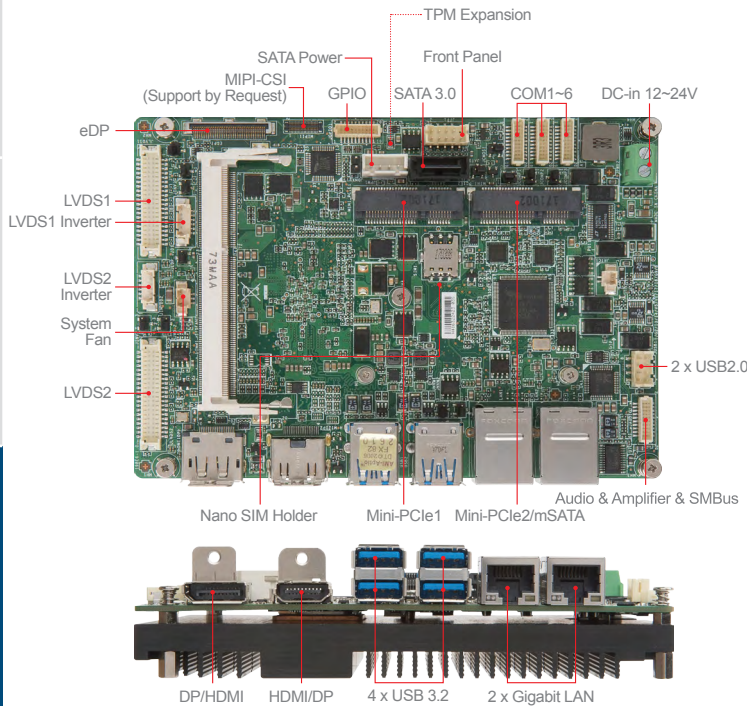


MS-98E6

3.5" SBC with Intel® Apollo Lake/Apollo Lake-I for Fanless, Ultra Low-Power, High-Performance & Wide Temperature Solution



Features

- Intel® Apollo Lake/Apollo Lake-I Series SoC
- DDR3L 1866/1600 MHz SODIMM Slot up to 8GB
- Triple independent displays: DP, HDMI, LVDS(eDP by option)
- 2 GbE LAN with RJ-45
- 1 Mini-PCIe (Full size, with mSATA), 1 Mini-PCIe (Full size, with Nano SIM Holder) Slots
- SATA 3.0, Micro SD for storage
- 4 USB 3.2 Gen 1, 2 USB 2.0, 6 COM (1 RS-485), GPIO, Audio
- Wide operating temperature : -40 ~ 85°C
- Wide Voltage DC-IN 12~24V
- MIPI-CSI 2.0 interface for Camera

Ordering Information

Part Number	Description
919-98E6-007	MS-98E6/609-98E6-180/809-98E6-007 VER12 OPT:A Intel Apollo Lake-I E3950,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, WT
919-98E6-008	MS-98E6/609-98E6-190/809-98E6-007 VER12 OPT:B Intel Apollo Lake-I E3940,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, WT
919-98E6-009	MS-98E6/609-98E6-200/809-98E6-007 VER12 OPT:C Intel Apollo Lake-I E3930,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, WT
919-98E6-010	MS-98E6/609-98E6-210/809-98E6-008 VER12 OPT:D Intel Apollo Lake-I E3940,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, Non-WT
919-98E6-011	MS-98E6/609-98E6-220/809-98E6-008 VER12 OPT:E Intel Apollo Lake N4200,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, Non-WT
919-98E6-012	MS-98E6/609-98E6-230/809-98E6-008 VER12 OPT:F Intel Apollo Lake N3350,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, Non-WT
919-98E6-013	MS-98E6/609-98E6-240/809-98E6-008 VER12 OPT:G Intel Apollo Lake J3455,F1,DDR3L SO DIMM+DP+HDMI+2LVDS+eDP+2Mini-PCIe+2LAN+SATA3.0+4USB3.0+2USB 2.0+6COM+MIPI+Micro SD, DC 12V~24V, Non-WT

