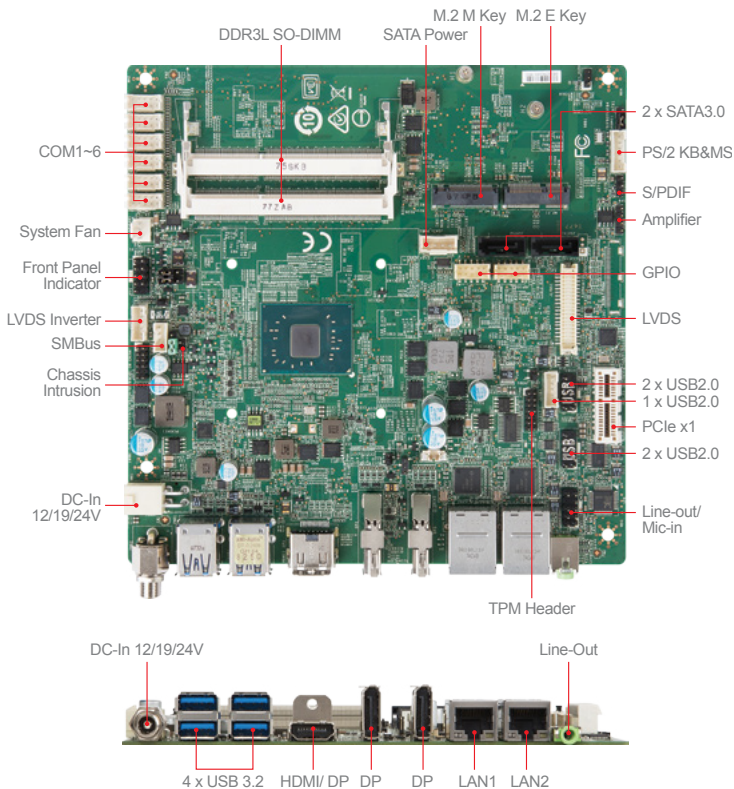


# MS-98B1

Mini-ITX with Intel® Apollo Lake SoC Series for Fanless, Low-Power, High-Performance, Multi-Displays & Multi-Functions Solution

NEW



## Features

- Intel® Apollo Lake/Apollo Lake-I Series SoC
- 2 DDR3L 1866MHz SODIMM slots up to 8GB
- Triple independent displays: 2 DP, HDMI (DP by option), LVDS (eDP by option)
- 2 GbE LAN with RJ-45
- 1 PCIe x1 (Gen 2), 1 M.2 E Key slots
- M.2 M Key, 2 SATA 3.0 for storage
- 4 USB 3.2 Gen 1, 5 USB 2.0, 6 COM (2 RS-485), GPIO, PS/2, Audio, S/PDIF, System FAN
- Onboard TPM 2.0 (by option)
- SMBus, Chassis Intrusion
- DC-IN 12/19/24V

## Ordering Information

Part Number	Description
Art. N° 161545	MS-98B1 10 OPT:A Intel E3940, DP+DP+HDMI+LVDS, 2*DDR3L SO-DIMMs, 2*LAN, 2*SATA 3.0, Audio, 2*M.2 Slot, 4*USB 3.0, 5*USB 2.0, PCIe x1, DC-in 12V/19V/24V, BULK
Art. N° 161544	MS-98B1 10 OPT:C Intel N3350, DP+DP+HDMI+LVDS, 2*DDR3L SO-DIMMs, 2*LAN, 2*SATA-3.0, Audio, 2*M.2 Slot, 4*USB 3.0, 5*USB 2.0, PCIe x1, DC-in12V/19V/24V, BULK

## Packing List

Part Number	Description	Quantity
K14-1009062-V03	COM Port Cable, 250mm	1
K1D-1012115-V03	SATA Cable with Power, 230mm	1
E21-98B1010-C22	I/O SHIELDING	1

## Optional Item

Part Number	Description
K14-1018003-V03	COM port cable, 300mm
K1B-3008012-E06	USB 2.0 Cable, 330mm

## Specifications

<b>Processor</b>	CPU	Intel® Celeron® Processor N3350, DC, 6W Intel® Atom™ x5 Processor E3940, QC, 9.5W Intel® Celeron® Processor J3455, QC, 10W
	Frequency	N3350, 1.1 GHz, up to 2.4 GHz E3940, 1.6 GHz, up to 1.8 GHz J3455, 1.5 GHz, up to 2.3 GHz
	L2 Cache	2MB
	CPU Type	BGA
	Chipset	Integrated in SoC
	BIOS	AMI
<b>Memory</b>	Technology	Dual-channel DDR3L 1866 MHz
	Max. Capacity	Up to 8GB
	Socket	2 x 204-pin SO-DIMMs
<b>Display</b>	Controller	Intel® HD Graphics
	Graphic Memory	Depends on CPU
	LVDS	1 x Dual channel 18/24-bit (Signal shared w/ eDP)
	eDP	1 (by BOM option)
	VGA	N/A
	DVI	N/A
	HDMI	1 (Co-lay DP)
	DisplayPort	2 (One Signal shared w/ eDP)
	Multiple Display	3 independent displays
	Display Interface	LVDS up to 1920 x 1200 @60 Hz eDP up to 4096 x 2160 @60Hz HDMI up to 3840 x 2160 @30Hz DP up to 4096 x 2160 @60Hz
<b>Ethernet</b>	Controller	2 x Intel® I211-AT (colay I210-AT GbE LAN)
<b>Audio</b>	Controller	Realtek® ALC887-VD2-CG HD Audio Codec
<b>Super I/O</b>	Controller	Fintek F81867AD-I
<b>H/W Monitor</b>	Watchdog Timer	256-level Watchdog Timer
	Smart Fan	Yes
<b>TPM</b>	Controller	Pin header (default) Infineon SLB9665TT 2.0 (by BOM option)
<b>I/O Interface</b>	USB	5 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, w/o Power
	Parallel	N/A
	PS/2	1 (pin header)
	GPIO	16-bits (8 x GPI; 8 x GPO), 5V
	<b>Expansion Slot</b>	PCIe x16
	PCIe x4	N/A
	PCIe x1	1
<b>Storage</b>	PCI	N/A
	M.2	1 x M key (SATA 3.0), 2242 1 x E key (PCIe x1, USB 2.0), 2230
	Mini-PCIe	N/A
<b>Storage</b>	SATA	2 x SATA 3.0 (SATA2 share with M.2 M Key)
	mSATA	N/A
<b>Power Supply</b>	DC	DC-in 12/19/24V
	ATX	N/A
<b>Environment</b>	Operating Temperature	-10 ~ 60°C
	Operating Humidity	10 ~ 90%, non-condensing
	Storage Temperature	-20 ~ 80°C
	Storage Humidity	10 ~ 90%, non-condensing
<b>Form Factor</b>	Dimensions	170 x 170mm (Mini-ITX)
	Weight	0.37 kg
<b>Certification</b>	EMC	FCC, CE, RCM, VCCI, BSMI
<b>Software Platform</b>	OS Support	Windows 10 IoT Enterprise LTSC/SAC 1809 (64-bit, RS5) Linux Fedora 25 (by request) Linux Ubuntu 16.04 (by request)