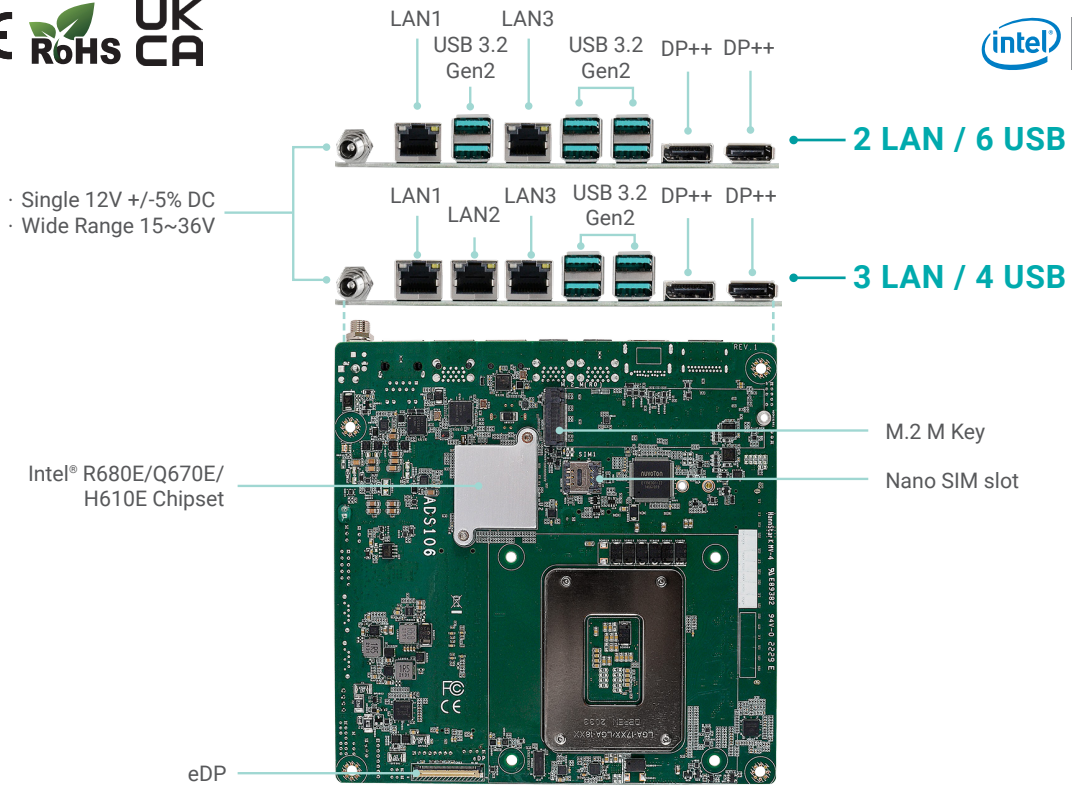
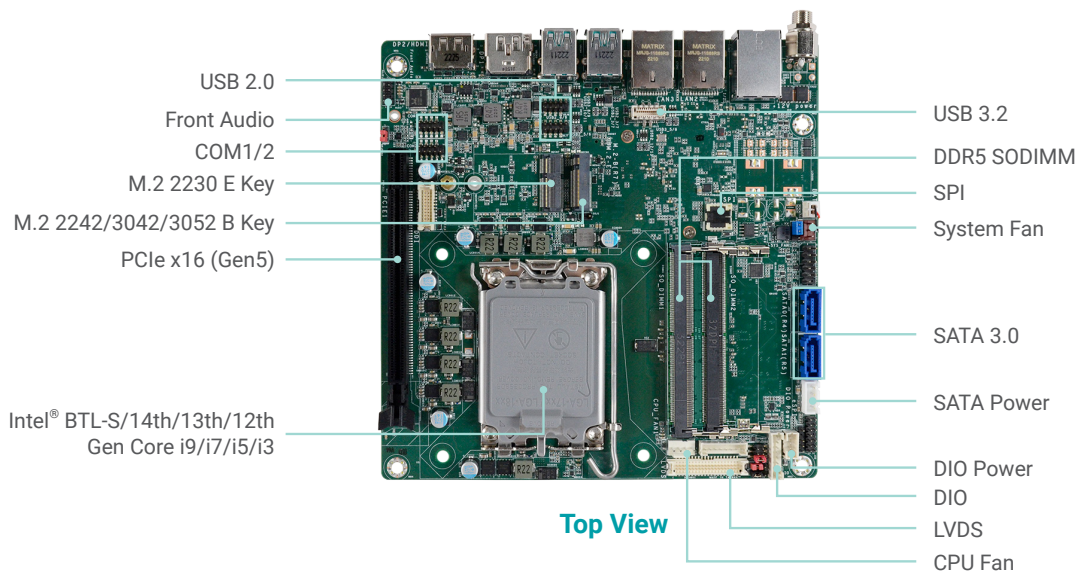


