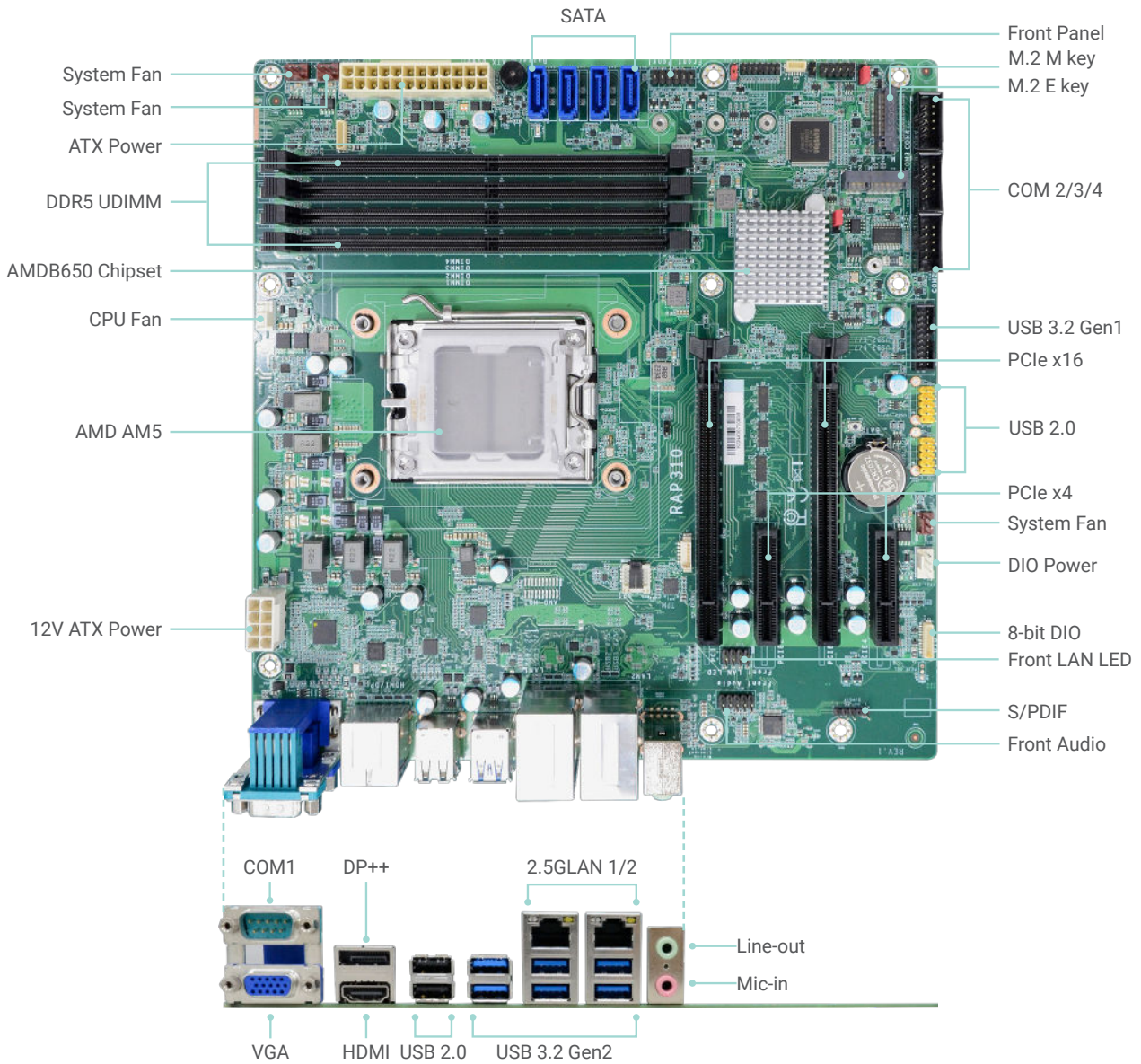


RAP310-B650

AMD® Ryzen™ 9000/7000/EPYC 4005 Series
microATX



Top View

KEY FEATURES



DDR5

4 DDR5 UDIMM up to 128GB



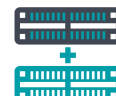
