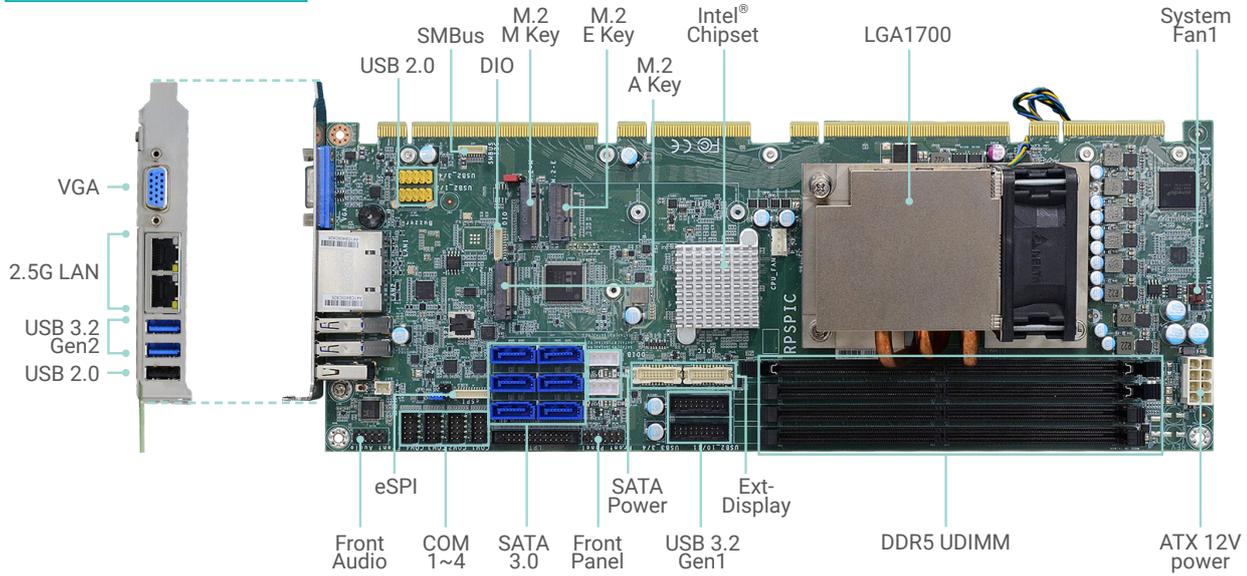


# RPSPIC-R680E RPSPIC-H610E

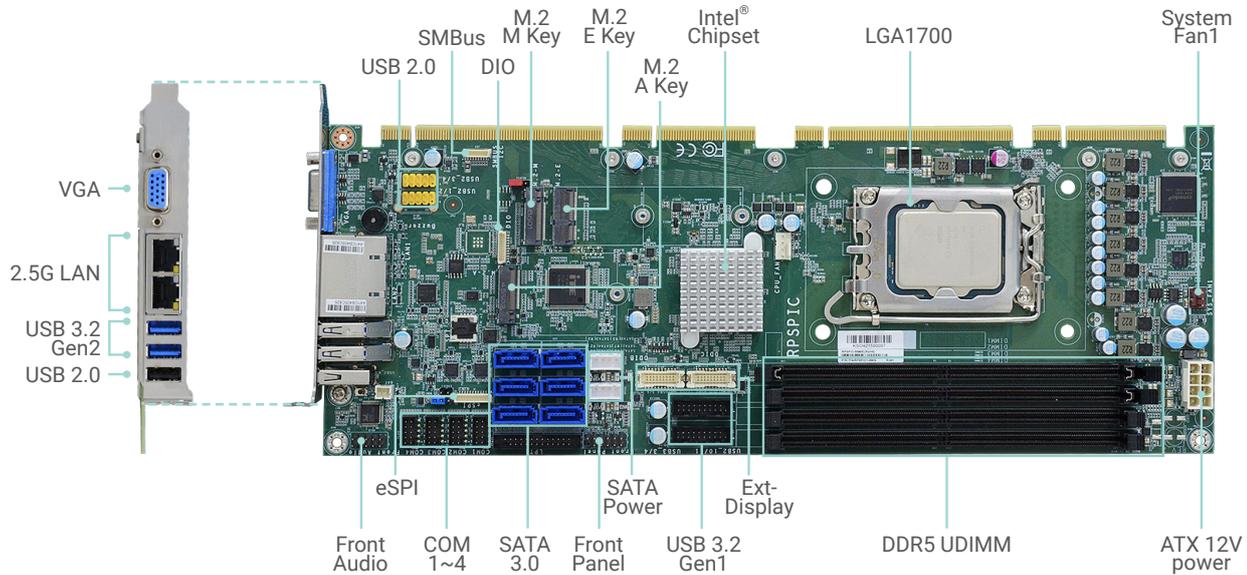
BTL-S/14th/13th/12th Gen Intel® Core™  
Full Size PICMG 1.3



