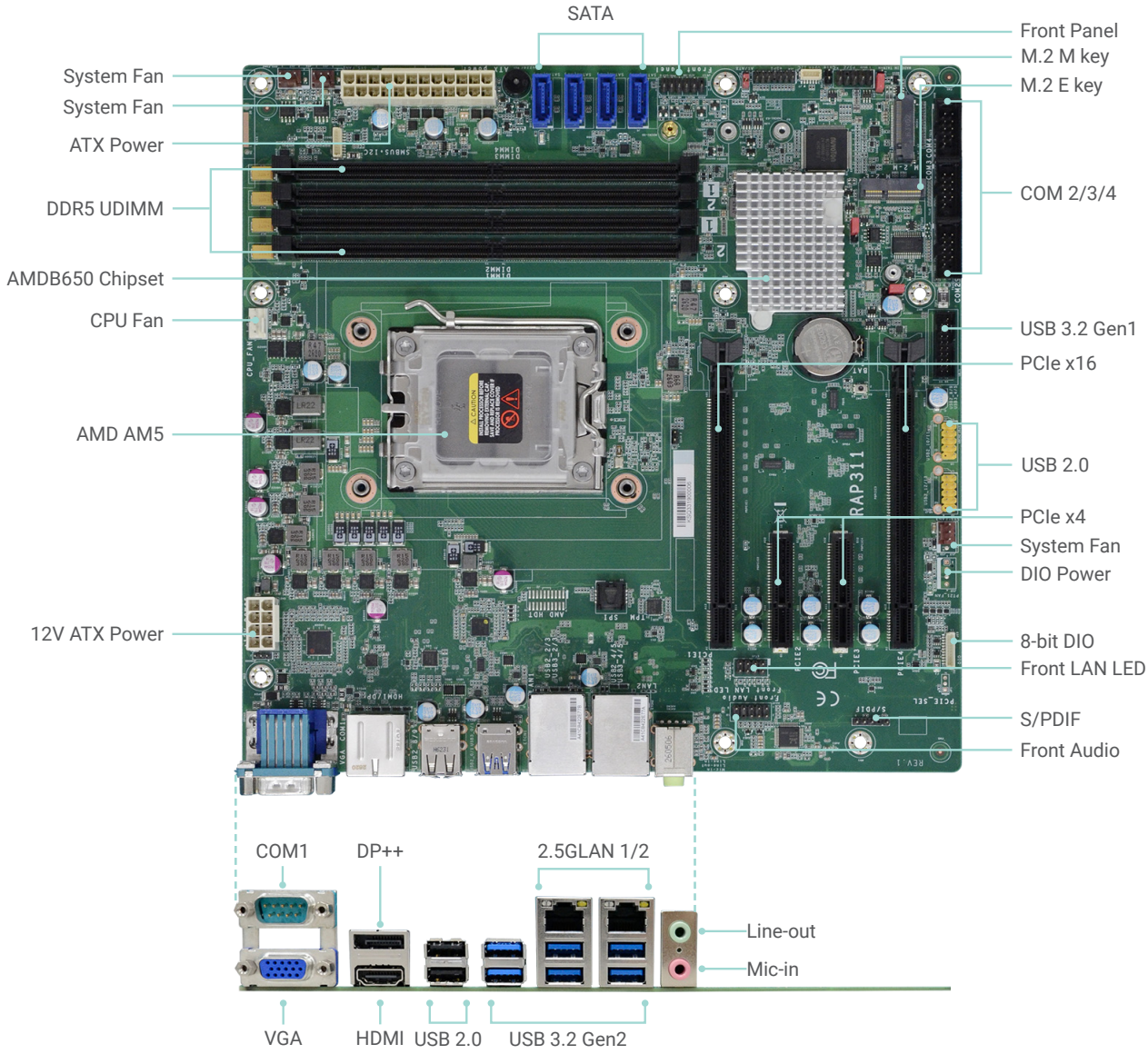
RAP311-B650

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



Top View

KEY FEATURES

DDR5

4 DDR5 UDIMM up to 192GB

4K High Resolution

Supports 4K resolution

Triple Displays

1 VGA, 1 DP++, 1 HDMI

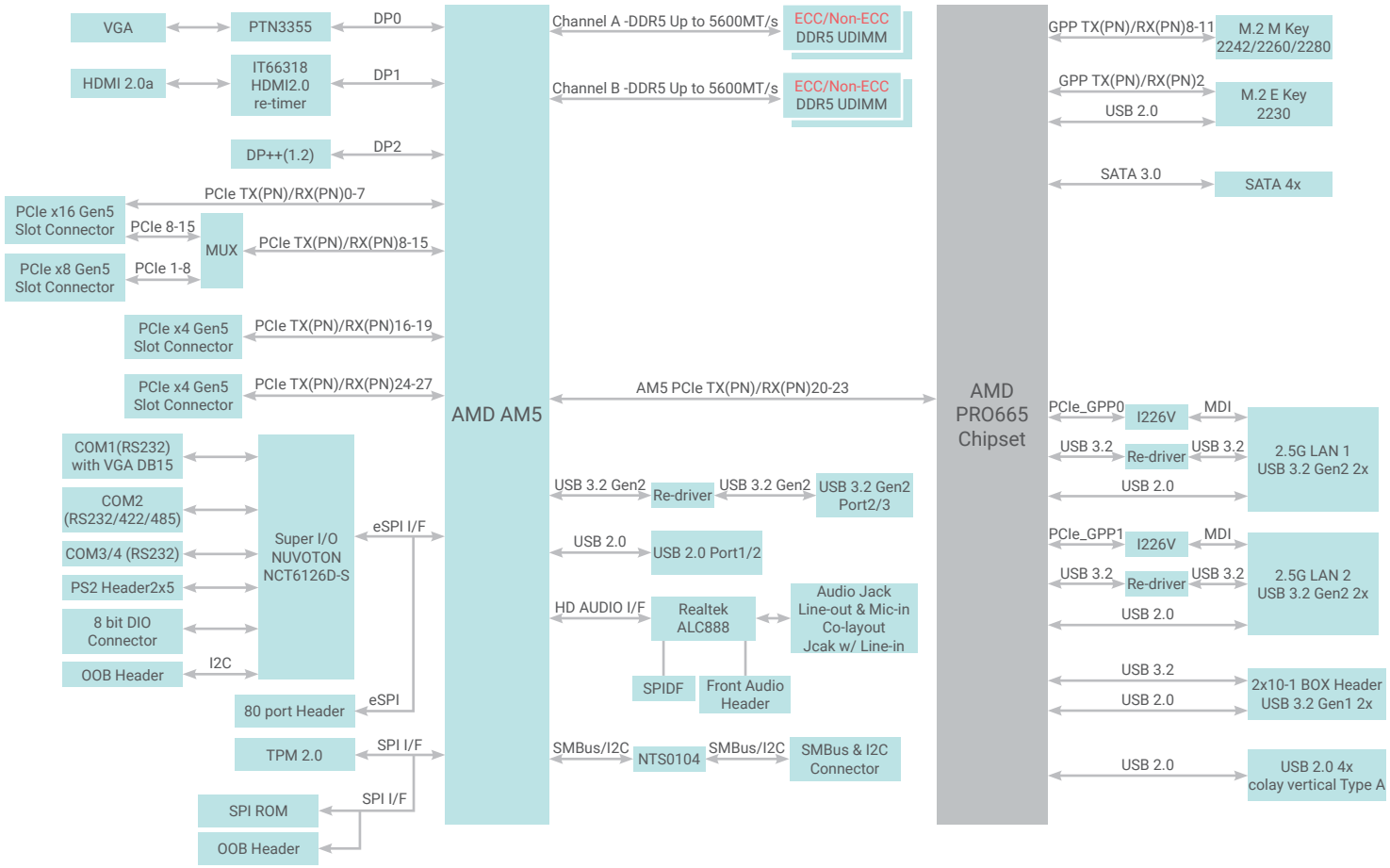
Multiple Expansion

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

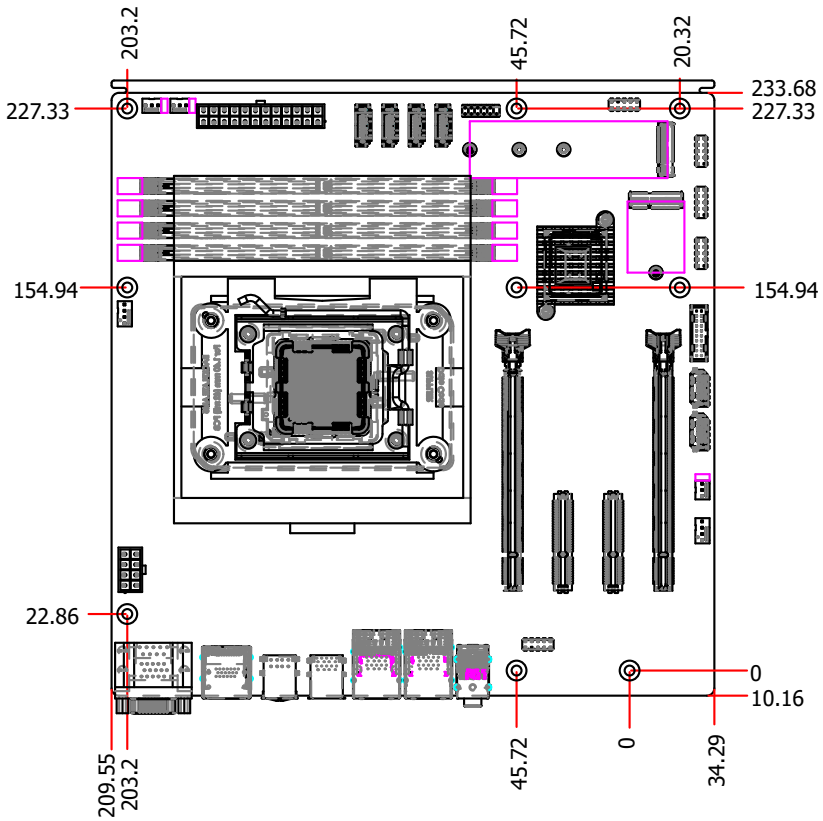
Rich I/O

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 Series AM5 Socket Processors, TDP support up to 170W Ryzen™ 9950X3D (16 Cores, 128M Cache, up to 5.7 GHz); 170W Ryzen™ 9900X3D (12 Cores, 128M Cache, up to 5.5 GHz); 120W Ryzen™ 9950X (16 Cores, 64M Cache, up to 5.7 GHz); 170W Ryzen™ 9900X (12 Cores, 64M Cache, up to 5.6 GHz); 120W Ryzen™ 9800X3D (8 Cores, 96M Cache, up to 5.12 GHz); 120W Ryzen™ PRO 9945 (12 Cores, 64M Cache, up to 5.6 GHz); 65W Ryzen™ PRO 9745 (8 Cores, 32M Cache, up to 5.5 GHz); 65W Ryzen™ PRO 9645 (6 Cores, 32M Cache, up to 5.4 GHz); 65W AMD® Ryzen™ 7000 Series AM5 Socket Processors, TDP