AIMB-523

Micro-ATX Motherboard AMD Ryzen™ Embedded 7000/9000 and EPYC™ Embedded 4005 Series Processors

Features

- AMD Ryzen™ Embedded 7000/9000 and EPYC™ Embedded 4005 Series processors with B650 chipset
- 6 LAN ports with 2.5GbE for multiple IP-based devices
- Triple displays by 1 DP and 2 HDMI
- High-speed expansions: PCIex16 Gen5, 8 USB 3.2, 1 M.2 M-key (PCIe Gen4 x4)
- 1 internal USB2.0 type A to support USB keylock functions
- Support Windows 10/11, Windows Server and Ubuntu

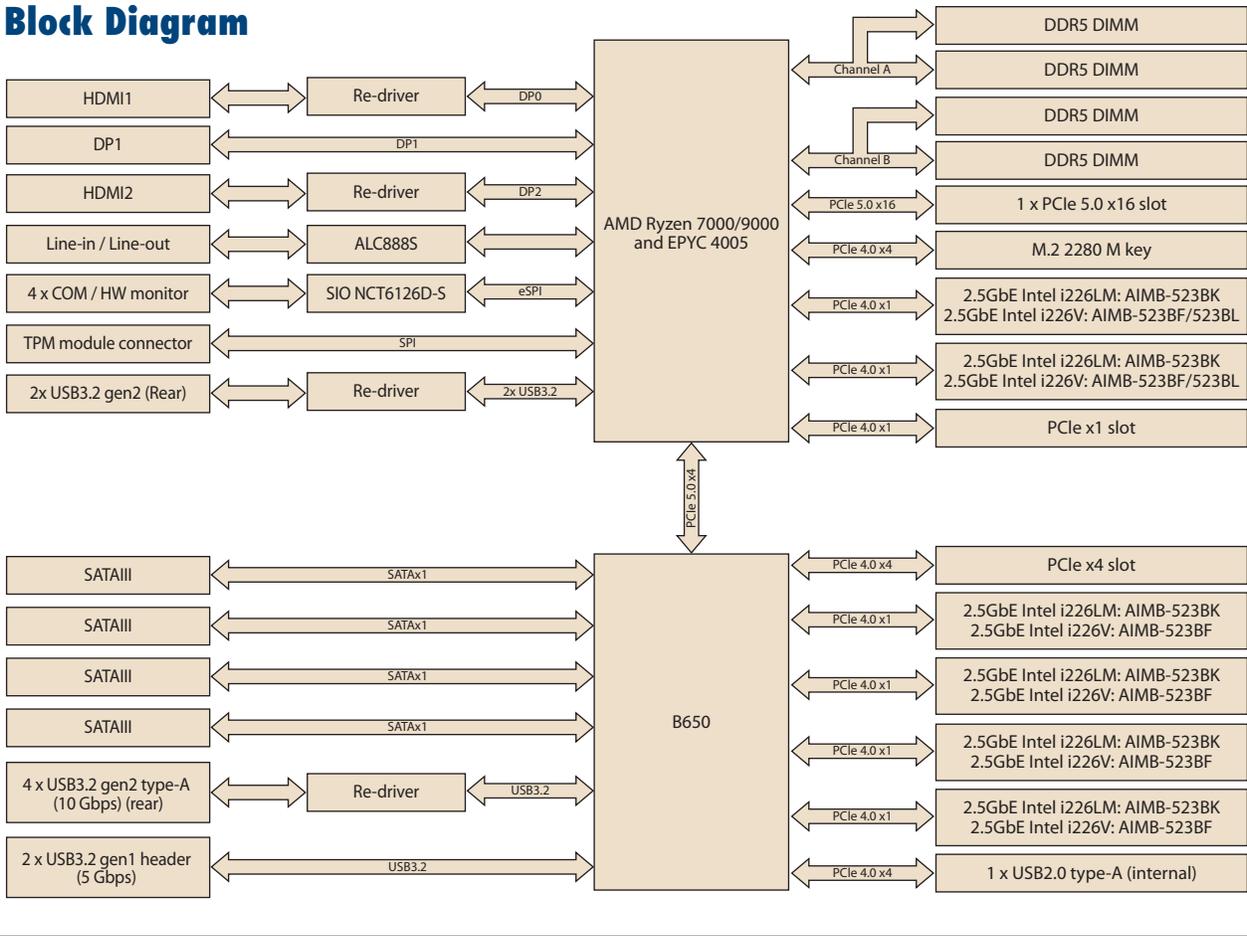**Software APIs:** SMBus, H/W Monitor, Watchdog, GPIO

