

MS-98H5

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

Industrial Computer

Pico-ITX Board

3.5" Board

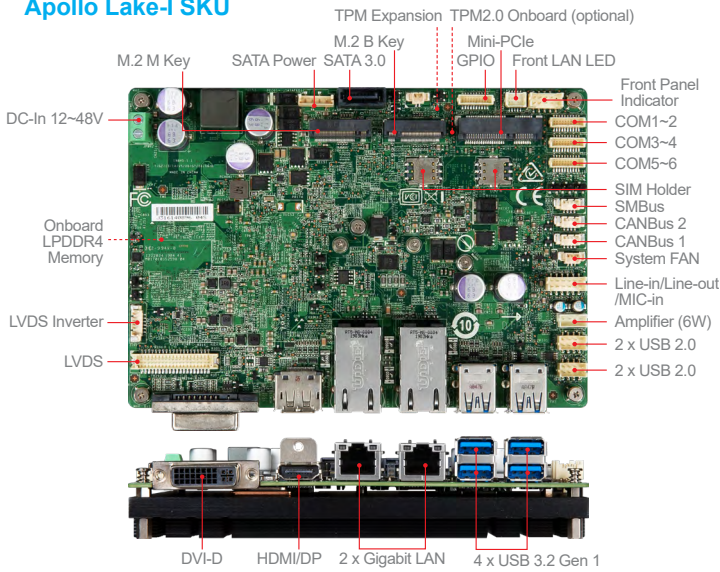
EPIC Board

Mini-ITX Board

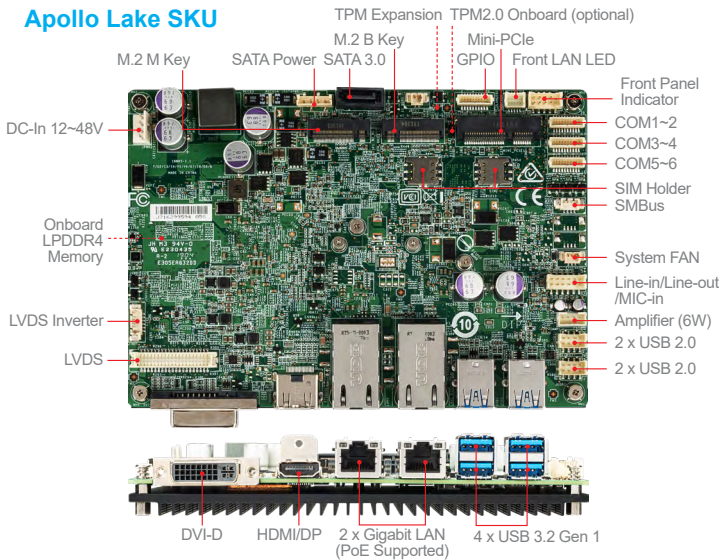
Micro-ATX Board

ATX Board

Apollo Lake-I SKU



Apollo Lake SKU



NEW

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
	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
Memory	L2 Cache	2M		
	CPU Type	BGA		
	Chipset	Integrated in SoC		
Display	BIOS	AMI		
	Technology	Single-channel LPDDR4 2133 MHz		
	Max. Capacity	Onboard up to 4 GB		
	Socket	Onboard		
	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)		
I/O Interface	HDMI	1		
	DisplayPort	1 (Co-ly 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-T GbE LAN (w/ PoE IEEE 802.3af)	
	Audio	Realtek® ALC888 HD Audio Codec		
Super I/O	Controller	Fintek F81867D-I		
	Watchdog Timer	256-level Watchdog Timer		
H/W Monitor	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		
Expansion Slot	GPIO	16-bits (8 x GPI; 8 x GPO), 5V		
	PCIe x 16	N/A		
	PCIe x 4	N/A		
	PCIe x 1	N/A		
	PCI	N/A		
Storage	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)		
	SATA	1 x SATA 3.0		
	IDE	N/A		
	eSATA	N/A		
	CFast	N/A		
Power Supply	mSATA	N/A		
	CompactFlash	N/A		
Environment	DC	DC-in 12V~48V		
	ATX	N/A		
	Operating Temperature	-10 ~ 60°C Note: Thermal w/ Airflow:0.7m/s	-40 ~ 85°C Note: Thermal w/ Airflow:0.7m/s	
Form Factor	Operating Humidity	10 ~ 90%, non-condensing		
	Storage Temperature	-20 ~ 80°C		
	Storage Humidity	10 ~ 90%, non-condensing		
Certification	Dimensions	165 x 115 mm (EPIC)		
	Weight	0.41 kg	0.72 kg	
Software Platform	EMC	FCC, CE, RCM, VCCI, BSMI		
	OS Support	Windows 10 IoT Enterprise (64-bit, RS5) Linux: Fedora 25 (by request) Linux: Ubuntu 16.04 (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-3008034-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 Stepping, 4GB LPDDR4, 4*USB3.0+4*USB2.0+6*COM+HDMI+DVI+2*1210 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 Stepping, 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