## RPSPIC-R680E



Top View with HS



Top View without HS

## KEY FEATURES



### DDR5

2/4 DDR5 UDIMM up to 96G/192GB



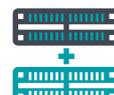
### 2K Resolution

Supports up to 2K resolution



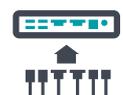
### Triple Displays

VGA, 2 DFI display module (DP/VGA/HDMI)



### Multiple Expansion

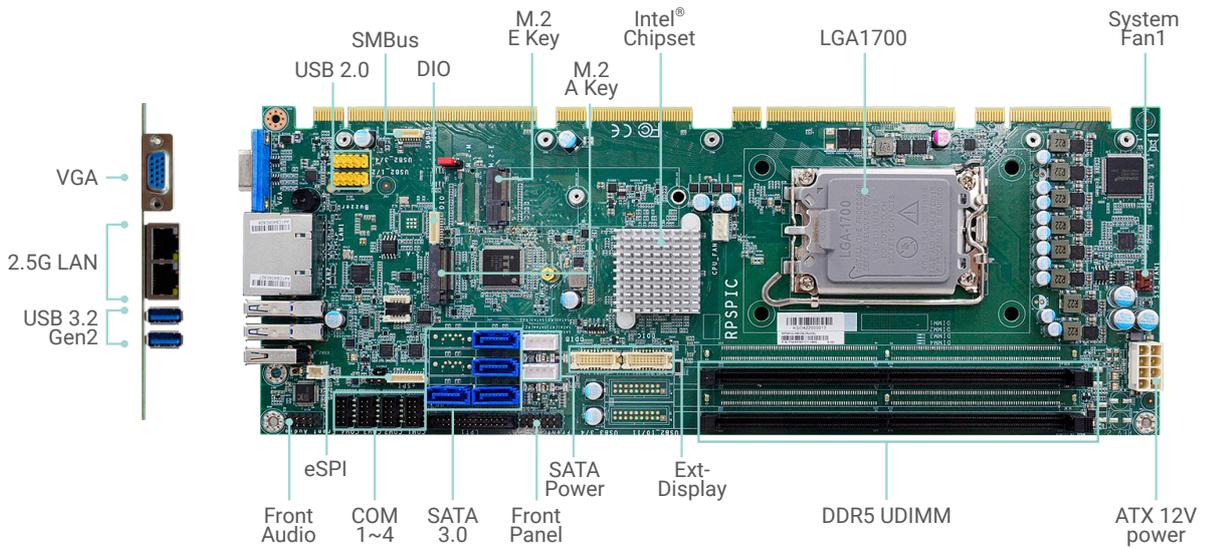
1 M.2 E Key (USB/PCIe/CNVi), 1 M.2 M Key (PCIe), 1 M.2 A Key for M2A-OOB



