

AIMB-522

Micro-ATX Motherboard AMD Ryzen™ Embedded 5000 Series Processors



Features

- Supports AMD AM4 Ryzen™ 5000 series processor with X570 chipset
- Supports triple displays. (DP, VGA, HDMI display)
- Supports PCIe Gen4, max up to 8 x USB 3.2 Gen2, 3 x USB 2.0, 4 x SATAIII, 2 x 2.5GbE, 2 x 1GbE LANs, M.2 (M Key & E Key)
- Supports DeviceOn and Embedded Software APIs

Software APIs:

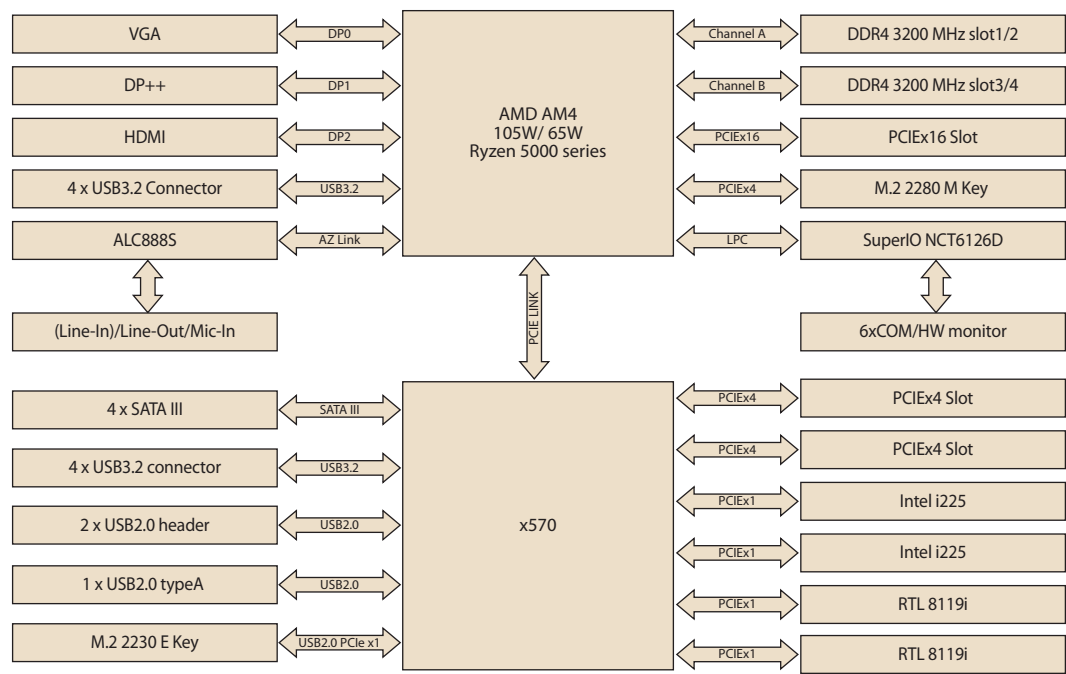


Utilities:



Processor System	CPU	5950E	5900E	5800E	5600E	5950X	5900X	5800X	5600G	5700G
	Core Number	12	10	8	6	16	12	8	6	8
	Max. Speed	3.4 GHz	3.7 GHz	3.7 GHz	3.6 GHz	3.4GHz	3.7GHz	3.8GHz	3.9GHz	3.8GHz
	L3 Cache	64 MB	64 MB	32 MB	32 MB	64MB	64MB	32MB	16MB	16MB
	TDP (W)	105W	105W	100W	65W	105W	105W	105W	65W	65W
	CPU/APU	CPU	CPU	CPU	CPU	CPU	CPU	CPU	APU	APU
	Chipset	X570								
BIOS	AMI EFI 256 Mbit SPI									
Expansion Slot	PCIe x16	1 (x16 Gen4 signal from CPU; Gen3 signal from APU)								
	PCIe x4 slot 1	1 (x4 signal from X570), only support half-length card and up-to PCIe x8 card								
	PCIe x4 slot 2	1 (x4 signal from X570), only support half-length card and up-to PCIe x8 card								
	M.2	1 (2280 M key, PCIe Gen4 x4 from CPU, Gen3 x4 from APU) 1 (2230 E key, USB 2.0 and PCIe Gen4 x1 from X570)								
Memory	Technology	Supports Dual Channel DDR4 3200MHz								
	Max. Capacity	128GB (32GB per DIMM)								
	Socket	4 x 288 pin U DIMM								
Graphics	Controller	APU : Radeon™ Graphics CPU: N/A (Discrete Graphics Card Required)								
	VGA	1, up to 1920x1200@60Hz, 2048x1152@60Hz								
	HDMI	1, up to 4096x2304@30Hz								
	Display Port	1, up to 4096x2304@30Hz								
	Triple Display	VGA+DP+HDMI (5600G/5700G only)								
Ethernet	Controller	2 x INTEL LAN i225LM, 2 x Realtek 8119i								
	Connector	4 x RJ 45								
SATA	Max Data Transfer Rate	600 MB/s Max. (SATA 3.0)								
	Q'ty	4								
Rear I/O	Display Port	1								
	VGA	1								
	HDMI	1								
	Ethernet	4								
	USB	8 USB 3.2 ports (4 ports from CPU/APU, 4 ports from X570)								
	Audio	2 Jacks (colay 3 Jacks)								
Internal Connector	USB 2.0	2 for pin header and 1 for type A connector								
	Serial	COM1, COM2 with 10pin box header (RS-232/422/485) COM3456 with 40pin box header (RS-232 only)								
	SATA 3.0	4								
	PS/2 (KBMS1)	1 (6-pin header)								
	M.2 (M key)	1 (2280 NVMe PCIe4)								
	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 3900X 12-Core Processor 3.79GHz with UDIMM DDR4 3200 8GB*4pcs	4.424A	0.843A	2.344A	11.876A					
	Standby (5Vsb)	2A								
Environment		Operating					Non-Operating			
	Temperature	0 ~ 60 °C (depends on CPU speed and cooler solution)					-40 ~ 85 °C (-40 ~ 185 °F)			
Physical Characteristics	Dimensions	244 x 244 mm								
Power	Input Mode	ATX input								

Block Diagram



Ordering Information

P/N	Chipset	Rear IO USB3.2	Internal USB2.0 header	Internal USB2.0 typeA	DP++/ VGA	HDMI	GbE LAN	2.5 GbE LAN	SATA III	COM	M.2 E-key	M.2 M-key	TPM	AMP (6W)
AIMB-522G4-00A1	X570	8	2	1	1/1	1	2	2	4	6	1	1	1	(1)
AIMB-522G2-00A1	X570	8	2	1	1/1	1	2 (Realtek 8119i only)	0	4	6	1	1	1	(1)

* () means BOM option

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	2
1960107927T001	I/O port bracket	1
1930006770-01	M.2 screws	2
1700022363-01	1-to-1 serial port cable kit, 17cm	2
2046052200	AIMB-522 Startup manual	1

Optional Accessories

Part Number	Description
1700033177-01	1-to-1 serial port cable kit, 60cm with bracket
1700030647-01	1-to-1 serial port cable kit, 30cm
1700034017-01	1-to-4 serial ports cable kit with shield, 50cm
1700002204	Dual port USB 2.0 cable, 27cm with bracket
1700032182-01	Dual port USB 2.0 cable, 60cm
1970005287T001	AMD AM4 CPU cooler for 2U chassis, for CPU TDP 65W, 96x92x79.55mm

