AIMB-523E

Micro-ATX Motherboard AMD EPYC™ Embedded 4005 Series Processors

Features

- AMD EPYC™ Embedded 4005 Series processors with B650 chipset
- 6 LAN ports with 2.5GbE
- 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 Server

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

Utilities: BIOS flash, Monitoring

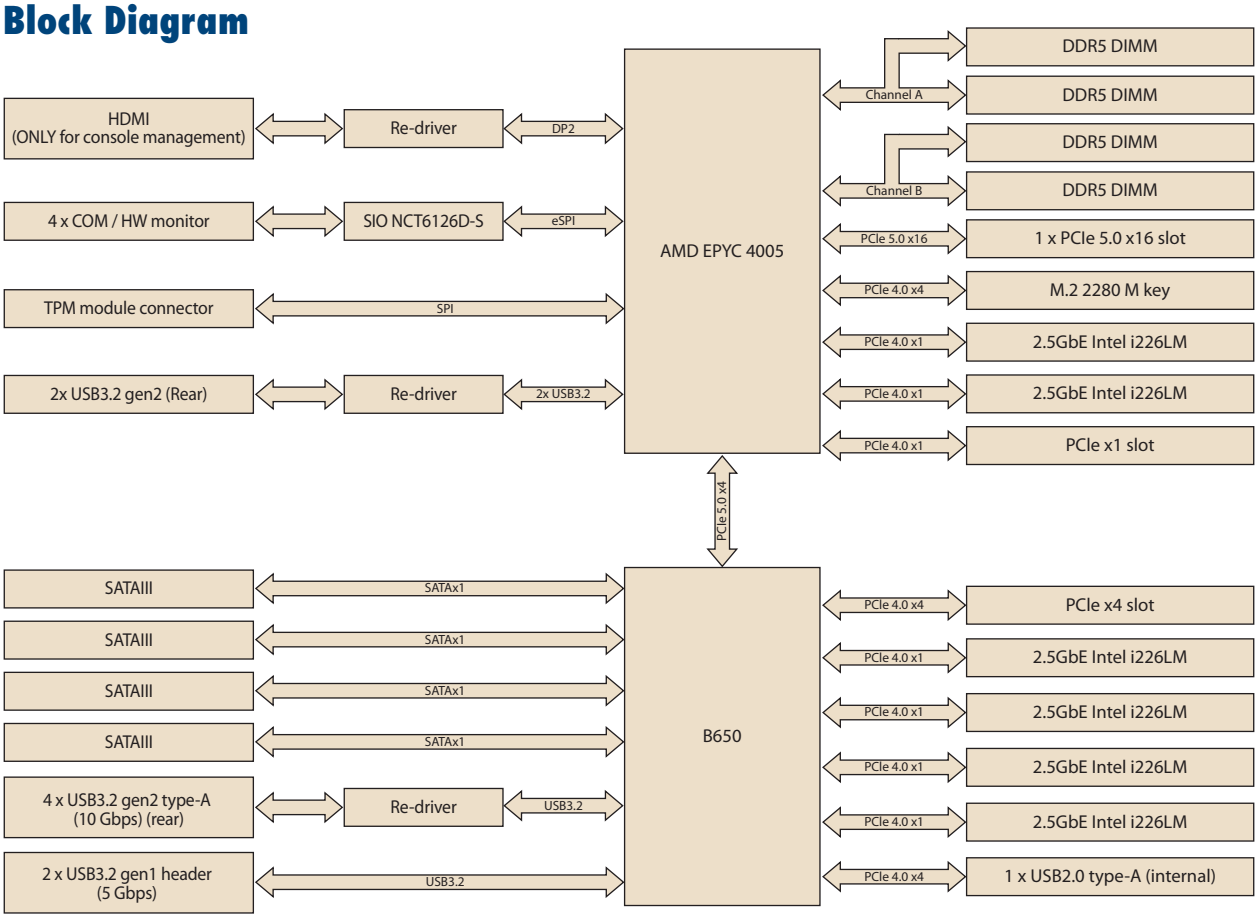
Windows Server WISE-DeviceOn CE FCC

Specifications

AMD Ryzen™ Embedded 9000 Processors	CPU	4565P	4545P	4465P	4345P	4245P
	Core	16	16	12	8	6
	Base frequency (GHz)	4.3	3	3.4	3.8	3.9
	Max Speed (GHz)	5.7	5.4	5.4	5.5	5.4
	L3 Cache (MB)	64	64	64	32	32
	TDP (W)	170	65	65	65	65
Processor System	Chipset	B650				
	BIOS	AMI EFI 256 Mbit SPI				
Memory	Technology	DDR5, Dual Channel, support UDIMM				
	Frequency	5600MT/s (2SPC, 1DCP, non-ECC), 5200MT/s (2SPC, 1DCP, ECC), 3600MT/s (2SPC, 2DPC, non-ECC)				
	Max. Capacity	192GB (up to 48GB per DIMM)				
	ECC Support	Yes				
	Socket	4 x 288-pin DDR5 UDIMM sockets				
Graphics	Controller	Radeon™ Graphics				
	HDMI	1, up to 3840 x 2160@60Hz (ONLY for console management)				
Network	Ethernet	10/100/1000/2500 Mbps				
	Controller	6 x Intel I226LM 2.5 GbE				
	Connector	6 x RJ45				
SATA	Max data transfer rate	Max. 600 MB/s				
	Channel	4				
Expansion Slot	M.2	1 x M-key (2280, for NVMe SSD, PCIe gen4x4)				
	PCIe x1	1 x PCIe x1 slot with x1 Gen4 lanes				
	PCIe x4	1 x PCIe x4 slot with x4 Gen4 lanes				
	PCIe x16	1 x PCIe x16 slot with x16 Gen5 lanes				
Rear I/O	HDMI	1 (ONLY for console management)				
	RJ45	6 x RJ45				
	USB	6 x USB3.2 Gen2 type A				
Internal Connector	USB	2 x USB3.2 Gen1 (one box header) 1 x USB 2.0 type A vertical connector				
	Serial	4, COM1&2 support RS-232/422/485; COM3&4 support RS-232				
	SATA	4				
	GPIO	1 x 8-bit				