# ADS106- R680E/Q670E/H610E

BTL-S/14th/13th/12th Gen Intel® Core™  
Desktop  
Thin Mini-ITX



Bottom View



Top View

## KEY FEATURES



### DDR5

2 DDR5 SODIMM  
5600MHz up to 64GB



### 4K High Resolution

Supports 4K/ 2K  
resolution



### Quad Displays

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



### Multiple Expansion

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

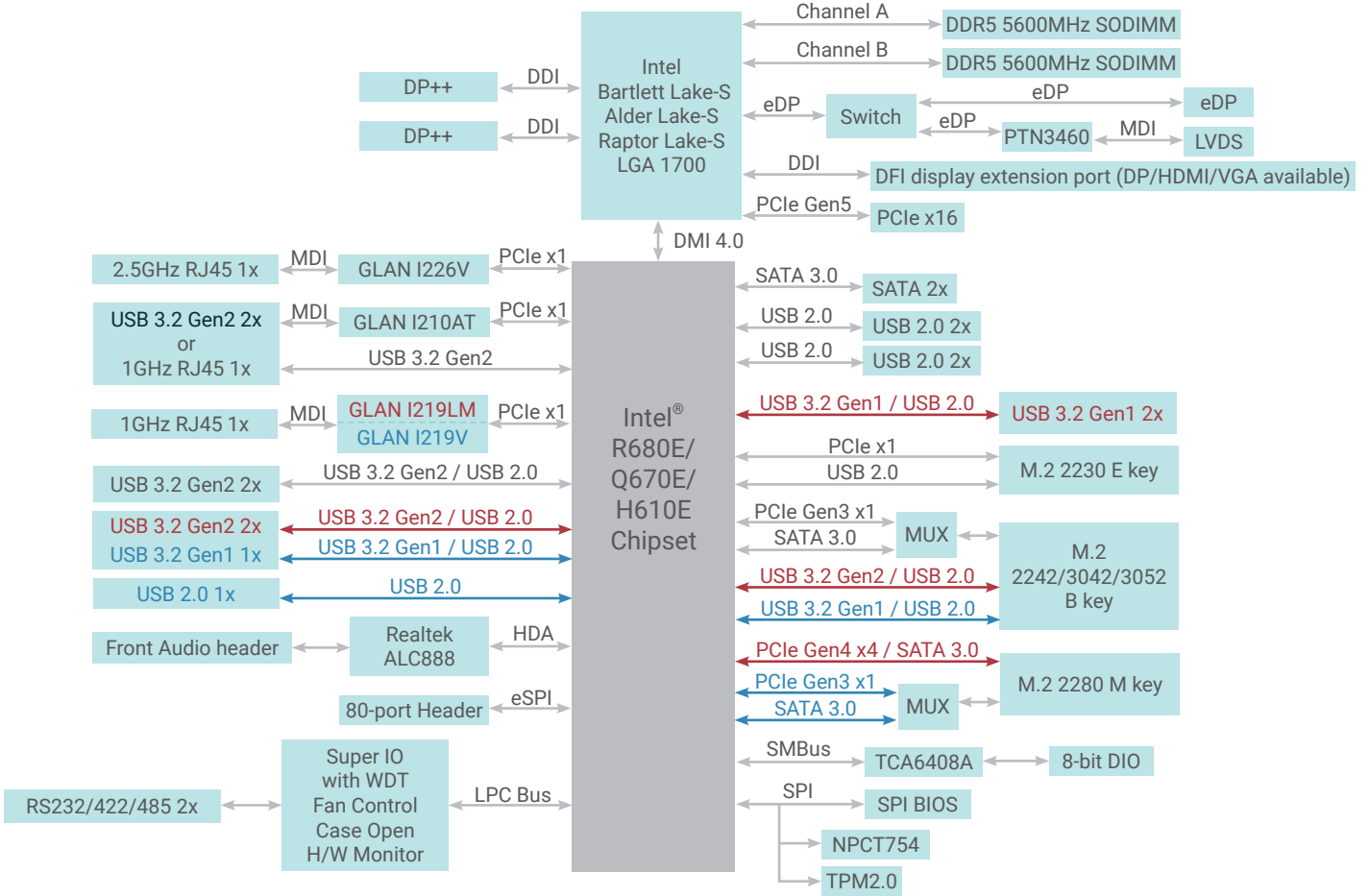


### Rich I/O

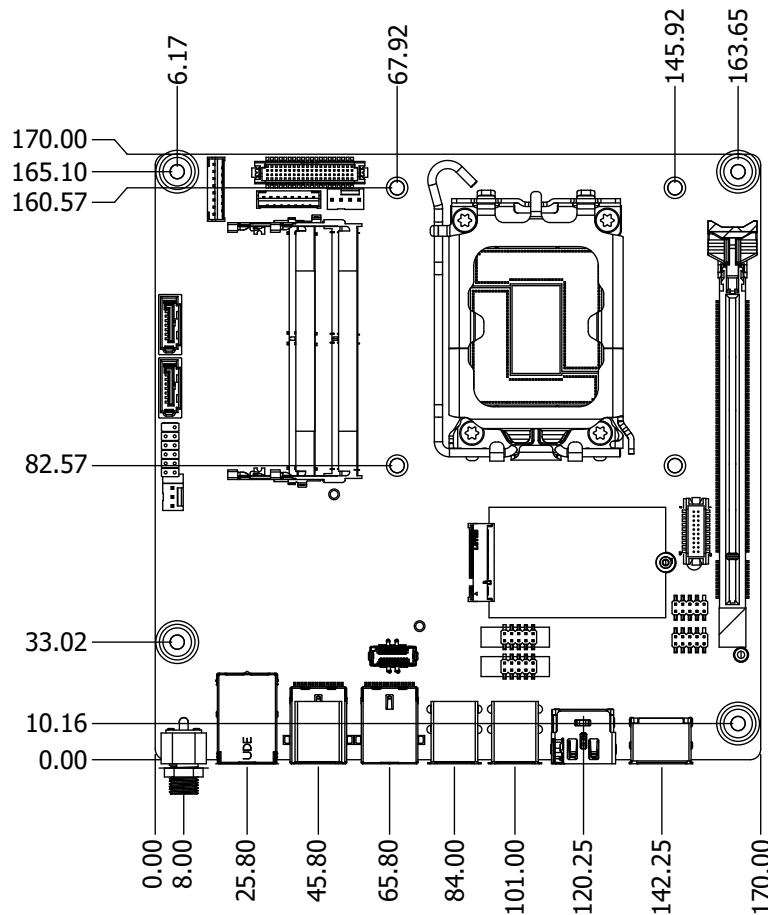
1 Intel 2.5GbE, 2 COM,  
up to 2 Intel GbE,  
up to 6 USB 3.2 Gen2,  
2 USB 3.2 Gen1,  
4 USB 2.0, 2 SATA 3.0

