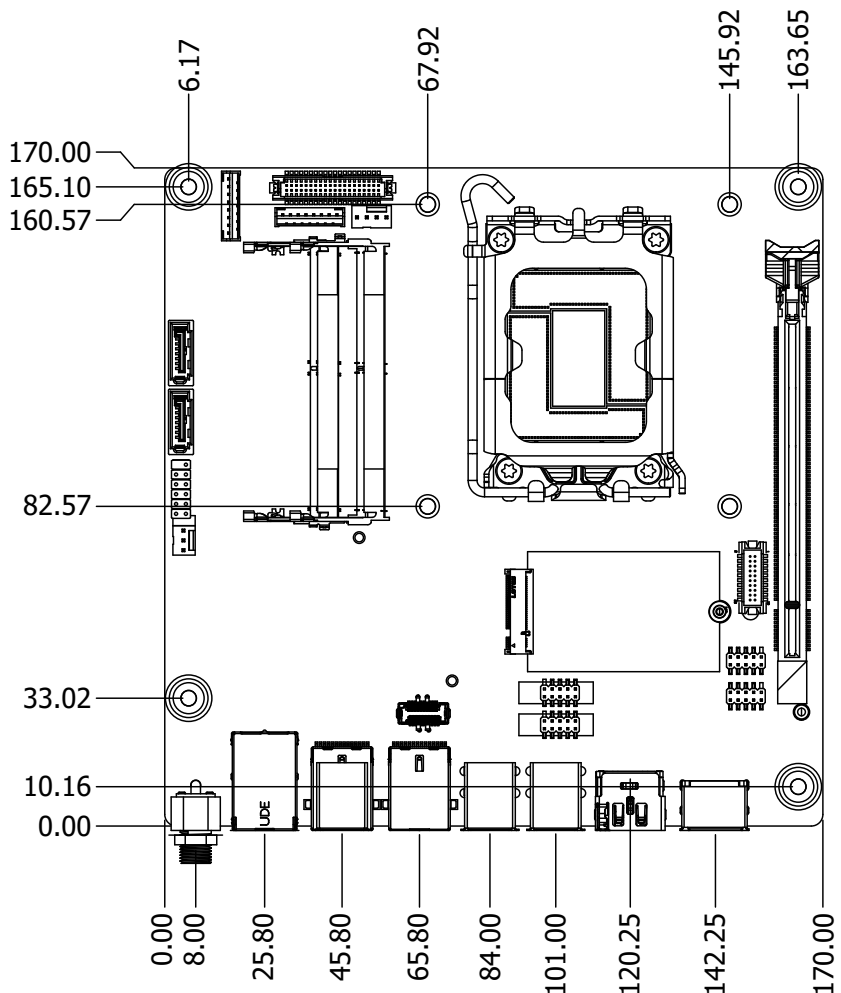
### Rich I/O

1 Intel 2.5GbE, 2 COM, up to 2 Intel GbE, up to 6 USB 3.2 Gen2, 2 USB 3.2 Gen1, 4 USB 2.0, 2 SATA 3.0

# BLOCK DIAGRAM



# MECHANICAL DRAWING



## SPECIFICATION

<b>SYSTEM</b>	<b>Processor</b>	<p>13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 65W            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 65W            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>	
	<b>Chipset</b>	Intel® R680E/Q670E/H610E Chipset	
	<b>Memory</b>	Two 260-pin SODIMM up to 64GB	Dual Channel DDR4 3200 MHz (ECC support: R680E only)
	<b>BIOS</b>	AMI SPI 256Mbit	
	<b>GRAPHICS</b>	<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 DP++ 1 x DP++/HDMI 1 x LVDS/eDP 1 x DFI display extension port (DP/HDMI/VGA available)	DP++: resolution up to 4096x2304 @60Hz LVDS: resolution up to 1920x1200 @ 60Hz eDP: resolution up to 4096x2160 @ 60Hz
	<b>Quad Displays</b>	DP++ + DP++/HDMI + LVDS/eDP + DFI display extension port (DP/HDMI/VGA available)	
<b>EXPANSION</b>	<b>Interface</b>	1 x PCIe x16 (Gen 5)	
		1 x M.2 2230 E Key (USB/PCIe x1)	
		R680E/Q670E: 1 x M.2 2280 M Key (PCIe Gen4 x4/SATA)	
		H610E: 1 x M.2 2280 M Key (PCIe Gen3 x1/SATA)	
		R680E/Q670E: 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/SATA/USB 3.2 Gen2/USB 2.0) H610E: 1 x M.2 2242/3042/3052 B Key (SATA/USB 3.2 Gen1/USB 2.0)	
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC888	
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I226LM/V PCIe(10/100/1000/2.5G speeds) 1 x Intel® I219LM PHY(10/100/1000 speeds) (support vPro/AMT) (H610E: I219V no supporting vPro/AMT) 1 x Intel® I210AT PCIe(10/100/1000 speeds)(Opt.)	
<b>REAR I/O</b>	<b>Ethernet</b>	1 x 2.5GbE (RJ-45) 1 x GbE (RJ-45) (2x by Opt.)	
	<b>USB</b>	R680E/Q670E: 4 x USB 3.2 Gen2 (Opt.: up to 6 x USB 3.2 Gen2) H610E: 2 x USB 3.2 Gen2 +1 x USB 3.2 Gen1	
	<b>Display</b>	1 x DP++ 1 x DP++/HDMI 1 x DFI display extension for (DP/HDMI/VGA) (Opt.)	
	<b>Audio</b>	1 x Line-out 1 x Mic-in	
<b>INTERNAL I/O</b>	<b>Serial</b>	2 x RS-232/422/485 (without power) (2.54mm pitch)	
	<b>USB</b>	4 x USB 2.0 (2.54mm pitch) 2 x USB 3.2 Gen1 (R680E/Q670E only)	
	<b>Display</b>	1 x LVDS header 1 x eDP connector	
	<b>Audio</b>	1 x Front Audio Header	
	<b>SATA</b>	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power	RAID 0/1/5/10 (w/ M.2 Key-M/B slot + 2 SATA Conn.)
	<b>DIO</b>	1 x 8-bit DIO	