	Intrusion Protection	1				
	M.2	1 x M-key				
	CPU & System Fan Connector	1 x PWM CPU FAN 4 x PWM SYS FAN				
	Power Connector	1 x ATX PSU 24pin power connector 1 x ATX PSU 8pin power connector for CPU/APU				
Watchdog Timer	Output	System reset				
	Interval	Programmable 1 ~ 255 (second or minute)				
Power Requirements	Input voltage	ATX				
	Connector	1 x ATX PSU 24pin power connector 1 x ATX PSU 8pin power connector for CPU/APU				
	Operation	+5V	3.3V	12V	12V_8P	
	Configuration: AMD EPYC 4565P 16-Core Processor 4.3GHz with UDIMM DDR5 5600 48GB*4pcs	4.56920A	1.45071A	2.27760A	24.12390A	
	Standby (5Vsb)	3A				
Environment	Temperature	Operating: 0 ~ 60° C (32 ~ 140° F), depends on CPU speed and cooler solution				
	Storage	Non-Operating: -40 ~ 85° C (-40 ~ 185° F)				
Physical Characteristics	Dimensions	244 mm x 244 mm (9.6" x 9.6")				

Last updated: 19-May-2026

Block Diagram



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 4)	M.2 (Gen 4)	2.5 GbE LAN PSE Support	2.5 GbE LAN	HDMI	SATA III	COM	TPM
AIMB-523E-PAA1	B650	65–170W	4	6	2	1	1	1	1	1	2*	4	1**	4	4	(1)***

() means BOM option
*Please refer to the Optional Accessories for MIOe-PSE module to support PSE function (a module supports two PSE LAN)
**ONLY for console management
***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)
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-523E-PAA1

Embedded OS/API

OS/API	P/N	Description
Windows11	20706WLE1S0130	img W11 24EL 64b 24H2 ENU
Windows11	20706WLH1S0130	img W11 24HL 64b 24H2 ENU
Windows11	20706WLV1S0130	img W11 24VL 64b 24H2 ENU
Ubuntu	20706U24ES0014	img Ubuntu Pro-E 64b 24.04 ENU
Ubuntu	20706U24HS0014	img Ubuntu Pro-H 64b 24.04 ENU
Ubuntu	20706U24VS0017	img Ubuntu Pro-V 64b 24.04 ENU
Ubuntu	20706U24DS0049	img Ubuntu Desktop 64b 24.04 ENU