4K High Resolution

Supports 4K resolution



Triple Displays

1 VGA, 1 DP++, 1 HDMI



Multiple Expansion

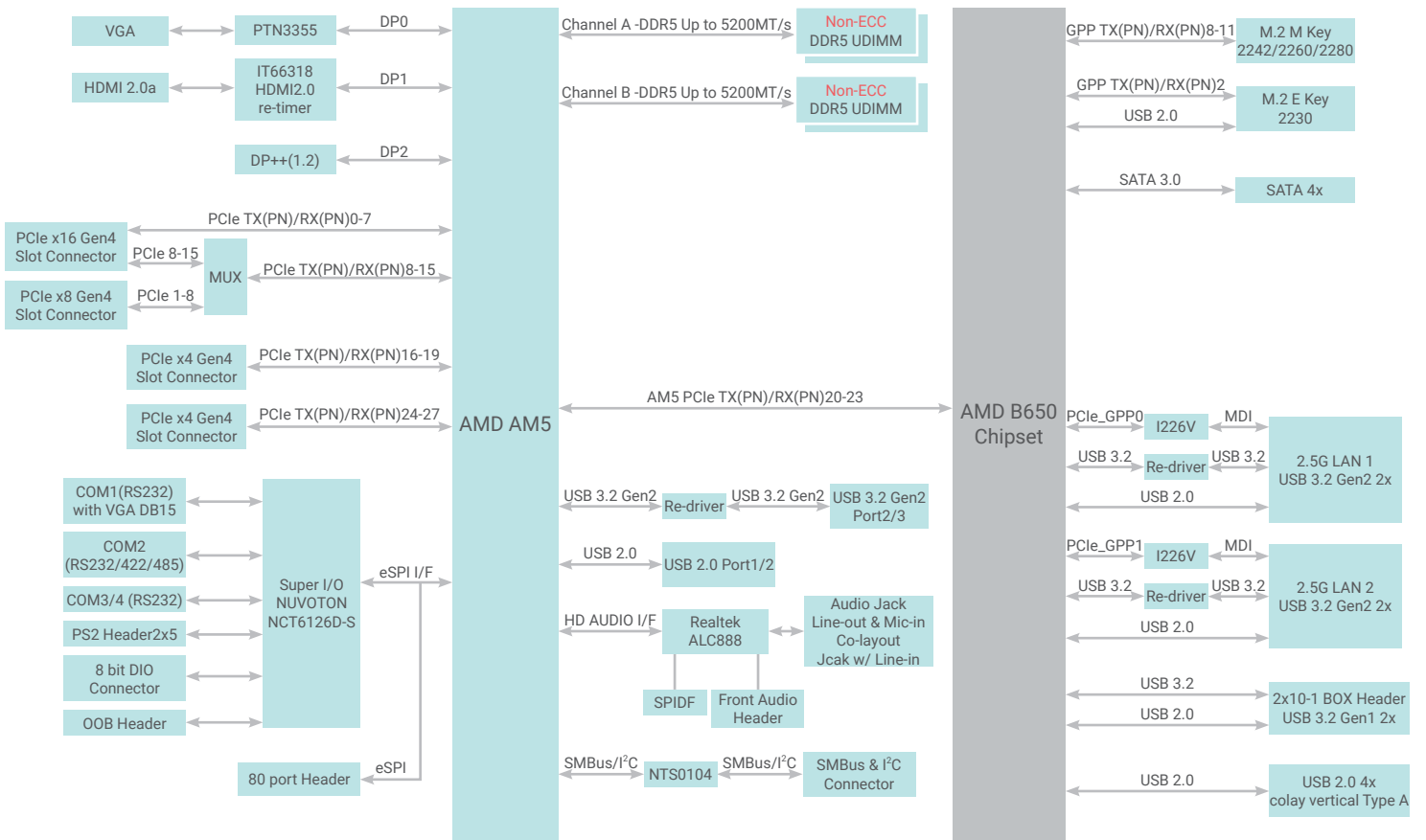
2 PCIe x16, 2 PCIe x4, 1 M.2 E key, 1 M.2 M key, 4 SATA 3.0