# BLOCK DIAGRAM

— R680E/Q670E Only  
— H610E Only



# MECHANICAL DRAWING



# SPECIFICATION

Model Name		ADS106-R680E	ADS106-Q670E	ADS106-H610E
SYSTEM	Processor	<p>Intel® Bartlett Lake-S Hybrid LGA 1700 Socket Processors</p> <p>Intel® Core™ 7 251E (24 Cores, 36M Cache, up to 5.6 GHz); 65W                      Intel® Core™ 7 251TE (24 Cores, 36M Cache, up to 5.4 GHz); 45W                      Intel® Core™ 5 221E (14 Cores, 24M Cache, up to 5.2 GHz); 65W                      Intel® Core™ 5 221TE (14 Cores, 24M Cache, up to 5.0 GHz); 45W                      Intel® Core™ 5 211E (10 Cores, 20M Cache, up to 4.9 GHz); 65W                      Intel® Core™ 5 211TE (10 Cores, 20M Cache, up to 4.8 GHz); 45W                      Intel® Core™ 3 201E (4 Cores, 12M Cache, up to 4.8 GHz); 60W                      Intel® Core™ 3 201TE (4 Cores, 12M Cache, up to 4.6 GHz); 45W                      Intel® 300 (2 Cores, 6M Cache, up to 3.9 GHz); 45W                      Intel® 300T (2 Cores, 6M Cache, up to 3.4 GHz); 35W</p> <p>14th Generation Intel® LGA 1700 Socket Processors, TDP support up to 65W</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 5.0 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® 300 (2 Cores, 6M Cache, 3.9 GHz); 46W</p> <p>13th Generation Intel® LGA 1700 Socket Processors, TDP support up to 65W</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 65W</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	Intel® H610E Chipset
	Memory	Two 260-pin SODIMM up to 64GB Dual Channel DDR5 5600MHz (ECC/Non-ECC)	Two 260-pin SODIMM up to 64GB Dual Channel DDR5 5600MHz (Non-ECC)	Two 260-pin SODIMM up to 64GB Dual Channel DDR5 5600MHz (Non-ECC)
	BIOS	AMI SPI 256Mbit	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	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	2 x DP++ 1 x LVDS/eDP 1 x DFI display extension port (DP/HDMI/VGA available) <b>DP++:</b> resolution up to 4096x2304 @60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz	2 x DP++ 1 x LVDS/eDP 1 x DFI display extension port (DP/HDMI/VGA available) <b>DP++:</b> resolution up to 4096x2304 @60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz	2 x DP++ 1 x LVDS/eDP 1 x DFI display extension port (DP/HDMI/VGA available) <b>DP++:</b> resolution up to 4096x2304 @60Hz <b>LVDS:</b> resolution up to 1920x1200 @ 60Hz <b>eDP:</b> resolution up to 4096x2160 @ 60Hz

