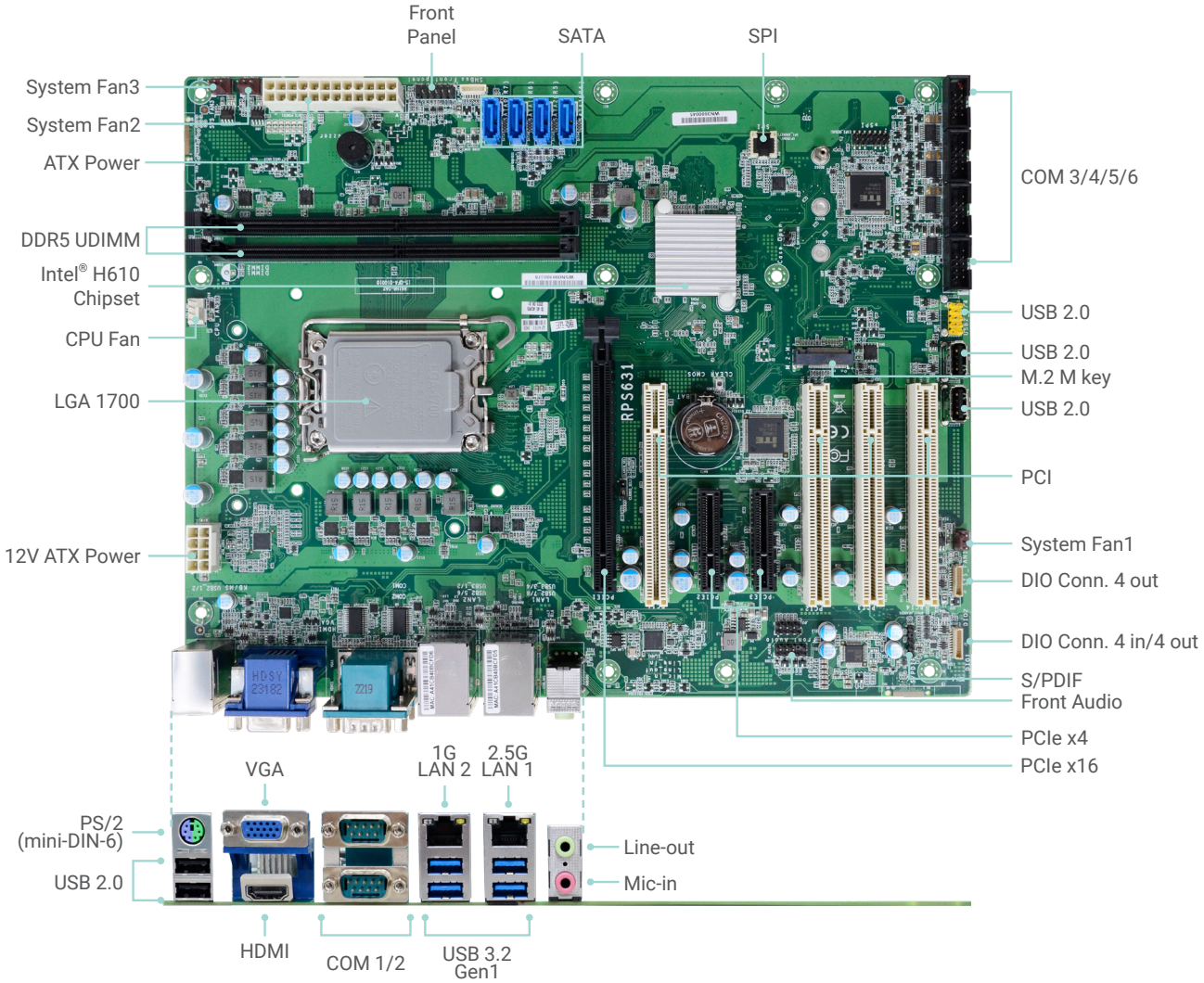
RPS631-H610

BTL-S/14th/13th/12th Gen Intel® Core™
Desktop
ATX

IoT Solutions Alliance



Top View

KEY FEATURES

DDR5

2 DDR5 UDIMM up to 96GB

4K High Resolution

Supports 4K resolution

Dual Displays

VGA, HDMI

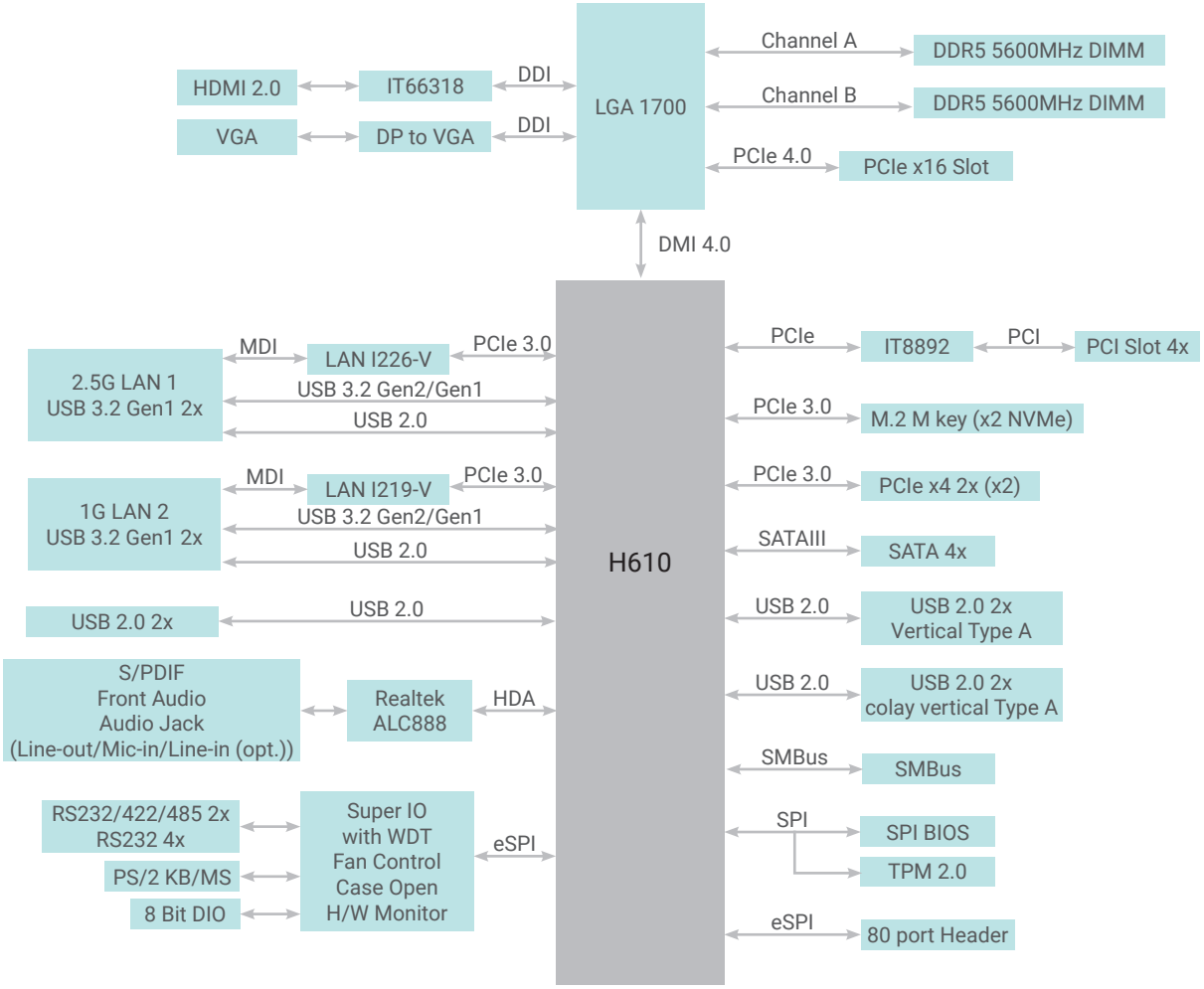
Multiple Expansion

1 PCIe x16, 2 PCIe x4, 4 PCI, 1 M.2 M key

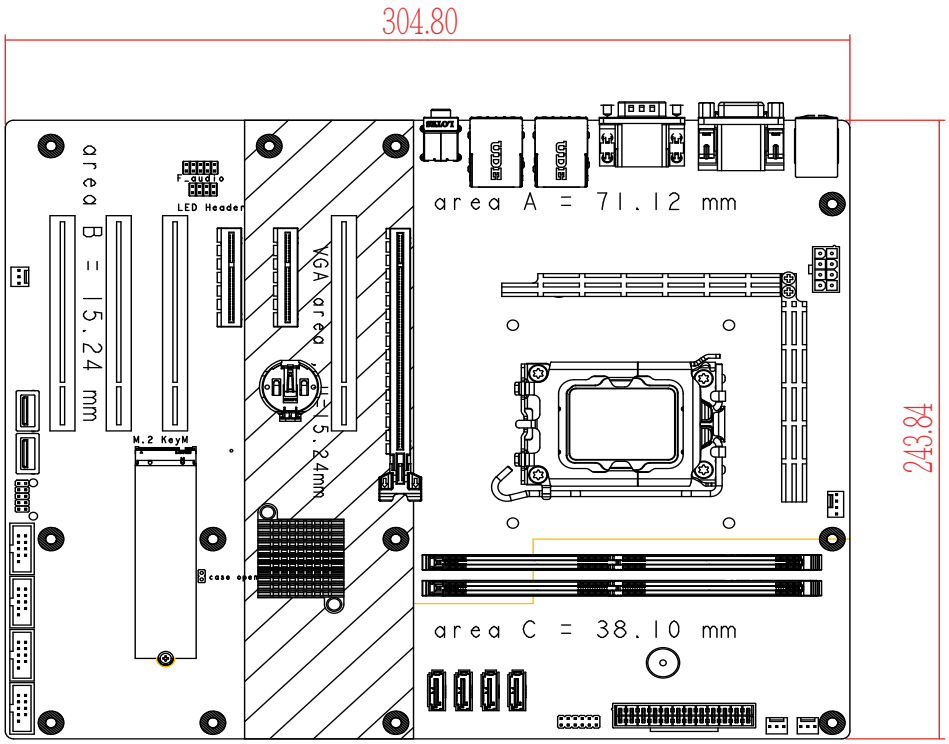
Rich I/O

1 Intel 2.5GbE, 1 Intel 1GbE, 4 USB 3.2 Gen1, 6 USB 2.0, 4 SATA 3.0, 6 COM

BLOCK DIAGRAM



MECHANICAL DRAWING



SPECIFICATION

SYSTEM	**Processor**	Intel® Bartlett Lake-S P-Core Only LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ 9 273PQE (12 Cores, 36M Cache, up to 5.9 GHz); 125W Intel® Core™ 9 273PE (12 Cores, 36M Cache, up to 5.7 GHz); 65W Intel® Core™ 9 273PTE (12 Cores, 36M Cache, up to 5.5 GHz); 45W Intel® Core™ 7 253PQE (10 Cores, 33M