Utilities: BIOS flash, Monitoring

Windows 11 · Windows 10 · Windows Server · Canonical Ubuntu · WISE-DeviceOn · CE · FCC

Specifications

		Ryzen 7 7700X	Ryzen 5 7600X	Ryzen 9 PRO 7945	Ryzen 7 PRO 7745	Ryzen 5 PRO 7645
Processor System	CPU					
	Core Number	8C	6C	12C	8C	6C
	Max. Speed	5.4 GHz	5.3 GHz	5.4 GHz	5.1 GHz	5 GHz
	L2 cache	8MB	6MB	12MB	8MB	6MB
	L3 Cache	32 MB	32 MB	64 MB	32 MB	32 MB
	TDP (W)	105W	105W	65W	65W	65W
	Graphic	Yes	Yes	Yes	Yes	Yes
	Chipset	B650				
	BIOS	AMI EFI 256 Mbit SPI				
Expansion Slot	PCIe x16	1 (Gen5, x16 signal from CPU)				
	PCIe x4	1 (Gen4, x4 signal from B650)				
	PCIex1	1 (Gen4, x1 signal from B650)				
	M.2	1 (2280 M key, PCIe Gen4 x4 from CPU)				
Memory	Technology	Supports Dual Channel DDR5 up to 5200MHz				
	Max. Capacity	128GB (32GB per DIMM)				
	Socket	4 x 288 pin U DIMM				
Graphics	Controller	Radeon™ Graphics				
	HDMI	2, up to 3840 x 2160@60Hz				
	Display Port	1, up to 3840 x 2160@60Hz				
	Dual Display	HDMI+DP, HDMI+HDMI				
	Triple Display	HDMI+HDMI+DP				
Ethernet	Controller	2.5GbE Intel i226V (523BF/523BL); 2.5GbE Intel I226LM (523BK) support Windows Server by request				
	Connector	6 RJ45 (523BK/523BF) / 2 RJ45 (523BL)				
SATA	Max Data Transfer Rate	600 MB/s Max. (SATA 3.0)				
	Q'ty	4				
Rear I/O	Display Port	1				
	HDMI	2				
	Ethernet	6				
	USB	6 USB 3.2 ports (2 ports from CPU, 4 ports from FCH B650)				
	Audio	2 Jacks (colay 3 Jacks)				
Internal Connector	USB 2.0	1, type A vertical connector				
	USB 3.2	2, one box header				
	Serial	4, COM1&2 support RS-232/422/485; COM3&4 support RS-232				
	SATA 3.0	4				
	M.2 (M key)	1 (2280 NVMe PCIex4)				
	GPIO	1, 8bit pin header				
Watchdog Timer	Output	System reset				
	Interval	Programmable 1 ~ 255 sec/min				
Power Requirements	Operation	+5V	3.3V	12V	12V_8P	
	Configuration: AMD Ryzen 9 Pro 7945 12-Core Processor 3.7GHz with UDIMM DDR5 5600 32GB*4pcs	4.37120A	1.59790A	1.26122A	10.17750A	
	Standby (5Vsb)	3A				
Environment	Temperature	Operating 0 ~ 60 °C (depends on CPU speed and cooler solution)				
Physical Characteristics	Dimensions	244 x 244 mm				
Power	Input Mode	ATX input				

Block Diagram

Left side inputs/outputs (top CPU block):
- HDMI1 → Re-driver → DP0 → AMD Ryzen 7000/9000 and EPYC 4005
- DP1 → DP1
- HDMI2 → Re-driver → DP2
- Line-in / Line-out → ALC888S
- 4 x COM / HW monitor → SIO NCT6126D-S → eSPI
- TPM module connector → SPI
- 2x USB3.2 gen2 (Rear) → Re-driver → 2x USB3.2

Right side (CPU block — AMD Ryzen 7000/9000 and EPYC 4005):
- Channel A → DDR5 DIMM, DDR5 DIMM
- Channel B → DDR5 DIMM, DDR5 DIMM
- PCIe 5.0 x16 → 1 x PCIe 5.0 x16 slot
- PCIe 4.0 x4 → M.2 2280 M key
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF/523BL
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF/523BL
- PCIe 4.0 x1 → PCIe x1 slot

CPU block to B650: PCIe 5.0 x4

Left side (B650 block inputs):
- SATAIII → SATAx1
- SATAIII → SATAx1
- SATAIII → SATAx1
- SATAIII → SATAx1
- 4 x USB3.2 gen2 type-A (10 Gbps) (rear) → Re-driver → USB3.2
- 2 x USB3.2 gen1 header (5 Gbps) → USB3.2