## SPECIFICATION

Model Name		ADS106-R680E	ADS106-Q670E	ADS106-H610E
GRAPHICS	Quad Displays	2 DP++ + LVDS/eDP + DFI display extension port (DP/HDMI/VGA available)	2 DP++ + LVDS/eDP + DFI display extension port (DP/HDMI/VGA available)	2 DP++ + LVDS/eDP + DFI display extension port (DP/HDMI/VGA available)
	EXPANSION	Interface 1 x PCIe x16 (Gen 5) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe Gen4 x4/SATA) 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/SATA/USB 3.2 Gen2/USB 2.0)	1 x PCIe x16 (Gen 5) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe Gen4 x4/SATA) 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/SATA/USB 3.2 Gen2/USB 2.0)	1 x PCIe x16 (Gen 5) (Max. 75W) 1 x M.2 2230 E Key (USB/PCIe x1) 1 x M.2 2280 M Key (PCIe Gen3 x1/SATA) 1 x M.2 2242/3042/3052 B Key (PCIe Gen3 x1/SATA/USB 3.2 Gen1/USB 2.0)
AUDIO	Audio Codec	Realtek ALC888	Realtek ALC888	Realtek ALC888
ETHERNET	Controller	<b>LAN1:</b> 1 x Intel® I226V PCIe (10/100/1000/2.5G speeds) <b>LAN2:</b> 1 x Intel® I210AT PCIe (10/100/1000 speeds)(Opt.) <b>LAN3:</b> 1 x Intel® I219LM PHY (10/100/1000 speeds) (support vPro/AMT)	<b>LAN1:</b> 1 x Intel® I226V PCIe (10/100/1000/2.5G speeds) <b>LAN2:</b> 1 x Intel® I210AT PCIe (10/100/1000 speeds)(Opt.) <b>LAN3:</b> 1 x Intel® I219LM PHY (10/100/1000 speeds) (support vPro/AMT)	<b>LAN1:</b> 1 x Intel® I226V PCIe (10/100/1000/2.5G speeds) <b>LAN2:</b> 1 x Intel® I210AT PCIe (10/100/1000 speeds)(Opt.) <b>LAN3:</b> 1 x Intel® I219V PHY (10/100/1000 speeds)
REAR I/O	Ethernet	1 x 2.5GbE (RJ-45) 1 x GbE (RJ-45) (2x by Opt.)	1 x 2.5GbE (RJ-45) 1 x GbE (RJ-45) (2x by Opt.)	1 x 2.5GbE (RJ-45) 1 x GbE (RJ-45) (2x by Opt.)
	USB	4 x USB 3.2 Gen2 (Opt.: up to 6 x USB 3.2 Gen2)	4 x USB 3.2 Gen2 (Opt.: up to 6 x USB 3.2 Gen2)	2 x USB 3.2 Gen2 + 1 x USB 3.2 Gen1 + 1 x USB 2.0
	Display	2 x DP++ 1 x DFI display extension for (DP/HDMI/VGA) (Opt.)	2 x DP++ 1 x DFI display extension for (DP/HDMI/VGA) (Opt.)	2 x DP++ 1 x DFI display extension for (DP/HDMI/VGA) (Opt.)
INTERNAL I/O	Serial	2 x RS-232/422/485 (without power) (2.0mm pitch)	2 x RS-232/422/485 (without power) (2.0mm pitch)	2 x RS-232/422/485 (without power) (2.0mm pitch)
	USB	4 x USB 2.0 (2.0mm pitch) 2 x USB 3.2 Gen1	4 x USB 2.0 (2.0mm pitch) 2 x USB 3.2 Gen1	4 x USB 2.0 (2.0mm pitch)
	Display	1 x LVDS header 1 x eDP connector	1 x LVDS header 1 x eDP connector	1 x LVDS header 1 x eDP connector
