Industrial Computer
COM Express Board
Pico-ITX Board
3.5" Board
EPIC Board
Mini-ITX Board
Micro-ATX Board
ATX Board
Peripheral

MS-98H5

EPIC SBC with Intel® Apollo Lake/Apollo Lake-I Series for Fanless, Low-Power, PoE, CANBus & Wide Temperature Solution

NEW
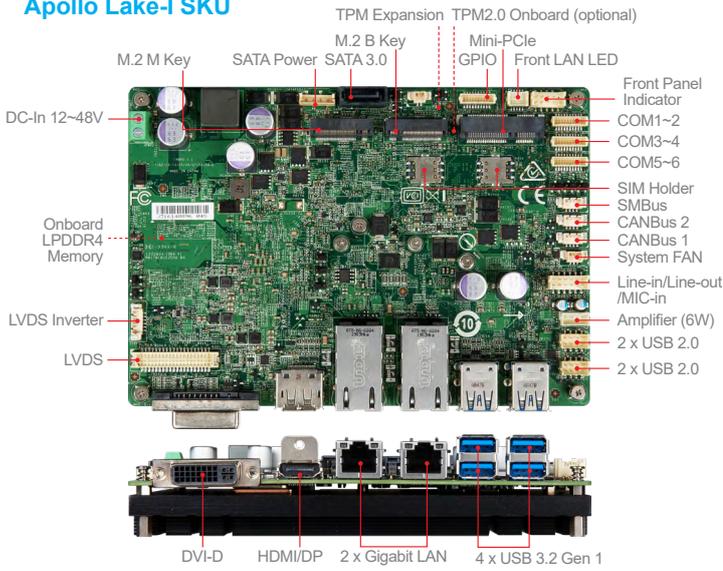
Apollo Lake-I SKU

Apollo Lake SKU
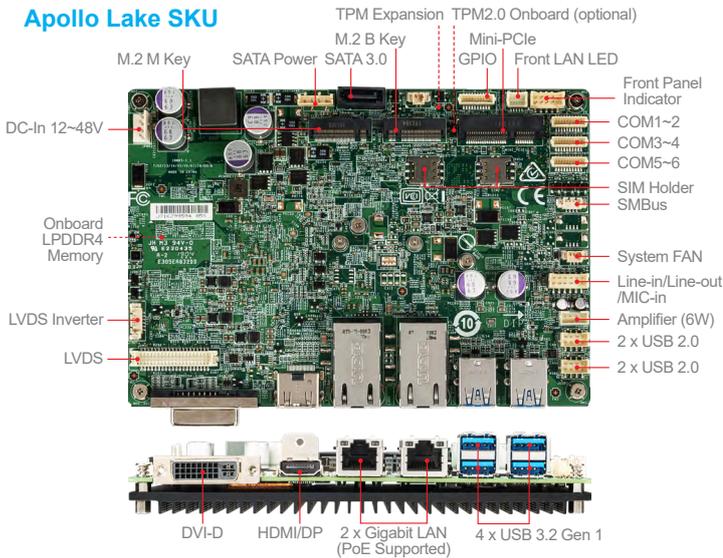
Specifications

		Apollo Lake SKUs	Apollo Lake-I SKUs
Processor	CPU	Intel® Celeron® Processor J3455, QC, 10W	Intel® Atom™ x7 Processor E3950, QC, 12W; Intel® Atom™ x5 Processor E3940, QC, 9.5W; Intel® Atom™ x5 Processor E3930, DC, 6.5W
	Frequency	J3455, 1.5 GHz, up to 2.3 GHz	E3950, 1.6 GHz, up to 2.0 GHz; E3940, 1.6 GHz, up to 1.8 GHz; E3930, 1.3 GHz, up to 1.8 GHz
	L2 Cache	2M	
	CPU Type	BGA	
	Chipset	Integrated in SoC	
	BIOS	AMI	
Memory	Technology	Single-channel LPDDR4 2133 MHz	
	Max. Capacity	Onboard up to 4 GB	
	Socket	Onboard	
Display	Controller	Intel® HD Graphics	
	Graphic Memory	Depends on CPU	
	LVDS	Dual-channel 18/24-bit	
	eDP	N/A	
	VGA	N/A	
	DVI	1 (DVI-D)	
	HDMI	1	
	DisplayPort	1 (Co-lay HDMI, by BOM option)	
	Multiple Display	3 independent displays	
	Display Interface	LVDS up to 1920 x 1200 @60 Hz; DVI-D up to 1920 x 1200 @60 Hz; HDMI up to 3840 x 2160 @30Hz; DP up to 4096 x 2160 @60Hz	
Ethernet	Controller	2 x Intel® I210-AT GbE LAN	2 x Intel® I210-IT GbE LAN (W/ PoE IEEE 802.3af)
Audio	Controller	Realtek® ALC888 HD Audio Codec	
Super I/O	Controller	Fintek F81867D-I	
H/W Monitor	Watchdog Timer	256-level Watchdog Timer	
	Smart Fan	Yes	
TPM	Controller	Pin header (Default); Infineon SLB9665TT 2.0 (by BOM option)	Infineon SLB9665XT 2.0 (Default)
I/O Interface	USB	4 x USB 2.0 (internal); 4 x USB 3.2 Gen 1 (rear)	
	Serial	6 x COM ports (internal); COM1~2: RS-232/422/485, 0V/5V/12V; COM3~6: RS-232, 0V/5V/12V	
	Parallel	N/A	
	PS/2	N/A	
	GPIO	16-bits (8 x GPI; 8 x GPO), 5V	
Expansion Slot	PCIe x 16	N/A	
	PCIe x 4	N/A	
	PCIe x 1	N/A	
	PCI	N/A	
	M.2	1 x M Key (SATA 3.0), 2242; 1 x B Key (PCIe x1, USB2.0), 3042	
	Mini-PCIe	1 x Full-size (w/ SIM holder)	
Storage	SATA	1 x SATA 3.0	