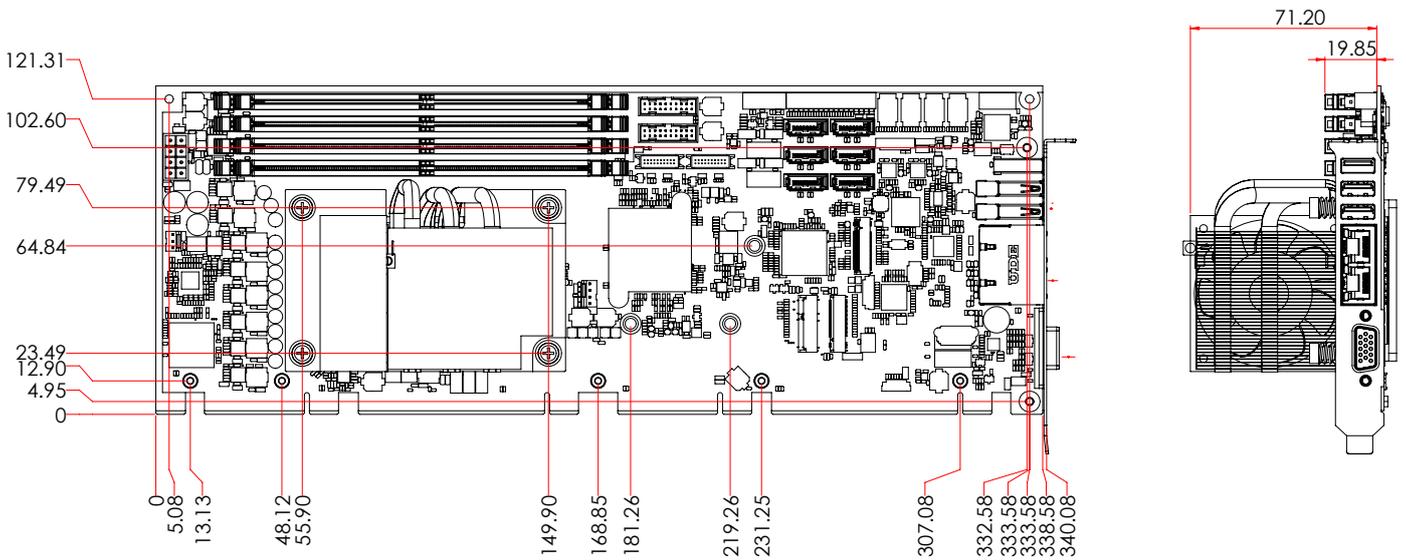
### Rich I/O

2 Intel 2.5GbE, 4 COM, 6 USB 3.2, 2 USB 2.0, 6 SATA 3.0

# RPSPIC-H610E

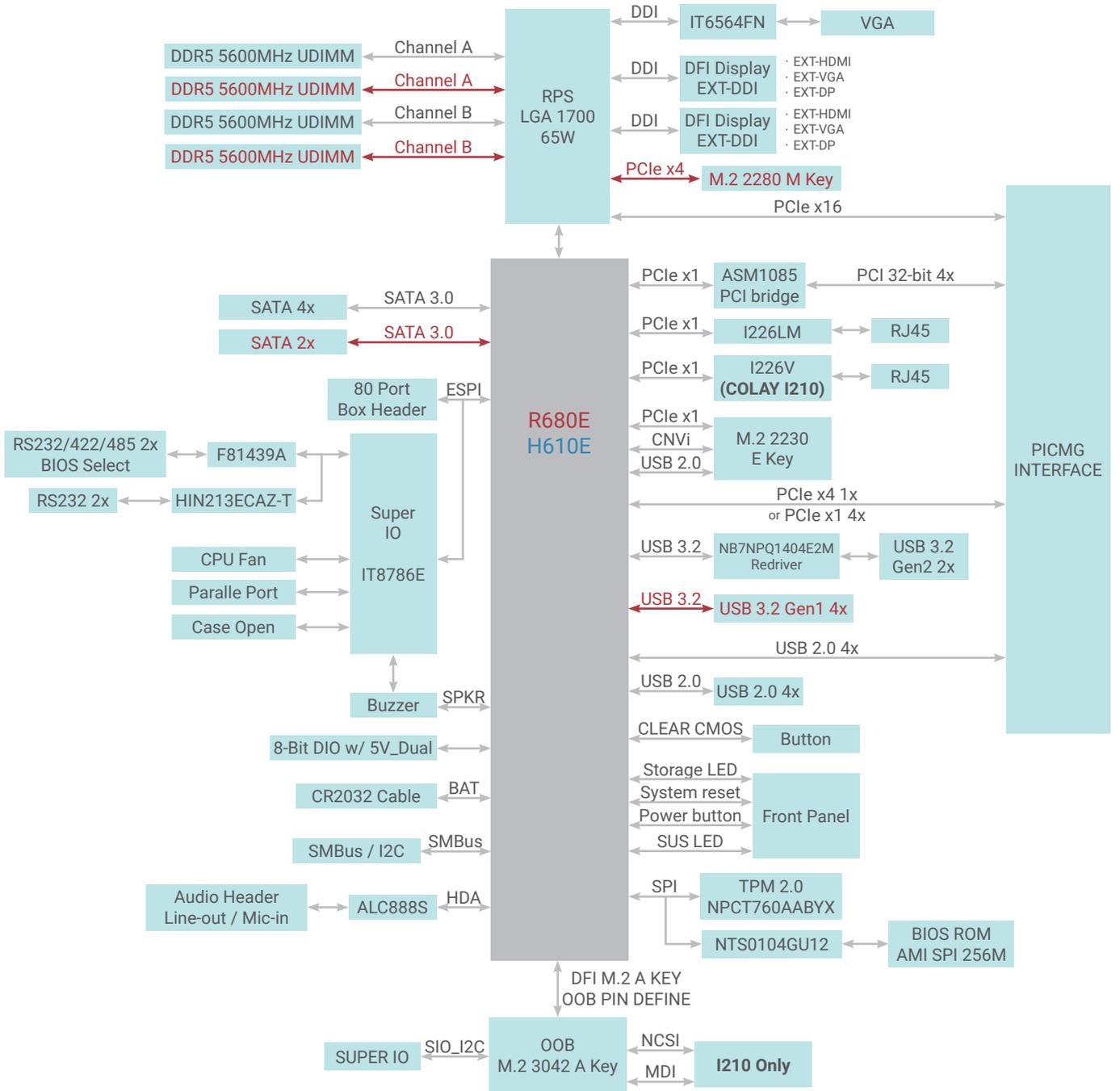


## MECHANICAL DRAWING



# BLOCK DIAGRAM

● R680E Only  
● H610E Only



## SPECIFICATION

Model Name		RPSPIC-R680E	RPSPIC-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</p> <p>Intel® Core™ 7 251TE (24 Cores, 36M Cache, up to 5.4 GHz); 45W</p> <p>Intel® Core™ 5 221E (14 Cores, 24M Cache, up to 5.2 GHz); 65W</p> <p>Intel® Core™ 5 221TE (14 Cores, 24M Cache, up to 5.0 GHz); 45W</p> <p>Intel® Core™ 5 211E (10 Cores, 20M Cache, up to 4.9 GHz); 65W</p> <p>Intel® Core™ 5 211TE (10 Cores, 20M Cache, up to 4.8 GHz); 45W</p> <p>Intel® Core™ 3 201E (4 Cores, 12M Cache, up to 4.8 GHz); 60W</p> <p>Intel® Core™ 3 201TE (4 Cores, 12M Cache, up to 4.6 GHz); 45W</p> <p>Intel® 300 (2 Cores, 6M Cache, up to 3.9 GHz); 45W</p> <p>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</p> <p>Intel® Core™ i9-14900T (24 Cores, 36M Cache, up to 5.5 GHz); 35W</p> <p>Intel® Core™ i7-14700 (20 Cores, 33M Cache, up to 5.4 GHz); 65W</p> <p>Intel® Core™ i7-14700T (20 Cores, 33M Cache, up to 5.2 GHz); 35W</p> <p>Intel® Core™ i5-14500 (14 Cores, 24M Cache, up to 5.0 GHz); 65W</p> <p>Intel® Core™ i5-14500T (14 Cores, 24M Cache, up to 4.8 GHz); 35W</p> <p>Intel® Core™ i5-14400 (10 Cores, 20M Cache, up to 4.7 GHz); 65W</p> <p>Intel® Core™ i5-14400T (10 Cores, 20M Cache, up to 4.5 GHz); 35W</p> <p>Intel® Core™ i3-14100 (4 Cores, 12M Cache, up to 4.7 GHz); 