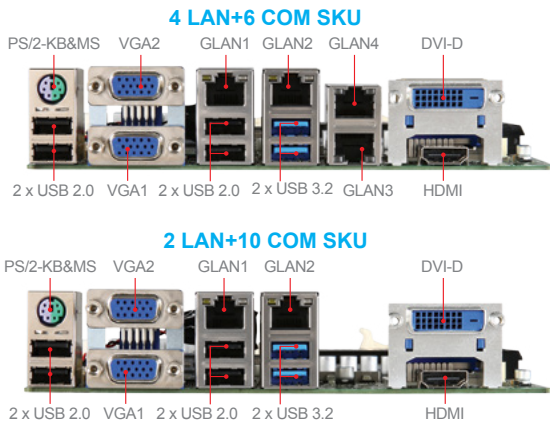
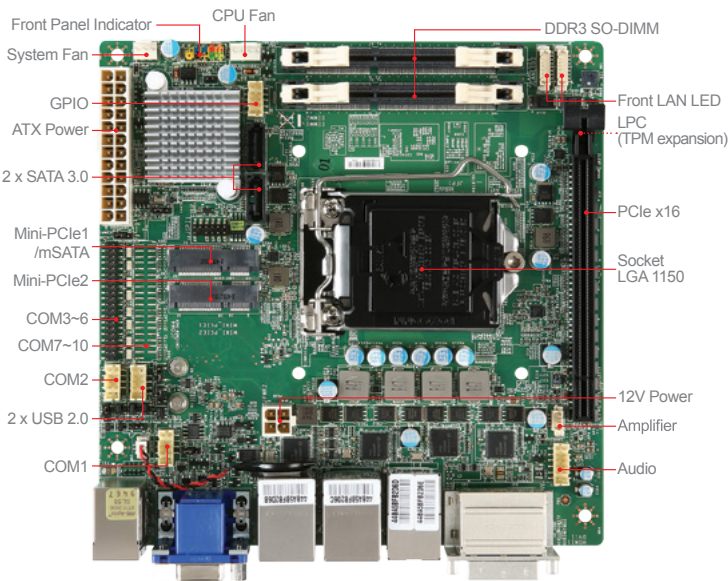


# MS-98H1

Mini-ITX with 4th Gen Intel® Desktop Haswell/Haswell Refresh Platform for 4 GLAN, 10 COM & 3 Independent Displays



## Features

- Intel® 4th Gen Haswell-S Series with Q87/H81
- 2 DDR3L/DDR3 1600/1333/1066 MHz SO-DIMM slots up to 16GB
- Triple independent displays: 2 VGA, DVI-D, DP (HDMI by option)
- 4 GbE LAN with RJ-45
- 1 PCIe x16 (Gen 3), 1 Mini-PCIe (Full size, with mSATA), 1 Mini-PCIe (Half size) slots
- mSATA, 2 SATA 3.0 for storage
- SATA RAID 0/1/5 (RAID 5 Configured with mSATA)
- 2 USB 3.2 Gen 1, 6 USB 2.0, 10 COM (2 RS-485), GPIO, PS/2, Audio, System FAN
- ATX Power

## Ordering Information

Part Number	Description
919-98H1-101	MS-98H1 V1.0 Mini-ITX, Intel Haswell Processor+Intel H81, 2*DDR3/DDR3L SO-DIMM+1*DVI-D+1*HD-MI+2*VGA+4*GbE LAN+6*COM+8*USB Port ,ATX power
919-98H1-102	MS-98H1 V1.0 Mini-ITX, Intel Haswell Processor+Intel H81, 2* DDR3/DDR3L SO-DIMM+1*DVI-D+1*HD-MI+2*VGA+2*GbE LAN+10*COM+8*USB Port ,ATX power
919-98H1-103	MS-98H1 V1.0 Mini-ITX, Intel Haswell Processor+Intel Q87, 2* DDR3/DDR3L SO-DIMM+1*DVI-D+1*HD-MI+2*VGA+2*GbE LAN+10*COM+8x USB Port ,ATX power

## Packing List

Part Number	Description	Quantity
E21-98H10X0-C22	I/O SHEILDING	1

## Specifications

<b>Processor</b>	CPU	4th Gen Intel® Desktop Haswell/ Haswell Refresh Core™ i7/i5/i3/Celeron®/ Pentium® Processor, Max. 95W	
	Frequency	2.4GHz~4.0 GHz (Depends on CPU)	
	L2 Cache	2M~8M (Depends on CPU)	
	CPU Type	Socket (LGA 1150)	
	Chipset	Intel® Q87/H81 Express	
<b>Memory</b>	BIOS	AMI	
	Technology	Dual-channel DDR3/DDR3L 1066/1333/1600MHz	
	Max. Capacity	Up to 16GB	
	Socket	2 x 204-pin SO-DIMMs	
<b>Display</b>	Controller	Intel® HD Graphics	
	Graphic Memory	Depends on CPU	
	VGA	2	
	DVI	1 (DVI-D)	
	HDMI	1	
	Multiple Display	3 independent displays (Q87 SKU) 2 independent displays (H81 SKU)	
	Display Interface	VGA1 up to 1920 x 1080 @60Hz VGA2 up to 1920 x 1080 @60Hz DVI-D up to 1920 x 1200 @60Hz HDMI up to 1920 x 1200 @60Hz	
<b>Ethernet</b>	Controller	4 x Intel® I210-AT GbE LAN 2 x Intel® I211-AT GbE LAN (depends on SKU)	
	Audio	Controller: Realtek® ALC887 HD Audio Codec	
<b>Super I/O</b>	Controller	Fintek F81866D	
<b>H/W Monitor</b>	Watchdog Timer	256-level Watchdog Timer	
	Smart Fan	Yes	
<b>TPM</b>	Controller	Pin header	
<b>I/O Interface</b>	USB	6 x USB 2.0 (4 x rear, 2 x internal) 2 x USB 3.2 Gen 1 (rear)	
	Serial	10 x COM ports (internal) COM1: RS-232/422/485, 0V/5V/12V COM2: RS-232/422/485, 0V/5V/12V COM3~6: RS-232, 0V/5V/12V COM7~10: RS-232, 0V/5V/12V (depends on SKU)	
	Parallel	N/A	
	PS/2	1	
	GPIO	8-bits (4 x GPI; 4 x GPO), 5V	
	<b>Expansion Slot</b>	PCIe x16	1
		M.2	N/A
		Mini-PCIe	1 x Full-size/Half-size (nSATA)
	<b>Storage</b>	SATA	2 x SATA 3.0
		mSATA	1 (shared w/ Mini-PCIe)
<b>Power Supply</b>	DC	N/A	
	ATX	ATX-Power 24P, 12V-4P	
<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 Class A, CE, RCM, VCCI, BSMI	
<b>Software Platform</b>	OS Support	Windows XP (32-bit) Windows 7 (32/64-bit) Windows 8/8.1 (32/64-bit) Windows 10 (64-bit) Linux Fedora 19 (by request) Linux Ubuntu 13.04 (by request)	

## Optional Item

Part Number	Description
K14-1036004-V03	COM Port Cable, 200mm