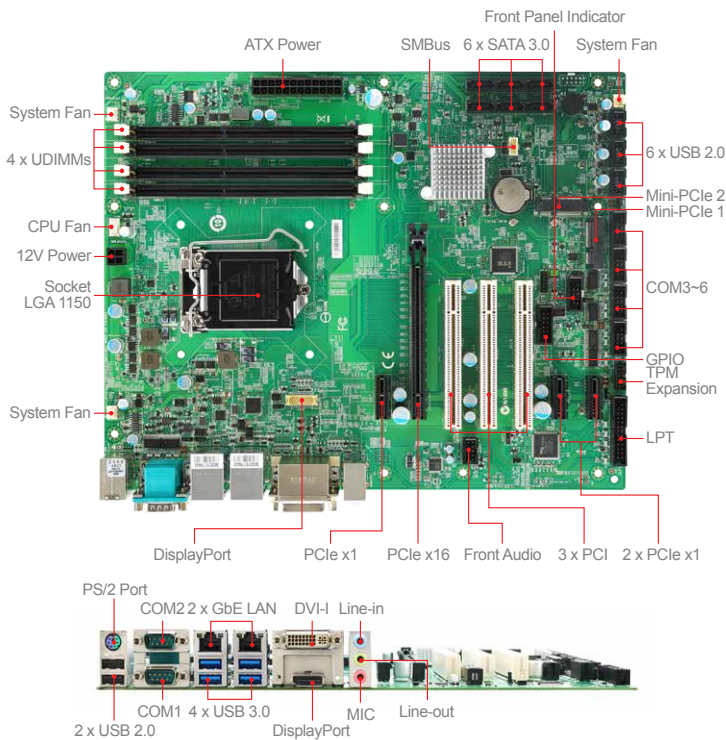


# MS-98B5

Intel® Embedded Haswell with Q87/H81 High-Performance ATX Solution



## Features

- Intel® Haswell Series CPU to maximize performance
- 4 DDR3/DDR3L 1600MHz UDIMMs up to 32GB
- Support DisplayPort, DVI-I, Dual Intel® GbE LAN and AMT 9.0
- 6 x SATA 3.0; 6 x COM; 4 x USB 3.0; 8 x USB 2.0
- Support ATX power

## Ordering Information

Art. No. 1' \$+*	Description
MS-98B5 10 Q87,ATX, LGA1150,4*DDR3,1*D-VI-I+2*DisplayPort 1.2a +4*USB3.0+8*USB2.0+6*SATA3.0+6*COM+2*GBE LAN+ATX POWER,RoHS	
MS-98B5 10 OPTA, H81,ATX, LGA1150,2*DDR3,1*D-VI-I+2*DisplayPort 1.2a +2*USB3.0+8*USB2.0+2*SATA3.0+2*SATA2.0+6*COM+2*GBE LAN+ATX POWER,RoHS	

## Packing List

Part Number	Description	Quantity
K14-1018004-V03	Internal COM Port Cable with Bracket	2
K18-1025011-V03	Internal LPT Cable with Bracket	1
K1B-3008012-E06	Internal USB2.0	1
K1D-1008261-V03	SATA Cable	2
K39-3002004-E06	External PS/2 Y-Cable	1
E21-98B5010-C22	I/O Shielding	1
G71-SEDC115-X03	Driver DVD	1

## Specifications

<b>Processor</b>	CPU	4th Gen Intel® Core™ i7/i5/i3/Pentium/Celeron Processor
	Frequency	Depends on CPU
	L2 Cache	Depends on CPU
	CPU Type	Socket (LGA 1150)
	Chipset	Intel® Q87/H81 Express
	BIOS	AMI
<b>Memory</b>	Technology	Dual-channel DDR3/DDR3L 1333/1600MHz
	Max. Capacity	Up to 32GB
	Socket	4 x 240-pin DIMMs
<b>Display</b>	Controller	Intel® HD Graphics
	Graphic Memory	Shared system memory up to 1.7 GB SDRAM
	DVI	1 (DVI-I)
	DisplayPort	1
	Multiple Display	2 independent displays (H81 SKU) 3 independent displays (Q87 SKU)
<b>Display Mode</b>	VGA	up to 1920 x 1080
	DVI-D	up to 2560 x 1600
DP	up to 2560 x 1600	
<b>Ethernet</b>	Controller	1 x Intel® I217-LM GbE LAN PHY 1 x Intel® I210-AT GbE LAN
<b>Audio</b>	Controller	Realtek® ALC887 HD Audio Codec
<b>Super I/O</b>	Controller	Fintek F81866AD-I
<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	8 x USB 2.0 (Q87: 2 x rear; 6 x internal; H81: 4 x rear; 4 x internal)
		4 x USB 3.0 (Q87: 4 x rear; H81: 2 x rear)
	Serial	6 x COM (COM1~2: rear; COM3~6: internal)
		COM1~2: RS-232/422/485, 0V/5V/12V COM3~6: RS-232, 0V/5V/12V
	Parallel	Yes
	PS/2	1 x PS/2 port by Y-cable for keyboard and mouse
GPIO	8-bits (4 x GPI; 4 x GPO), 5V	
<b>Expansion Slot</b>	PCIe x16	1
	PCIe x1	3
	PCI	3
	Mini-PCle	2 x Full-size (Q87 only)
<b>Storage</b>	SATA	6 x SATA 3.0 (H81 SKU only support 2 x SATA 2.0, 2 x SATA 3.0) (Q87 SKU support RAID 0/1/5/10)
	DC	N/A
<b>Power Supply</b>	ATX	ATX-Power 24P, 12V-4P
	Operating Temperature	0 ~ 60°C
<b>Environment</b>	Operating Humidity	10 ~ 90%, non-condensing
	Storage Temperature	-20 ~ 80°C
	Storage Humidity	10 ~ 90%, non-condensing
<b>Form Factor</b>	Dimensions	305mm x 244mm (ATX)
	Weight	0.70 kg
<b>Certification</b>	EMC	FCC, CE, C-Tick, VCCI, BSMI (Class A)