60W</p> <p>Intel® Core™ i3-14100T (4 Cores, 12M Cache, up to 4.4 GHz); 35W</p> <p>Intel® 300 (2 Cores, 6M Cache, 3.9 GHz); 46W</p> <p>Intel® 300T (2 Cores, 6M Cache, 3.4 GHz); 35W</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</p> <p>Intel® Core™ i9-13900TE (24 Cores, 36M Cache, up to 5.0 GHz); 35W</p> <p>Intel® Core™ i9-13900 (24 Cores, 36M Cache, up to 5.6 GHz); 65W</p> <p>Intel® Core™ i7-13700E (16 Cores, 30M Cache, up to 5.1 GHz); 65W</p> <p>Intel® Core™ i7-13700TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W</p> <p>Intel® Core™ i7-13700 (16 Cores, 30M Cache, up to 5.2 GHz); 65W</p> <p>Intel® Core™ i7-13700T (16 Cores, 30M Cache, up to 4.9 GHz); 35W</p> <p>Intel® Core™ i5-13500E (14 Cores, 24M Cache, up to 4.6 GHz); 65W</p> <p>Intel® Core™ i5-13500TE (14 Cores, 24M Cache, up to 4.5 GHz); 35W</p> <p>Intel® Core™ i5-13500 (14 Cores, 24M Cache, up to 4.8 GHz); 65W</p> <p>Intel® Core™ i5-13500T (14 Cores, 24M Cache, up to 4.6 GHz); 35W</p> <p>Intel® Core™ i5-13400E (10 Cores, 20M Cache, up to 4.6 GHz); 65W</p> <p>Intel® Core™ i5-13400 (10 Cores, 20M Cache, up to 4.6 GHz); 65W</p> <p>Intel® Core™ i3-13100E (4 Cores, 12M Cache, up to 4.4 GHz); 65W</p> <p>Intel® Core™ i3-13100TE (4 Cores, 12M Cache, up to 4.1 GHz); 35W</p> <p>Intel® Core™ i3-13100 (4 Cores, 12M Cache, up to 4.5 GHz); 65W</p> <p>Intel® Core™ i3-13100T (4 Cores, 12M Cache, up to 4.2 GHz); 35W</p> <p>Intel® G7400E (2 Cores, 6M Cache, 3.6 GHz); 46W</p> <p>Intel® G7400TE (2 Cores, 6M Cache, 3.0 GHz); 35W</p> <p>Intel® G6900E (2 Cores, 