

# MS-98K9 V2.1

ATX with 8th/9th Gen Intel® Coffee Lake-S & Coffee Lake Refresh-S Xeon®, Core™ i7/i5/i3, Pentium®, Celeron® Processor & Intel® C246/Q370 for High-Performance Solution

NEW

## Specifications

		SKU1	SKU2
<b>System Processor</b>	CPU	9th/8th Gen Intel® Coffee Lake Refresh-S/Coffee Lake-S Xeon®, Core™ i7/i5/i3, Pentium®, Celeron® Processor, Max 95W	9th/8th Gen Intel® Coffee Lake Refresh-S/Coffee Lake-S, Core™ i7/i5/i3, Pentium®, Celeron® Processor, Max 95W
	Frequency	2.1GHz~4.7GHz (Depends on CPU)	
	L2 Cache	2MB~12MB (Depends on CPU)	
	CPU Type	Socket (LGA 1151)	
	Chipset	Intel® C246 Express	Intel® Q370 Express
	BIOS	AMI UEFI	
<b>Memory</b>	Technology	Dual-channel DDR4 (ECC/non-ECC) 2666 MHz	Dual-channel DDR4 (non-ECC) 2666 MHz
	Max. Capacity	Up to 128GB	
	Socket	4 x 288-pin UDIMMs	
<b>Display</b>	Controller	Intel® UHD Graphics	
	VGA	1	
	HDMI	1	
	DisplayPort	2	
	Multiple Display	3 independent displays	
	Display Interface	VGA up to 1920 x 1200 @60Hz HDMI up to 4096 x 2160 @24Hz DP up to 4096 x 2304 @60Hz	
	<b>Ethernet</b>	Controller	1 x Intel® I219-LM GbE LAN PHY 2 x Intel® I210-AT GbE LAN
<b>Audio</b>	Controller	Realtek® ALC887-VD2-CG 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	Infineon SLB 9665TT2.0	
<b>I/O Interfaces</b>	USB	7 x USB 2.0 (2 x rear, 5 x internal with one Vertical Type-A) 6 x USB 3.2 Gen 1 (rear)	
	Serial	6 x COM ports (internal) COM1~2: RS-232/422/485, Ring/0V/5V/12V, Auto-flow Control COM3~6: RS-232, 0V/5V/12V	
	Parallel	Yes	
	PS/2	1 x PS/2 port by Y-cable for keyboard and mouse	
	GPIO	16-bits (8 x GPI; 8 x GPO), 5V	
	<b>Expansion Slot</b>	PCIe x16	2 (Signal configured as 1 PCIe x16 or 2 PCIe x8)
PCIe x4		3 (PCIe x16 Slot Type; 2*PCIe x4 NVMe)	
PCIe x1		N/A	
M.2		1 x M.2 M key (PCIe x4 NVMe, Intel® Optane™ Memory Support, SATA 3.0), 2242/2260/2280	
<b>Storage</b>	Mini-PCIe	N/A	
	SATA	4 x SATA 3.0 (RAID 0/1/5/10, SATA port 4 share with M.2 M Key)	
<b>Power Supply</b>	ATX	ATX-Power 24P, 12V-8P	
<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 (W x D x H)	305 x 244mm (ATX)	
	Weight	0.70 kg	
<b>Certification</b>	EMC	CE, FCC Class B, BSMI, RCM, VCCI	
<b>Software Platform</b>	OS Support	Windows 10 IoT Enterprise 2019 SAC (64-bit, RS5) Linux Kernel 4.x (by request)	

## Features

- Intel® 9th/8th Gen Coffee Lake Refresh-S/Coffee Lake-S Series with C246/Q370
- 4 DDR4 2666 MHz ECC/non-ECC UDIMMs up to 128GB
- Triple independent displays: VGA, 2 DP, HDMI
- 3 GbE LAN with RJ-45
- 1 PCIe x16 (Gen 3) or 2 PCIe x8 (Gen3), 3PCIe x4 (Gen 3), 2 PCI slots
- M.2 M key, 4 SATA 3.0 for storage
- SATA RAID 0/1/5/10
- 6 USB 3.2 Gen 2, 7 USB 2.0, 6 COM (2 RS-485), GPIO, LPT, PS/2, Audio, S/PDIF, 3 System FAN
- Onboard TPM 2.0 (by option)
- SMBus, I2C, iAMT 12.x, Chassis Intrusion
- ATX-Power

## Ordering Information

Part Number	Description
919-98K9-004	MS-98K9 VER 21, ATX, Intel Coffee Lake-S Refresh, Intel C246, 4*DDR4, 1*VGA, 1*HDMI, 2*DP, 3*LAN, 6*USB3.2, 7*USB2.0, 4*SATA3.0, 1*M.2, 6*COM, 5*PCIe x16, 2*PCI, TPM2.0, 2*SATA CABLE, 1*COM CABLE, 1*USB 2.0 CABLE, 1*I/O SHIELD, 1*DRIVER CD, SINGLE, For Channel
919-98K9-005	MS-98K9 VER 21, ATX, Intel Coffee Lake-S Refresh, Intel Q370, 4*DDR4, 1*VGA, 1*HDMI, 2*DP, 3*LAN, 6*USB3.2, 7*USB2.0, 4*SATA3.0, 1*M.2, 6*COM, 5*PCIe x16, 2*PCI, TPM2.0, 2*SATA CABLE, 1*COM CABLE, 1*USB 2.0 CABLE, 1*I/O SHIELD, 1*DRIVER CD, SINGLE, For Channel

## Packing List

Part Number	Description	Quantity
K1B-3008012-E06	USB2.0 Cable, 330mm	1
K14-1018004-V03	COM Port Cable, 510mm	1
K1D-1008261-V03	SATA Cable, 550mm	2
E21-98K9010-C22	IO Shielding	1
G71-SEDC212-X03	Driver CD	1