Packing List

Part Number	Description	Quantity
K1B-3008034-V03	USB Cable, 150mm	1
K1D-1012064-V036	SATA Cable with Power, 200mm	1
K14-3018001-V03	COM PORT Cable, 150mm	1
K1G-3002031-V03	DC Power Cable, 150mm (For 919-98E6-007/008/009)	1
K1G-3004069-V03	DC Power Cable, 150mm (For 919-98E6-010/011/012/013)	1

Specifications

		Apollo Lake SKUs	Apollo Lake-I SKUs
		Intel® Pentium® Processor N4200, QC, 6W Intel® Celeron® Processor N3350, DC, 6W 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
Processor	CPU		
	Frequency	N4200, 1.1 GHz, up to 2.5 GHz N3350, 1.1 GHz, up to 2.4 GHz 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	1M~2M (Depends on CPU)	
	CPU Type	BGA	
	Chipset	Integrated in SoC	
Memory	BIOS	AMI	
	Technology	Single-channel DDR3L 1866/1600 MHz	
	Max. Capacity	Up to 8GB	
Display	Socket	1 x 204-pin SO-DIMM	
	Controller	Intel® HD Graphics	
	Graphic Memory	Depends on CPU	
	LVDS	2 x Dual Channel 18/24-bit (LVDS1 Share with eDP Signal, LVDS2 Share with DP1 Signal)	
	eDP	1 (Share with LVDS1 Signal)	
Ethernet	VGA	N/A	
	DVI	N/A	
	HDMI	1(HDMI1 Co-lay DP1/LVDS2 & HDMI2 Co-lay DP2 by option)	
	DisplayPort	1(DP1 Co-lay HDMI1/LVDS2 & DP2 Co-lay HDMI2 by option)	
	Multiple Display	3 independent displays	
Super I/O	Display Interface	LVDS1/LVDS2 up to 1920 x 1200 @60Hz eDP up to 4096 x 2160 @60Hz HDMI1/HDMI2 up to 3840 x 2160 @30Hz DP1/DP2 up to 4096 x 2160 @60Hz	
	Controller	2 x Intel® I211-AT GbE LAN	2 x Intel® I210-IT GbE LAN
	Audio	Realtek® ALC887-V02-CG HD Audio Codec	
	Watchdog Timer	Fintek F81867AD-I	
	Smart Fan	Yes	
I/O Interface	TPM	Controller	Pin header
	USB	2 x USB 2.0 (internal) 4 x USB 3.2 Gen 1 (rear)	
	Serial	6 x COM ports (Internal) COM1: RS-232/422/485, 0V/5V/12V, support auto flow control COM2~6: RS-232, 0V/5V/12V (RS-422/485 by Optional)	
	Parallel	N/A	
	PS/2	N/A	
Expansion Slot	GPIO	16-bits (8 x GPI; 8 x GPO), 5V	
	PCIe x16	N/A	
	PCI	N/A	
Storage	M.2	N/A	
	Mini-PCIe	2 x Full-size (Mini-PCIe1 Slot w/ NANO SIM-Holder) (Mini-PCIe2 Slot w/ mSATA)	
Power Supply	SATA	1 x SATA 3.0	
	mSATA	1 (Shared with Mini-PCIe2)	
Environment	DC	DC-in 12~24V (Box header with 4pin)	DC-in 12~24V (Phoenix connector with 2pin)
	ATX	N/A	
Form Factor	Operating Temperature	-10 ~ 60°C Note: Thermal Test w/ Airflow:0.7m/s	-40 ~ 85°C Note: Thermal Test 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	
Certification	Dimensions	146 x 102mm (3.5")	
	Weight	0.34 kg	0.59 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) *1 x MIPI-CSI 2.0 (by request) *1 x microSD slot	

Optional Item

Part Number	Description
E31-0805840-K08	Heatspreader (For Apollo Lake-I))
E31-0805850-K08	Heatspreader (For Apollo Lake)