4M Cache, 3.0 GHz); 46W</p> <p>Intel® G6900TE (2 Cores, 4M Cache, 2.4 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</p> <p>Intel® Core™ i9-12900TE (16 Cores, 30M Cache, up to 4.8 GHz); 35W</p> <p>Intel® Core™ i9-12900 (16 Cores, 30M Cache, up to 5.0 GHz); 65W</p> <p>Intel® Core™ i7-12700E (12 Cores, 25M Cache, up to 4.8 GHz); 65W</p> <p>Intel® Core™ i7-12700TE (12 Cores, 25M Cache, up to 4.7 GHz); 35W</p> <p>Intel® Core™ i7-12700 (12 Cores, 25M Cache, up to 4.8 GHz); 65W</p> <p>Intel® Core™ i5-12500E (6 Cores, 18M Cache, up to 4.5 GHz); 65W</p> <p>Intel® Core™ i5-12500TE (6 Cores, 18M Cache, up to 4.3 GHz); 35W</p> <p>Intel® Core™ i5-12500 (6 Cores, 18M Cache, up to 4.6 GHz); 65W</p> <p>Intel® Core™ i5-12400 (6 Cores, 18M Cache, up to 4.4 GHz); 65W</p> <p>Intel® Core™ i3-12100E (4 Cores, 12M Cache, up to 4.2 GHz); 60W</p> <p>Intel® Core™ i3-12100TE (4 Cores, 12M Cache, up to 4.0 GHz); 35W</p> <p>Intel® Core™ i3-12100 (4 Cores, 12M Cache, up to 4.3 GHz); 60W</p> <p>Intel® G7400E (2 Cores, 6M Cache, 3.6 GHz); 46W</p> <p>Intel® G7400TE (2 Cores, 6M Cache, 3.0 GHz); 35W</p> <p>Intel® G6900E (2 Cores, 4M Cache, 3.0 GHz); 46W</p> <p>Intel® G6900TE (2 Cores, 4M Cache, 2.4 GHz); 35W</p>	
		<p><b>Chipset</b></p> <p>Intel® R680E Chipset</p>	Intel® H610E Chipset
	<p><b>Memory</b></p> <p>4 288-pin UDIMM up to 192GB (ECC/Non-ECC)</p> <p>Dual Channel DDR5 5600 MHz</p>	<p>2 288-pin UDIMM up to 96GB (Non-ECC)</p> <p>Dual Channel DDR5 5600 MHz</p>	
	<p><b>BIOS</b></p> <p>AMI SPI 256Mbit</p>	AMI SPI 256Mbit	