Cache, up to 5.7 GHz); 125W Intel® Core™ 7 253PE (10 Cores, 33M Cache, up to 5.5 GHz); 65W Intel® Core™ 7 253PTE (10 Cores, 33M Cache, up to 5.4 GHz); 45W Intel® Core™ 5 223PQE (8 Cores, 24M Cache, up to 5.5 GHz); 125W Intel® Core™ 5 223PE (8 Cores, 24M Cache, up to 5.4 GHz); 65W Intel® Core™ 5 223PTE (8 Cores, 24M Cache, up to 5.4 GHz); 45W Intel® Core™ 5 213PE (8 Cores, 24M Cache, up to 5.2 GHz); 65W Intel® Core™ 5 213PTE (8 Cores, 24M Cache, up to 5.2 GHz); 45W
		Intel® Bartlett Lake-S Hybrid LGA 1700 Socket Processors, TDP support up to 125W 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
		14th Generation P-Core Only Intel® LGA 1700 Socket Processors, TDP support up to 125W Intel® Core™ i9-14901E (8 Cores, 36M Cache, up to 5.6 GHz); 65W Intel® Core™ i9-14901TE (8 Cores, 36M Cache, up to 5.5 GHz); 45W Intel® Core™ i7-14701E (8 Cores, 33M Cache, up to 5.4 GHz); 65W Intel® Core™ i7-14701TE (8 Cores, 33M Cache, up to 5.2 GHz); 45W Intel® Core™ i5-14501E (6 Cores, 24M Cache, up to 5.2 GHz); 65W Intel® Core™ i5-14501TE (6 Cores, 24M Cache, up to 5.1 GHz); 45W Intel® Core™ i5-14401E (6 Cores, 24M Cache, up to 4.7 GHz); 65W Intel® Core™ i5-14401TE (6 Cores, 24M Cache, up to 4.5 GHz); 45W
		14th Generation Intel® LGA 1700 Socket Processors, TDP support up to 125W 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® 300 (2 Cores, 6M Cache, up to 3.9 GHz); 46W Intel® 300T (2 Cores, 6M Cache, up to 3.4 GHz); 35W
		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); 60W 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
		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
	Chipset	Intel® H610 Chipset
	Memory	Two 288-pin UDIMM up to 96GB (Non-ECC) Dual Channel DDR5 up to 5600 MHz
	BIOS	AMI SPI 256Mbit