	IDE	N/A	
	eSATA	N/A	
	CFast	N/A	
	mSATA	N/A	
	CompactFlash	N/A	
Power Supply	DC	DC-in 12V~48V	
	ATX	N/A	
Environment	Operating Temperature	-10 ~ 60°C Note: Thermal w/ Airflow:0.7m/s	-40 ~ 85°C Note: Thermal w/ Airflow:0.7m/s
	Operating Humidity	10 ~ 90%, non-condensing	
	Storage Temperature	-20 ~ 80°C	-40 ~ 85°C
	Storage Humidity	10 ~ 90%, non-condensing	
Form Factor	Dimensions	165 x 115 mm (EPIC)	
	Weight	0.41 kg	0.72 kg
Certification	EMC	FCC, CE, RCM, VCCI, BSMI	
Software Platform	OS Support	Windows 10 IoT Enterprise LTSC/SAC 1809 (64-bit, RS5); Linux (Support by request)	

Features

- Intel® Apollo Lake/Apollo Lake-I Series SoC
- LPDDR4 2133 MHz onboard memory up to 4GB
- Triple independent displays : DVI-D, HDMI 1.4 (DP by option), LVDS
- 2 PoE/GbE LAN with RJ-45 (IEEE 802.11af compliant)
- 1 Mini-PCIe (Full size, with NANO SIM-Holder), 1 M.2 B Key (with NANO SIM-Holder)
- SATA 3.0, M.2 M Key for storage
- 4 USB 3.2 Gen 1, 4 USB 2.0, 6 COM (2 RS-485), GPIO, Audio
- Onboard TPM 2.0 (by option)
- ESD: Contact 6KV/ Air 8KV
- Dual channel CANBus 2.0B
- Wide operating temperature : -40~85°C
- Wide voltage DC-IN 12~48V

Packing List

Part Number	Description	Quantity
K1B-3008067-V03	USB Cable, 150mm	1
K14-3018001-V03	COM Cable, 150mm	1
K1G-3002031-V03	DC Power Cable, 150mm (for 919-98H5-002)	1
K1G-3004069-V03	DC Power Cable, 150mm (for 919-98H5-004)	1
K1D-3012023-V03	SATA Cable with Power, 230mm	1

Ordering Information

Part Number	Description
919-98H5-002	MS-98H5\609-98H5-020\809-98H5-005 VER:11 OPT B,4 Inches, Intel Apollo Lake-I E3940, F1 Steping, 4GB LPDDR4, 4*USB3.0+4*USB2.0+6*COM+HDMI+DVI+2*I210 LAN with POE+1*LVDS+1*mini-PCIe+1*SATA, 2*M.2, 2*CANBUS DC12~48V, WT for channel
919-98H5-004	MS-98H5\609-98H5-050\809-98H5-004 VER:11 OPT E,4 Inches, Intel Apollo Lake J3455, F1 Steping, 4GB LPDDR4, 4*USB3.0+4*USB2.0+6*COM+HDMI+DVI+2*I211 LAN+1*LVDS+1*mini-PCIe+1*SATA,2*M.2, DC12~48V, Non-WT for channel

Optional Item

Part Number	Description
E31-0806200-K08	Heatspreader for Apollo Lake
E31-0806210-K08	Heatspreader for Apollo Lake-I