I/O View



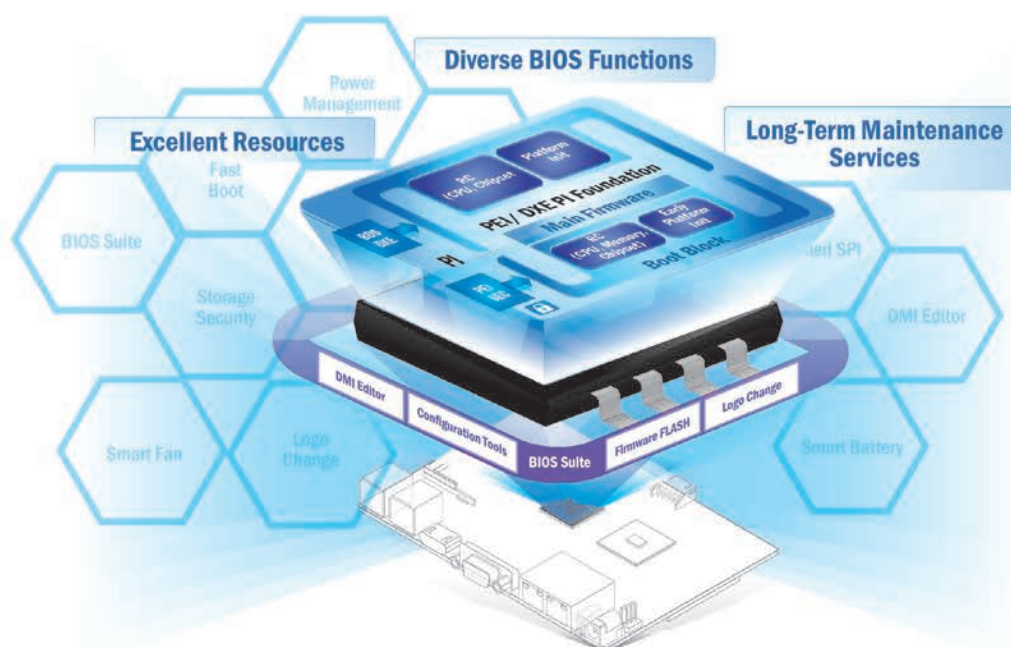
Embedded OS/API

OS/API	Part No.	Description
win10 IoT Ent	20706WX9ES0172	IMG W10 19EL
	20706WX9HS0157	IMG W10 19HL
	20706WX9VS0161	IMG W10 19VL
Ubuntu20.04	20706U20DS0054	Ubuntu Desktop 20.04 LTS 64bit Image

Reliable Embedded BIOS Solutions

Custom BIOS services with long-term support

Advantech's high-quality embedded BIOS solutions deliver rapid execution and feature expert BIOS team support. These solutions feature multi-functional designs that ensure security and enable power/boot management. Advantech further provides 10+ years of BIOS version management, internal management, and longevity support for both hardware and BIOS — enhancing application efficiency, diversifying functionality, and optimizing performance.



Embedded BIOS Solution Advantages

Sufficient Sources

- Strong partnership with BIOS vendors
- 50+ engineers with extensive industrial BIOS experience

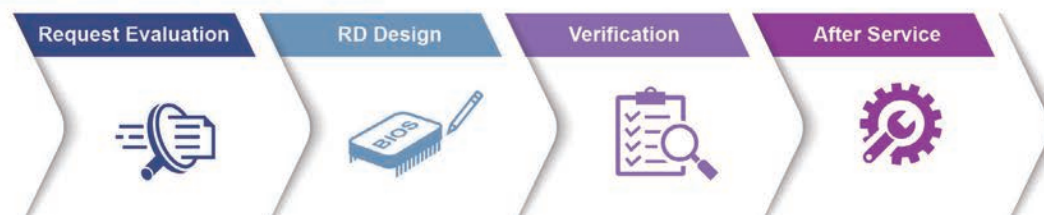
Diverse BIOS Functions

- Multi-layer security
- 3 second fast boot
- Power management
- BIOS suite utility

Long-Term Maintenance Services

- Platform longevity support
- 10-year BIOS version control
- BIOS remote backup

Value-Added Customization Process



WISE-DeviceOn

Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.



Features

Comprehensive Management

- Devices status
- Peripherals/firmware
- Open for extension

Remote Access

- Real-time monitoring
- Remote controls
- Troubleshooting

Efficient Operations

- Zero-touch on-boarding
- OTA updates
- Batch control

Product Highlights



SOM-6883

High-performance 11th Gen Intel®
COMe Type 6 Module



MIO-5375

Compact 11th Gen Intel® Outdoor
Focused 3.5" SBC



EPC-B5587

10th Gen Intel® Xeon® based Edge
server



EPC-R3220

Arm based IoT Edge Gateway

Embedded Linux Support and Design-in Services

Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.



Features

Certified OS and BSP	Licensed Services	Numerous AI and Edge Resources	Local Partner Alliance
- Platform compatibility tests - Preloaded functional driver and software stacks	- License authorized Canonical delivers 10-years of bug fixes and security updates - In-house bundled service	- Containerized technology for service provision and deployment - AI resources from Caffe, TensorFlow, and mxnet	Embedded Linux and Android Alliance (ELAA)