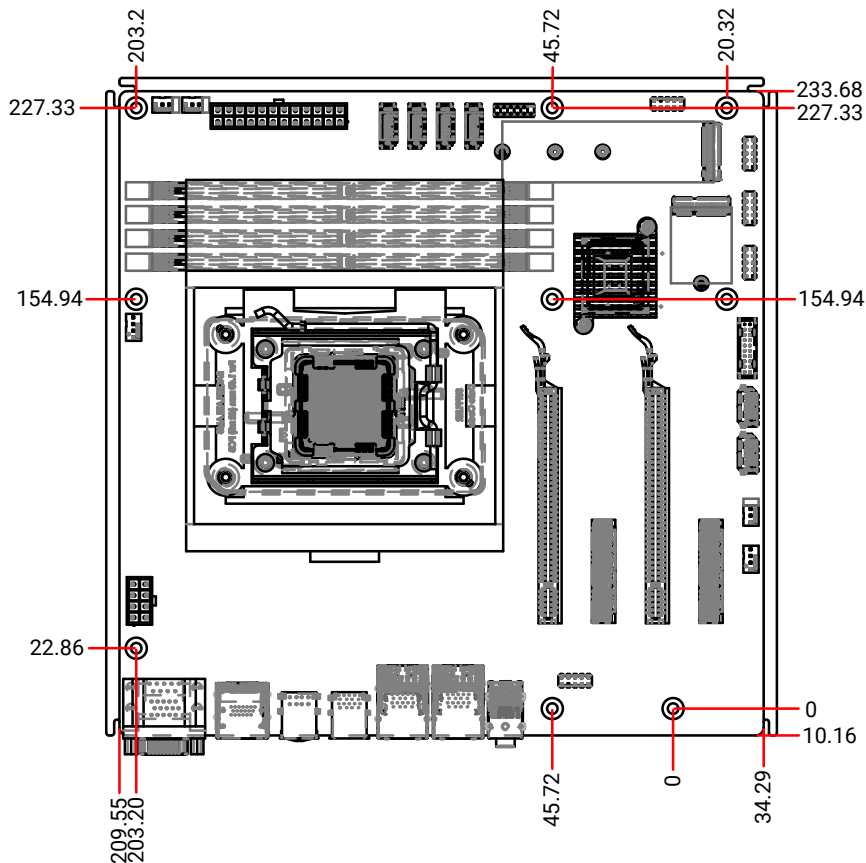
Rich I/O

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

BLOCK DIAGRAM



MECHANICAL DRAWING



SPECIFICATION

| | | |
|----------------|-------------------------|--|
| SYSTEM | Processor | AMD® Ryzen™ 9000/7000/EPYC 4005 Series AM5 Socket Processors, TDP support up to 65W Ryzen™ 7 9700X (8 Cores, 32M Cache, up to 5.5 GHz); 65W (life cycle only to Q1' 29) Ryzen™ 5 9600X (6 Cores, 32M Cache, up to 5.4 GHz); 65W (life cycle only to Q1' 29) Ryzen™ 9 PRO 7945 (12 Cores, 64M Cache, up to 5.4 GHz); 65W Ryzen™ 7 PRO 7745 (8 Cores, 32M Cache, up to 5.3 GHz); 65W Ryzen™ 5 PRO 7645 (6 Cores, 32M Cache, up to 5.1 GHz); 65W EPYC™ 4545P (16 Cores, 64M Cache, up to 5.4 GHz); 65W EPYC™ 4465P (12 Cores, 64M Cache, up to 5.4 GHz); 65W EPYC™ 4345P (8 Cores, 32M Cache, up to 5.5 GHz); 65W EPYC™ 4245P (6 Cores, 32M Cache, up to 5.4 GHz); 65W |
| | Chipset | AMDB650 |
| | Memory | Four 288-pin UDIMM up to 128GB (Non-ECC) Dual Channel DDR5 5200 MHz *Speed support list follow User's Manual |
| | BIOS | AMI SPI 256Mbit |
| GRAPHICS | Controller | Navi2 Graphics |
| | Feature | 1WGP @2.2GHz max |
| | Display | 1 x VGA 1 x DP++ 1 x HDMI 2.0 VGA: resolution up to 1920x1200 @ 60Hz DP++: resolution up to 3840x2160 @ 60Hz HDMI: resolution up to 4096x2160 @ 60Hz |
| | Triple Displays | 1 VGA + 1 DP++ + 1 HDMI 2.0 |
| EXPANSION | Interface | 2 x PCIe x16 (Gen 4, x16 or x8+x8) -Support PCIe1/PCIe3 : single at x16(PCIe1) -Support PCIe1/PCIe3 : dual at x8(PCIe1)/x8(PCIe3) -Support PCIe1 : Riser card x16 or x8/x8 selected by Jumper 2 x PCIe x4 (Gen 4) 1 x M.2 2230 E key (PCIe/USB 2.0/Intel CNVi/Discrete Wifi 6E support) 1 x M.2 2242/2260/2280 M key (PCIe x4 Gen4 NVMe support) |
| | | |
| AUDIO | Audio Codec | Realtek ALC888 |
| ETHERNET | Controller | 2 x Intel® I226V |
| REAR I/O | Ethernet | 2 x 2.5GbE (RJ-45) |
| | Serial | 1 x RS232 |
| | USB | 6 x USB 3.2 Gen 2 2 x USB 2.0 |
| | Display | 1 x VGA 1 x DP++ 1 x HDMI |
| | Audio | 1 x Line-out 1 x Mic-in 1 x Line-in (opt. by request, MOQ required) |
| INTERNAL I/O | Serial | 1 x RS-232/422/485 2 x RS232 |
| | USB | 2 x USB 3.2 Gen1 4 x USB 2.0 (colay vertical Type A) |