## SPECIFICATION

<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>	dTPM2.0	
<b>POWER</b>	<b>Type</b>	Single 12V +/-10% DC (ADS101)	Wide Range 15~36V (ADS103)
	<b>Connector</b>	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	
	<b>Consumption</b>	TBD	
	<b>RTC Battery</b>	CR2032 Coin Cell	
<b>OS SUPPORT</b>	<b>Microsoft</b>	Windows 10 IoT Enterprise 64-bit	
	<b>Linux</b>	Linux	
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: -5 to 65°C	
		Storage: -40 to 85°C	
	<b>Humidity</b>	Operating: 5 to 90% RH	
Storage: 5 to 90% RH			
<b>MTBF</b>	TBD		
<b>MECHANISM</b>	<b>Dimensions</b>	Mini-ITX Form Factor, 170mm (6.7") x 170mm (6.7")	
	<b>Height</b>	PCB: 1.6mm Top Side: 33.3mm, Bottom Side: 4mm	
<b>STANDARDS AND CERTIFICATION</b>	<b>Certifications</b>	CE, FCC Class B	

## ORDERING INFORMATION

Model Name	P/N	Description
ADS101-R680DB	770-ADS1011-000G	ADS101-R680DB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 2 LAN, 6 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 12V DC-Jack, -5 to 65°C
ADS101-Q670DB	770-ADS1011-100G	ADS101-Q670DB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 2 LAN, 6 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 12V DC-Jack, -5 to 65°C
ADS101-H610IB	770-ADS1011-200G	ADS101-H610IB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 3 LAN, 2 USB 3.2 Gen2, 1 USB3.2 Gen1), Internal I/O (M.2 M/B/E Key, 4 USB 2.0), dTPM, 12V DC-Jack, -5 to 65°C
ADS101-R680IB	770-ADS1011-300G	ADS101-R680IB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 3 LAN, 4 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 12V DC-Jack, -5 to 65°C
ADS103-R680DB	770-ADS1031-000G	ADS103-R680DB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 2 LAN, 6 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 15~36V DC-IN, -5 to 65°C
ADS103-Q670DB	770-ADS1031-100G	ADS103-Q670DB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 2 LAN, 6 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 15~36V DC-IN, -5 to 65°C
ADS103-H610IB	770-ADS1031-200G	ADS103-H610IB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 3 LAN, 4 USB 3.2 Gen2, 1 USB3.2 Gen1), Internal I/O (M.2 M/B/E Key, 4 USB 2.0), dTPM, 15~36V DC-IN, -5 to 65°C
ADS103-R680IB	770-ADS1031-300G	ADS103-R680IB, 2 DDR4, Rear I/O (1DP++, 1 DP++/HDMI, 3 LAN, 4 USB 3.2 Gen2), Internal I/O (M.2 M/B/E Key, 2 USB3.2 Gen1, 4 USB 2.0), dTPM, 15~36V DC-IN, -5 to 65°C

## PACKING LIST

1 ADS101/ADS103 motherboard	
1 Serial ATA data & power cable w/lock (Length: 300mm)	A81-002101-016G
1 COM port cable (Length: 250mm, 1 x COM port)	A81-015011-001G
1 I/O shield	
- w/ icon (3LAN/4USB)	A49-ADS101-000G
- w/ icon (2LAN/6USB)	A49-ADS101-010G

## OPTIONAL ITEMS

COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
Serial ATA data & power cable w/lock (Length: 300mm)	A81-002101-016G
Thermal solution (For 35W, Height: 29.4mm)	A71-101136-000G
Thermal solution (For 65W, Height: 46mm)	A71-101137-000G
DT122 Chassis	761-DT1220-200G
EXT-VGA module board	770-DP2VGA-000G
EXT-HDMI module board	770-DP2HDM-000G
EXT-DP module board	770-EXTDP1-000G