	Audio	1 x Front Audio Header	1 x Front Audio Header	1 x Front Audio Header
	SATA	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.)	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.)	2 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power
	DIO	1 x 8-bit DIO	1 x 8-bit DIO	1 x 8-bit DIO
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	TPM	dTPM2.0	dTPM2.0	dTPM2.0
POWER	Type	Single 12V +/-5% DC or Wide Range 15~36VV	Single 12V +/-5% DC or Wide Range 15~36VV	Single 12V +/-5% DC or Wide Range 15~36VV
	Connector	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)	DC-in Jack Right Angle Connector (4-pin) (available upon request) Straight Type Connector (4-pin) (available upon request)
	Consumption	EUP Enable & WOL Enable Intel® Core™ 5 Processor 221E Lone Idle: 15V @ 0.18A (2.7W), 36V @ 0.12A (4.32W) Max: 15V @ 13.42A (201.3W), 36V @ 5.66A (203.76W) Intel Core I5-13500E Lone Idle: 12V @ 0.23A (2.76W) Max: 12V @ 16.69A (200.28W)	EUP Enable & WOL Enable Intel® Core™ 5 Processor 221E Lone Idle: 15V @ 0.18A (2.7W), 36V @ 0.12A (4.32W) Max: 15V @ 13.42A (201.3W), 36V @ 5.66A (203.76W) Intel Core I5-13500E Lone Idle: 12V @ 0.23A (2.76W) Max: 12V @ 16.69A (200.28W)	EUP Enable & WOL Enable Intel® Core™ 5 Processor 221E Lone Idle: 15V @ 0.18A (2.7W), 36V @ 0.12A (4.32W) Max: 15V @ 13.42A (201.3W), 36V @ 5.66A (203.76W) Intel Core I5-13500E Lone Idle: 12V @ 0.23A (2.76W) Max: 12V @ 16.69A (200.28W)
	RTC Battery	CR2032 Coin Cell	CR2032 Coin Cell	CR2032 Coin Cell
OS SUPPORT	Microsoft	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC
	Linux	Linux	Linux	Linux
ENVIRONMENT	Temperature	<b>Operating:</b> -5°C ~ 65°C <b>Storage:</b> -40°C ~ 85°C	<b>Operating:</b> -5°C ~ 65°C <b>Storage:</b> -40°C ~ 85°C	<b>Operating:</b> -5°C ~ 65°C <b>Storage:</b> -40°C ~ 85°C
	Humidity	<b>Operating:</b> 5% ~ 90% RH <b>Storage:</b> 5% ~ 90% RH	<b>Operating:</b> 5% ~ 90% RH <b>Storage:</b> 5% ~ 90% RH	<b>Operating:</b> 5% ~ 90% RH <b>Storage:</b> 5% ~ 90% RH
	MTBF	ADS106-R680DB 524,886 hrs @ 25°C; 304,620 hrs @ 45°C; 193,331 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled	ADS106-R680DB 524,886 hrs @ 25°C; 304,620 hrs @ 45°C; 193,331 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled	ADS106-R680DB 524,886 hrs @ 25°C; 304,620 hrs @ 45°C; 193,331 hrs @ 60°C; <b>Calculation model:</b> Telcordia Issue 4 <b>Environment:</b> GB, GC – Ground Benign, Controlled