support up to 170W Ryzen™ PRO 7945 (12 Cores, 64M Cache, up to 5.4 GHz); 65W Ryzen™ PRO 7745 (8 Cores, 32M Cache, up to 5.3 GHz); 65W Ryzen™ PRO 7645 (6 Cores, 32M Cache, up to 5.1 GHz); 65W AMD® EPYC 4005 Series AM5 Socket Processors, TDP support up to 170W EPYC™ 4565P (16 Cores, 64M Cache, up to 5.7 GHz); 170W 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	AMD B650
	Memory	Four 288-pin UDIMM Dual Channel (ECC/Non-ECC) DDR5 up to 5200 MHz (up to 128GB)(Ryzen™ 7000 Series) DDR5 up to 5600 MHz (up to 192GB)(Ryzen™ 9000/EPYC 4005 Series) ***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 5, 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 5)
		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^2C	1 x SMBus/ I^2C
WATCHDOG TIMER	**Output & Interval**	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	**TPM**	TPM 2.0
POWER	**Type**	ATX
	Connector	8-pin ATX 12V power
		24-pin ATX power
	Consumption	TBD
	RTC Battery	CR2032 Coin Cell

SPECIFICATION

OS SUPPORT	**Microsoft**	Windows 11 24H2 LTSC Windows Server 2025 (only EPYC 4005 series)
	Linux	Ubuntu 24.04
ENVIRONMENT	**Temperature**	**Operating:** -5 to 65°C **Storage:** -40 to 85°C
	Humidity	**Operating:** 5 to 95% RH **Storage:** 5 to 95% RH
	MTBF	TBD
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

ORDERING INFORMATION

Model Name	P/N	PCH	USB 3.2 Gen2 (10G)	USB 3.2 Gen1 (5G)	USB 2.0	SATA 3	TPM	LAN	DDR5
RAP311-B650	770-RAP3111-000G	B650	6	2	6	4	dTPM 2.0	2	Non ECC/ECC
	770-RAP3111-100G						fTPM 2.0		

PACKING LIST

1 RAP311-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)	A81-001196-023G
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 (Cooler)	TBD
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

DFI reserves the right to change the specifications at any time prior to the product's release. Changes thereafter will be based on the product's revision. Please contact your sales representative for the exact revision offered in your area. All product names mentioned are trademarks of their respective companies. © November 19, 2026 DFI Inc.