Right side (B650 block outputs):
- PCIe 4.0 x4 → PCIe x4 slot
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF
- PCIe 4.0 x1 → 2.5GbE Intel i226LM: AIMB-523BK / 2.5GbE Intel i226V: AIMB-523BF
- PCIe 4.0 x4 → 1 x USB2.0 type-A (internal)

Ordering Information

P/N	Chipset	Support CPU TDP	Memory slot	USB 3.2 Gen2	USB 3.2 Gen1	USB 2.0 Internal TypeA	PCIe x16 (Gen 5)	PCIe x4 (Gen 4)	PCIe x1 (Gen 3)	M.2 (Gen 4)	2.5 GbE LAN PSE Support	2.5 GbE LAN	DP	HDMI	SATA III	COM	Audio Jack	TPM
AIMB-523BK-PAA1	B650	65–170W	4	2	6	1	1	1	1	1	2*	4	1	2	4	4	2 jacks	(1)**
AIMB-523BF-6AA1	B650	65–105W	4	2	6	1	1	1	1	1	0	6	1	2	4	4	2 jacks	(1)**
AIMB-523BL-2AA1	B650	65–105W	4	2	6	1	1	1	1	1	0	2	1	2	4	4	2 jacks	(1)**
AIMB-523BF-6AA1U	B650	65–105W	4	2	6	1	1	1	1	1	0	6	1	2	4	4	2 jacks	(1)**

() means BOM option
*Please refer to the Optional Accessories for MIOe-PSE module to support PSE function (a module supports two PSE LAN)
**Please refer to the Optional Accessories for TPM module

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	2
1700000447	1-to-4 serial ports cable	1
1960116132T001	I/O port bracket	1
1930005673-11	M.2 screws	1
2046052300	AIMB-523 Startup manual	1

Optional Accessories

Part Number	Description
AIMB-TPMSPI-0IA1	TPM 2.0 SPI module (SLB9672 FW15.23)
1970005786N001	AMD AM5 CPU cooler H: 125mm (for TDP 105W, Operating Ta 35°C)
MIOE-PSE-DPA1	MIOe-PSE Dual Port 15.4W PoE PSE module
1970005287T001	AMD AM5 CPU cooler H: 79.55mm (for TDP 65W, Operating Ta 60°C)

I/O view

AIMB-523BK/AIMB-523BF

AIMB-523BL

Embedded OS/API

OS/API	Part No.	Description
Windows 11	20706WLE1S0028	img W11 24EL AIMB-523 64b 24H2 ENU
	20706WLH1S0028	img W11 24HL AIMB-523 64b 24H2 ENU
	20706WLV1S0028	img W11 24VL AIMB-523 64b 24H2 ENU
Ubuntu	20706U22DS0063	img UbuntuD AIMB-523 64b 22.04

Tento produkt můžete zakoupit u společnosti AutoCont IPC a.s.

IPC AutoCont

AutoCont IPC a.s.
Váš dodavatel průmyslových počítačů, komponent a speciálních průmyslových IT systémů.

Uhlířská 1064/3, 710 00 Ostrava, Česká republika

obchod@autocont-ipc.cz   +420 552 301 002   www.autocont-ipc.cz

PRŮMYSLOVÉ POČÍTAČE
fanless embedded PC, do racku, …

POČÍTAČE S DISPLEJEM
panelové PC, terminály, do vozidel, …

AUTOMATIZACE A SBĚR DAT
převodníky, karty, moduly, switche, …

PERIFERIE A KOMPONENTY
monitory, klávesnice, desky, skříně, …

NOTEBOOKY A TABLETY
odolné, windows, android, IP65, …

INFORMAČNÍ KIOSKY
interiérové, venkovní, …

MEDICÍNSKÁ TECHNIKA
počítače, tablety, LCD, klávesnice, …

SOFTWAROVÁ ŘEŠENÍ
pro výrobu, zaměstnance, kiosky, …

PŘEJÍT DO E-SHOPU
eshop.autocont-ipc.cz

DOPRAVA ZDARMA
Doprava zdarma v ČR a SR při objednávce nad 10 000 Kč bez DPH nebo nad 400 EUR.

PRODLOUŽENÁ ZÁRUKA
Záruka 2 roky na vyráběné počítače s možností jejího prodloužení až na 5 let.

ODMĚNA ZA VĚRNOST
Pravidelní zákazníci u nás nakupují za nižší ceny. Výše slevy se odvíjí od realizovaného obratu.

SERVIS ON-SITE A IN-TIME
K projektovým dodávkám nabízíme rozšířenou podporu a servis s garancí výměny zařízení do 48 hodin.