## SPECIFICATION

Model Name		ADS106-R680E	ADS106-Q670E	ADS106-H610E
MECHANISM	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")
	Height	PCB: 1.6mm Top Side: 33.3mm Bottom Side: 4mm	PCB: 1.6mm Top Side: 33.3mm Bottom Side: 4mm	PCB: 1.6mm Top Side: 33.3mm Bottom Side: 4mm
STANDARDS AND CERTIFICATION	Certifications	CE, FCC Class B, RoHS, UKCA	CE, FCC Class B, RoHS, UKCA	CE, FCC Class B, RoHS, UKCA

## ORDERING INFORMATION

Model Name	P/N	Memory
ARS106-R680E	770-ADS1061-000G	ADS106-R680DB: R.1, 2 DDR5, Rear I/O (2 DP++, 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, F/G MOTHER BOARD
ADS106-Q670E	770- ADS1061-100G	ADS106-H610IB: R.1, 2 DDR5, Rear I/O (2 DP++, 3 LAN, 2 USB 3.2 Gen2, 1 USB 3.2 Gen1, 1 USB 2.0), Internal I/O (M.2 M/B/E Key, 4 USB 2.0), dTPM, 12V DC-Jack, F/G MOTHER BOARD
ADS106-H610E	770- ADS1061-200G	ADS106-Q670DB: R.1, 2 DDR5, Rear I/O (2 DP++, 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, F/G MOTHER BOARD
ARS106-R680E	770- ADS1061-300G	ADS106-R680DB: R.1, 2 DDR5, Rear I/O (2 DP++, 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-Jack, F/G MOTHER BOARD
ADS106-Q670E	770- ADS1061-400G	ADS106-Q670DB: R.1, 2 DDR5, Rear I/O (2 DP++, 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-Jack, F/G MOTHER BOARD
ADS106-H610E	770- ADS1061-500G	ADS106-H610IB: R.1, 2 DDR5, Rear I/O (2 DP++, 3 LAN, 2 USB 3.2 Gen2, 1 USB 3.2 Gen1, 1 USB 2.0), Internal I/O (M.2 M/B/E Key, 4 USB 2.0), dTPM, 15~36V DC-Jack, F/G M

## PACKING LIST

• 1 ADS106 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
• USB 3.1 cable (2-port USB3.1 Gen1/2, Length: 300mm, w/bracket)	A81-001075-017G
• 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