| | Audio | 1 x Front Audio Header 1 x S/PDIF |
| | SATA | 4 x SATA 3.0 RAID 0/1/5/10 |
| | DIO | 1 x 8-bit DIO |
| | PS/2 | 1 x PS/2 |
| | SMBus/ I ² C | 1 x SMBus/ I ² C |
| WATCHDOG TIMER | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds |
| SECURITY | TPM | Nuvoton TPM 2.0 |
| POWER | Type | ATX |
| | Connector | 8-pin ATX 12V power 24-pin ATX power |
| | Consumption | Typical: Ryzen 9 PRO 7945: 3.3V @ 0.14A (0.462W); 5V @ 0.96A (4.8W); 12V @ 0.66A (7.92W) Max.: Ryzen 9 PRO 7945: 3.3V @ 1.14A (3.762W); 5V @ 3.4A (17W); 12V @ 8.94A (107.28W) |
| | RTC Battery | CR2032 Coin Cell |
| OS SUPPORT | Microsoft | Windows 11 Enterprise Windows 10 |
| | Linux | Ubuntu 22.04 |
| ENVIRONMENT | Temperature | Operating: -5 to 65°C Storage: -40 to 85°C |
| | Humidity | Operating: 5 to 95% RH Storage: 5 to 95% RH |
| | MTBF | 481,630 hrs @ 25°C; 277,744 hrs @ 45°C; 177,053 hrs @ 60°C; 130,262 hrs @ 70°C Calculation Model: Telcordia Issue 4 Environment: GB, GC - Ground Benign, Controlled |

SPECIFICATION

| | | |
|-------------------------------------|-----------------------|---|
| MECHANISM | Dimensions | microATX Form Factor 244mm (9.6") x 244mm (9.6") |
| | Height | PCB: 1.6mm Top Side: 38mm Bottom Side: 3mm |
| STANDARDS AND CERTIFICATIONS | Certifications | CE, FCC Class B, RoHS, UKCA |

ORDERING INFORMATION

| Model Name | P/N | Memory | 2.5 GbE | COM | USB 3.2 Gen2 | USB 3.2 Gen1 | USB 2.0 | TPM 2.0 | Power | Temp. |
|-------------|------------------|--------------|---------|-----|--------------|--------------|---------|---------|------------------------------|------------|
| RAP310-B650 | 770-RAP3101-000G | 4 DDR5 UDIMM | 2 | 4 | 6 | 2 | 4 | dTPM | 24-pin ATX/ 8-pin ATX 12V | -5 to 65°C |

PACKING LIST

| | |
|---|-----------------|
| 1 RAP310-B650 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 | A49-RAP310-000G |

OPTIONAL ITEMS

| | |
|--|-----------------|
| USB 2.0 port cable (Length: 350/398mm) | A81-001066-016G |
| USB 3.2 Gen1 port cable (Length: 320mm) | A81-001052-023G |
| 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 (Cooler) | A71-101159-001G |
| 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 |