

# AIMB-589

## Micro-ATX Motherboard Intel® Core™ Ultra Series 2 Processors (codename: Arrow Lake-S)



### Features

- Intel® Core™ Ultra Series 2 Processors, max. 24Core. Support W880/Q870 chipsets
- Up to 192GB DDR5 UDIMMs/CUDIMMs for data transfer
- 2 x 2.5GbE LAN and 2 x GbE LAN for digital devices
- 1 x USB4, 8 x USB3.2, 4 x USB2.0
- 2 x M.2 M-Key 2280 for NVMe SSD
- Accommodate 2 double-deck GPU cards by PCIe x16 slots (x8 lanes)
- WISE-DeviceOn and Embedded Software APIs

#### Software APIs:



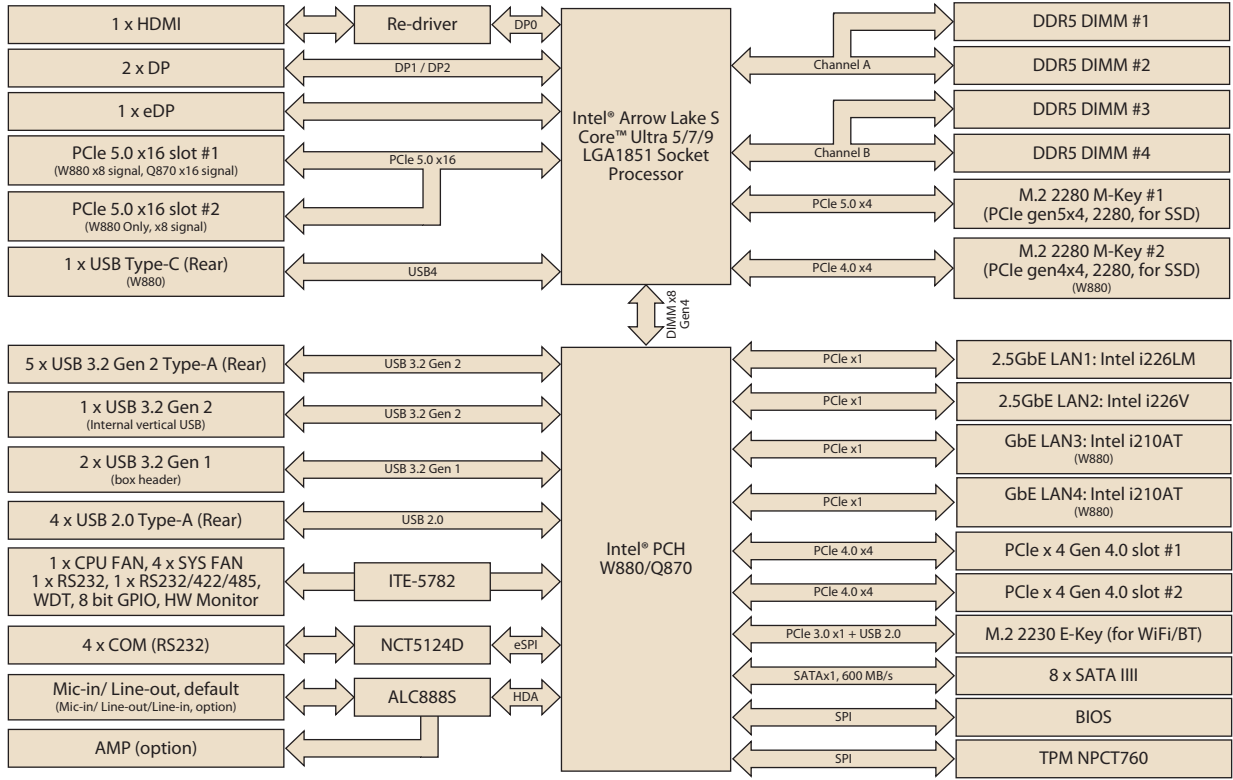
#### Utilities:



### Specifications

		Ultra 9 285	Ultra 9 285T	Ultra 7 265	Ultra 7 265T	Ultra 5 245	Ultra 5 245T	Ultra 5 225	Ultra 5 225T	
Processors	CPU	Ultra 9 285	Ultra 9 285T	Ultra 7 265	Ultra 7 265T	Ultra 5 245	Ultra 5 245T	Ultra 5 225	Ultra 5 225T	
	Core Number	24	24	20	20	14	14	10	10	
	Base frequency (GHz)	2.5/1.9	1.4/1.2	2.4/1.8	1.5/1.2	3.5/3.0	2.2/1.7	3.3/2.7	2.5/1.9	
	Max Speed (GHz)	5.6/4.6	5.6/4.6	5.3/4.6	5.3/4.6	5.1/4.5	5.1/4.5	4.9/4.4	4.9/4.4	
	Smart cache (MB)	36	36	30	30	24	24	20	20	
TDP (W)	65	35	65	35	65	35	65	35		
Processor System	Chipset	W880/Q870								
	BIOS	AMI EFI 512 Mbit SPI								
Expansion Slot	M.2 M-Key	2 x M-key (2280, for NVMe SSD, 1 x PCIe gen5x4, 1 x PCIe gen4x4--option by SKU)								
	M.2 E-Key	1 x E-Key (2230, for Wireless connection)								
	PCIe x16	2 x PCIe x16 slot with x8 Gen5 lanes or 1 x PCIe x16 slot with x16 Gen5 lanes (option by SKU)								
	PCIe x4	2 x PCIe x4 Gen4								
Memory	Technology	Dual Channel DDR5 up to 5600 MT/s, ECC memory supported by all CPU only with Chipset W880								
	Max. Capacity	192GB (up to 48GB per DIMM)								
	Frequency	5600MT/s (1DIMM 1R/2R), 4400MT/s (2DIMM 1R)								
	Socket	4 x 288-pin DDR5 UDIMMs/CUDIMMs sockets								
Graphics	Controller	Enhanced Intel® Xe LPG architecture								
	HDMI	1 x HDMI 2.1 TMDS, up to 4096 x 2160 @ 60Hz								
	DP	3 x DP++ 1.4, up to 4096 x 2160 @ 60Hz, Including 1 x USB Type-C, support DisplayPort1.4 Alt. Mode (option by SKU)								
	eDP	1 x eDP1.4, up to 4096 x 2160 @ 60Hz (Internal pin header)								
	Multi Displays	Up to 4 independent displays								
Network	Ethernet	2 x 10/100/1000/2500 Mbps, 2 x 10/100/1000 Mbps								
	Controller	1 x Intel I226LM 2.5 GbE (vPro support) 1 x Intel I226V 2.5 GbE 2 x Intel I210AT GbE (option by SKU)								
	Connector	4 x RJ45								
Audio	Codec	Realtek ALC888S, High Definition Audio (HD), Line-Out (default)								
	Amplifier	Option (Max. 3W)								
SATA	Max data transfer rate	600 MB/s Max. (SATA 3.0)								
	Channel	8								
Rear I/O	DP	2								
	HDMI	1								
	Ethernet	4								
	USB	1 x USB4 Gen 3x2 40Gbps Type-C, support DisplayPort1.4 Alt. Mode (option by SKU) 5 x USB3.2 Gen2 Type-A 4 x USB2.0 Type-A								
	Audio	2 (Mic-in/ Line-out, default), 3 (Mic-in/ Line-out/Line-in, option)								
Internal Connector	USB	1 x USB3.2 Gen2 Type-A (vertical) 2 x USB3.2 Gen1 (one box header)								
	Extended Display Port (eDP)	1								
	Serial	6 (5 x RS-232, COM 2 RS-232/422/485 with auto flow control)								
	SATA III	8								
Watchdog Timer	GPIO	8-bit GPIO								
	Output	System reset								
	Interval	Programmable 1 – 255 (second or minute)								
Power Requirements	Operation	+5V			3.3V		12V		12V_8P	
	Configuration: Intel® Core™ Ultra 285 24-Core Processor 2.50GHz with UDIMM DDR5 4800 48GB*4pcs	4.55A			0.72A		0.04A		42.04700A	
	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")								
	Power	Input Mode ATX								

### Block Diagram



### Ordering Information

P/N	Chipset	PCIe x16/PCIe x8* (Gen5)	PCIe x4 (Gen4)	USB Type C (20x2Gbps)	USB 3.2 Gen 2	USB 2.0	USB 3.2 Gen1	DP	HDMI	eDP	2.5 GbE LAN	GbE LAN	SATA III	M.2 Gen5 M-key	M.2 Gen4 M-key	M.2 E-key	COM	Audio jack	TPM
AIMB-589WF-0AA1	W880	(1)/2	2	1	6	4	2	2	1	1	2	2	8	1	1	1	6	2 ports**	1
AIMB-589QM-0AA1	Q870	1/(2)	2	0	6	4	2	2	1	1	2	0	8	1	0	1	6	2 ports**	1

( ) means BOM option  
 \* 2 PCIe x8 Gen5 lanes at 2 PCIe16 physical slot.  
 W880 SKU default 2 x PCIe x8, option 1 x PCIe x16  
 Q870 SKU default 1 x PCIe x16, option 2 x PCIe x8  
 \*\* Option for 3 ports

### Packing List

P/N	Description	Quality
1700003194	SATA HDD cable	2
1920002619T000	I/O port bracket	1
1930005673-11	M.2 device screw	3 for AIMB-589WF 2 for AIMB-589QM
2046058900	Startup manual for AIMB-589	1

### Optional Accessories

P/N	Description
1700020277-01	Dual port USB 3.0 cable 30cm with IO bracket
1700035844-01	1-to-1 serial ports cable, 25cm
1970005349T001	LGA1700 CPU Cooler (for CPU TDP ≤ 65W), H: 56.5mm
1970005672T001	LGA1700 CPU Cooler (for CPU TDP ≤ 35W), H: 32mm

### I/O View



### Embedded OS/API

OS/API	P/N	Description
Windows11	20706WLV1S0132	img W11 24VL 64b 24H2 ENU
Windows11	20706WLH1S0132	img W11 24HL 64b 24H2 ENU
Windows11	20706WLE1S0132	img W11 24EL 64b 24H2 ENU
Ubuntu	20706U24VS0018	img Ubuntu Pro-V 64b 24.04 ENU
Ubuntu	20706U24HS0015	img Ubuntu Pro-H 64b 24.04 ENU
Ubuntu	20706U24ES0015	img Ubuntu Pro-E 64b 24.04 ENU
Ubuntu	20706U24DS0054	img Ubuntu Desktop 64b 24.04 ENU