## SPECIFICATION

Model Name		RPSPIC-R680E	RPSPIC-H610E
GRAPHICS	Controller	Intel® UHD Graphics 700 series	Intel® UHD Graphics 700 series
	Feature	<b>3D graphics HW acceleration:</b> DX12, Open GL 4.6, Vulkan 1.2 <b>HW Video Decode:</b> 8K60 12b 4:2:0 HEVC/VP9/SCC; 8K30 10b 4:2:0 AV1; 5K60 10b 4:4:4 HEVC/VP9/SCC; 4K60 8b 4:2:0 AVC <b>HW Video Encode:</b> 8K30 or 5K60 8b/10b 4:2:0 HEVC/VP9/SCC; 4K60 10b 4:4:4 HEVC/VP9/SCC; 4K60 8b 4:2:0 AVC	<b>3D graphics HW acceleration:</b> DX12, Open GL 4.6, Vulkan 1.2 <b>HW Video Decode:</b> 8K60 12b 4:2:0 HEVC/VP9/SCC; 8K30 10b 4:2:0 AV1; 5K60 10b 4:4:4 HEVC/VP9/SCC; 4K60 8b 4:2:0 AVC <b>HW Video Encode:</b> 8K30 or 5K60 8b/10b 4:2:0 HEVC/VP9/SCC; 4K60 10b 4:4:4 HEVC/VP9/SCC; 4K60 8b 4:2:0 AVC
GRAPHICS	Display	1 x VGA 2 x DFI display extension port (DP/HDMI/VGA available) <b>VGA:</b> resolution up to 1920x1200 @ 60Hz <b>HDMI:</b> resolution up to 1920x1080 @ 60Hz <b>DP:</b> resolution up to 1920x1200 @ 60Hz	1 x VGA 2 x DFI display extension port (DP/HDMI/VGA available) <b>VGA:</b> resolution up to 1920x1200 @ 60Hz <b>HDMI:</b> resolution up to 1920x1080 @ 60Hz <b>DP:</b> resolution up to 1920x1200 @ 60Hz
	Triple Displays	VGA + DFI display extension port(DP/HDMI/VGA available)	VGA + DFI display extension port(DP/HDMI/VGA available)
EXPANSION	Interface	1 x M.2 2230 E Key (USB 2.0x1/CNVix1/PCIe3.0 x1) 1 x M.2 2280 M Key (PCIe 4.0x4) 1 x M.2 3042 A Key for M2A-OOB	1 x M.2 2230 E Key (USB 2.0x1/CNVix1/PCIe3.0 x1) 1 x M.2 3042 A Key for M2A-OOB
AUDIO	Audio Codec	Realtek ALC888S	Realtek ALC888S
ETHERNET	Controller	1 x Intel® I226-LM (Core i9/i7/i5 support iAMT) 1 x Intel® I226-V (colay i210AT)	1 x Intel® I226-V 1 x Intel® I226-V (colay i210AT)
REAR I/O	Ethernet	2 x 2.5GbE (RJ-45)	2 x 2.5GbE (RJ-45)
	USB	2 x USB 3.2 Gen2 1 x USB 2.0	2 x USB 3.2 Gen2 1 x USB 2.0
	Display	1 x VGA	1 x VGA
INTERNAL I/O	Serial	2 x RS232/422/485 w/o Power (2.0 pitch BOX) by BIOS select 2 x RS232 w/o Power, 2.0 pitch BOX	2 x RS232/422/485 w/o Power (2.0 pitch BOX) by BIOS select 2 x RS232 w/o Power, 2.0 pitch BOX
	USB	4 x USB 3.2 Gen1 BOX 4 x USB 2.0 (2x5 2.0mm pitch header)	4 x USB 2.0 (2x5 2.0mm pitch header)