SPECIFICATION

GRAPHICS	**Controller**	Intel® UHD Graphics 700 series
	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 1 x HDMI 2.0a **VGA:** resolution up to 1920x1200 @ 60Hz **HDMI:** resolution up to 4096x2160 @ 24Hz
EXPANSION	**Interface**	1 x PCIe x16 (Gen 4) - Support PCIE1 : Riser card x16 or x8/x8 selected by BOM change 2 x PCIe x4 (Gen 3, x2) 4 x PCI
		1 x M.2 M key (PCIe x2 NVMe)
AUDIO	**Audio Codec**	Realtek ALC888S
ETHERNET	**Controller**	1 x Intel® I226V 1 x Intel® I219V
REAR I/O	**Ethernet**	1 x 2.5GbE (RJ-45) 1 x 1GbE (RJ-45)
	Serial	2 x RS-232/422/485 (RS-232 w/ power) (DB-9)
	USB	4 x USB 3.2 Gen 1 2 x USB 2.0
	PS/2	1 x PS/2 (mini-DIN-6)
	Display	1 x VGA 1 x HDMI
	Audio	1 x Line-out 1 x Mic-in 1 x Line-in (opt.)
INTERNAL I/O	**Serial**	4 x RS-232
	USB	2 x USB 2.0 Type A 2 x USB 2.0 (2.54mm pitch, colay vertical Type A, opt.: MOQ required)
	Audio	1 x Front Audio 1 x S/PDIF
	SATA	4 x SATA 3.0 (up to 6Gb/s)
	DIO	4-IN / 8-OUT DIO
	eSPI	1 x eSPI
	SMBus	1 x SMBus
WATCHDOG TIMER	**Output & Interval**	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	**TPM**	TPM2.0
POWER	**Type**	ATX
	Connector	8-pin ATX 12V power 24-pin ATX power
	Consumption	**Typical:** i9-12900K: 3.3V @ 0.4A (1.32W); 5V @ 0.85A (4.25W); 12V @ 1.09A (13.08W) **Max.:** i9-12900K: 3.3V @ 0.63A (2.08W); 5V @ 3.02A (15.1W); 12V @ 26.39A (316.68W)
	RTC Battery	CR2032 Coin Cell
OS SUPPORT	**Microsoft**	Windows 10 IoT Enterprise 64-bit Windows 11 LTSC
	Linux	Linux
ENVIRONMENT	**Temperature**	**Operating:** -5 to 65°C **Storage:** -20 to 70°C with RTC Battery; -40 to 85°C without RTC Battery
	Humidity	**Operating:** 5 to 95% RH **Storage:** 5 to 95% RH
	MTBF	265,554 hrs @ 25°C; 173,101 hrs @ 40°C; 98,534 hrs @ 60°C; 74,966 hrs @ 70°C **Calculation Model:** Telcordia Issue 2 **Environment:** GB, GC - Ground Benign, Controlled
MECHANISM	**Dimensions**	ATX Form Factor 305mm (12") x 244mm (9.6")
	Height	**PCB:** 1.6mm **Top Side:** 33.3mm **Bottom Side:** 4mm
CERTIFICATIONS	**Certifications**	CE, FCC Class B, UKCA, RoHS, KC

ORDERING INFORMATION

Model Name	P/N	Memory	1 GbE	2.5 GbE	RS-232/422/485	USB 3.2 Gen1	USB 2.0	TPM 2.0	Power	Temp.
RPS631-H610	770-RPS6311-000G	2 UDIMM	1	1	2	4	6	1	24-pin ATX/8-pin ATX 12V	-5 to 65°C

PACKING LIST

- 1 RPS631 motherboard
- 1 COM port cables (Length: 300mm, 2 x COM ports)
- 1 Serial ATA data cable (Length: 500mm)
- 1 I/O shield
- 1 M.2 screw/standoff

OPTIONAL ITEMS

• USB 2.0 port cable (Length: 350/398mm)	A81-001066-016G
• USB 3.2 Gen1 port cable (Length: 320mm)	A81-001196-023G
• 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
• 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-M22LN2-000G
• M.2-2PSE (M.2 PSE module)	770-M22PS2-000G

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