	Display	2 x DFI display extension port (DP/HDMI/VGA available)	2 x DFI display extension port (DP/HDMI/VGA available)
	Audio	1 x Front Audio Header (1 x Line-out, 1 x Mic-in)	1 x Front Audio Header (1 x Line-out, 1 x Mic-in)
	SATA	6 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
	DIO	1 x 4 IN 4 OUT 8 BIT DIO	1 x 4 IN 4 OUT 8 BIT DIO
	SMBus	1 x SMBus & I2C	1 x SMBus & I2C
	LPT Port	1 x Parallel Port	1 x Parallel Port
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 CPU ATX 12V power Expansion Goldfinger	8-pin CPU ATX 12V power Expansion Goldfinger
	Consumption	Idle: Intel i9-14900E (65W): ATX PSU total 80.194W Max: Intel i9-14900E (65W): ATX PSU total 135.96W	TBD
	RTC Battery	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
	Linux	Linux	Linux
ENVIRONMENT	Temperature	Operating: -5 to 65°C Storage: -40 to 85°C	Operating: -5 to 65°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 95% RH Storage: 5 to 95% RH	Operating: 5 to 95% RH Storage: 5 to 95% RH
	MTBF	RPSPIC-R680DB 379,337 hrs @ 25°C; 164,133 hrs @ 45°C; 73,750 hrs @ 60°C; Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled	TBD
MECHANISM	Dimensions	Full Size PICMG 1.3 338mm (13.3") x 126.39mm (4.98")	Full Size PICMG 1.3 338mm (13.3") x 126.39mm (4.98")
	Height	PCB: 1.6mm TOP Side : 19.85mm TOP Side with cooler: 71.20mm BOT side: 2.35mm BOT side with cooler: 5.90mm	PCB: 1.6mm TOP Side : 19.85mm TOP Side with cooler: 71.20mm BOT side: 2.35mm BOT side with cooler: 5.90mm
CERTIFICATIONS	Certification	CE, FCC Class B, RoHS, UKCA	CE, FCC Class B, RoHS, UKCA

## ORDERING INFORMATION

Model Name	P/N	PCH	2.5 GbE	DDR5	USB 3.2 Gen2	USB 2.0	COM	SATA	TPM	Power	Temp.
RPSPIC-R680E	770-RPSPIC1-000G	R680E	2	4 ECC/Non ECC	6	2	4	6	dTPM	8-pin ATX 12V power Expansion Goldfinger	-5 to 65°C
RPSPIC-H610E	770-RPSPIC1-100G	H610E	4	2 Non ECC	2			4			

## PACKING LIST

• 1 RPSPIC-R680E/H610E board	
• 1 Cooler/Heat sink	A71-101161-000G
• 1 SATA Cable, L=300mm	A81-002101-016G
• 1 USB2.0 Cable (with bracket), L=350mm	A81-001066-016G

## OPTIONAL ITEMS

• EXT-HDMI (DP-to-HDMI 1.4 MODULE CARD)	770-DP2HDM2-000G
• EXT-VGA (DP-to-VGA MODULE CARD)	770-DP2VGA-000G
• EXT-DP (DP-to-DP MODULE CARD)	770-EXTDP1-000G