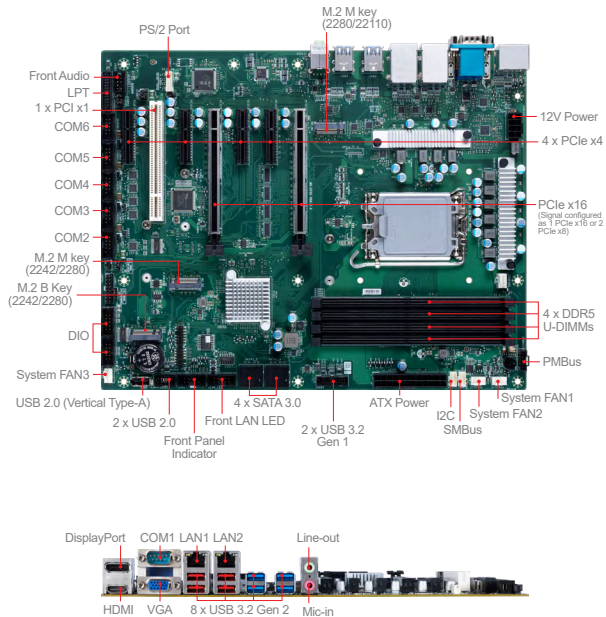


# MS-CF05 V2.0

ATX with 14th/13th/12th Gen Intel® Raptor Lake-S Refresh/ Raptor Lake-S/ Alder Lake-S, Core™ i9/i7/i5/i3, Pentium®, Celeron®, Bartlett Lake-S Core™ i7/i5/i3/300 Processor & Intel® Q670E for High-Performance Solution

**NEW**



## Features

- Intel® 14th/13th/12th Gen Raptor Lake-S Refresh/Raptor Lake-S/ Alder Lake-S Series/Bartlett Lake-S with Q670E
- 4 DDR5 4400 MT/s non-ECC UDIMM slots up to 128GB
- Triple independent displays: VGA, DP, HDMI
- 2 2.5GbE LAN with RJ-45
- 1 PCIe x16 (Gen 5) or 2 PCIe x8 (Gen 5), 1 PCIe x4 (Gen 4), 3 PCIe x4 (Gen 3), 1 PCI slot, 1 M.2 B key slots
- 2 M.2 M key, 4 SATA 3.0 for storage
- SATA RAID 0/1/5/10
- 8 USB 3.2 Gen 2, 2 USB 3.2 Gen 1, 3 USB 2.0, 6 COM (6 RS-485), GPIO, PS/2, Audio, 3 System FAN
- Onboard TPM 2.0
- SMBus, I2C, PMBus, iAMT 16.x, Chassis Intrusion
- ATX Power

## Ordering Information

Part Number	Description
916-CF05-003	MS-CF05 20 OPTA ADL-S, RPL-S, Q670E, 4*DDR5, HDMI+DP+VGA, 2*M.2 M key, 1*M.2 B key, 1*PCIe x16, 1*PCIe x8, 4*PCIe x4, 1*PCI, 2*2.5GbE LAN, 4*SATA 3.0, 10*USB 3.2, 3*USB 2.0, 6*COM, TPM2.0, ATX, SINGLE

## Packing List

Part Number	Description	Quantity
K1D-1008261-V03	SATA Cable 500mm	2
K1B-3008012-E06	USB 2.0 Cable, 330mm	1
E21-CF05020-C22	I/O SHIELDING For 2 LANs	1

## Specifications

<b>Processor</b>	CPU	12th Gen Intel® Alder Lake-S i9/i7/i5/i3/ Pentium®/Celeron® IOTG Series Processor, Max 125W 13th Gen Intel® Raptor Lake-S i9/i7/i5/i3/ Pentium®/Celeron® IOTG Series Processor, Max 125W 14th Gen Intel® Raptor Lake-S Refresh i9/i7/i5/i3/ Pentium®/Celeron® IOTG Series Processor, Max 125W Intel® Bartlett Lake-S i7/i5/i3/300 IOTG Series Processor, Max 125W
	Frequency	P-Core 1.1GHz~5.0GHz (Depends on CPU) E-Core 0.9GHz~3.8GHz (Depends on CPU)
	L2 Cache	4MB~30MB (Depends on CPU)
	CPU Type	Socket (LGA 1700)
	Chipset	Intel® Q670E Express
<b>Memory</b>	BIOS	AMI UEFI
	Technology	Dual-channel DDR5 (ECC/non-ECC) 4400 MT/s (ECC support will depend on CPU)
	Max. Capacity	Up to 128GB
	Socket	4 x 288-pin UDIMMs
	Controller	Intel® UHD Graphics
<b>Display</b>	Graphic Memory	Depends on CPU
	VGA	1
	HDMI	1
	DisplayPort	1
	Multiple Display	3 independent displays
Display Interface	VGA up to 1920 x 1200 @60Hz HDMI up to 4096 x 2160 @60Hz DP up to 4096 x 2304 @60Hz	
<b>Ethernet</b>	Controller	2 x Intel® I226-LM 2.5GbE LAN
<b>Audio</b>	Controller	Realtek® ALC897 Audio Codec (Co-lay ALC888S)
<b>Super I/O</b>	Controller	FINTEK F81966D-I
<b>H/W Monitor</b>	Watchdog Timer	256-level Watchdog Timer
<b>TPM</b>	Smart Fan	Yes
<b>I/O Interface</b>	Controller	Infineon® SLB9672VU2.0
	USB	8 x USB 3.2 Gen 2 x1 (8 x rear) 2 x USB 3.2 Gen 1 Ports (2 x internal) 3 x USB 2.0 (3 x internal with one Vertical Type-A Connector)
	Serial	6 x COM ports (1 x rear, 5 x internal) COM1~2: RS-232/422/485, Ring/0V/5V/12V, Auto-flow Control (Default set to Ring) COM3~6: RS-232, 0V/5V/12V
	Parallel	Yes
	PS/2	1 x PS/2 port by Y-cable for keyboard and mouse
<b>Expansion Slot</b>	GPIO	16-bits (8 x GPI; 8 x GPO), 5V
	PCIe x16	2 (Signal configured as 1 PCIe x16 or 2 PCIe x8)
	PCIe x4	4
	PCI	1
	M.2	1 x M key (Signal from CPU), 2242/2280 1 x M key (Signal Shared by PCIe Slot5), 2242/2280 1 x B key (PCIe x1), 2242/2280
<b>Storage</b>	SATA	4 x SATA 3.0 (RAID 0/1/5/10)
	Power Supply	ATX ATX-Power 24P, 12V-8P
<b>Environment</b>	Operating Temperature	0 ~ 60°C
	Operating Humidity	10 ~ 90%, non-condensing
	Storage Temperature	-20 ~ 80°C
	Storage Humidity	10 ~ 90%, non-condensing
<b>Form Factor</b>	Dimensions	305 x 244 mm (ATX)
<b>Certification</b>	Weight	0.779 Kg
	EMC	BSMI, KC
<b>Software Platform</b>	OS Support	Windows 10 IoT Enterprise 21H2 LTSC (64-bit) Windows 11 IoT Enterprise 24H2 LTSC (64-bit) Linux (Support by request) Noted: All driver base on Intel & chip vendor supported

**Block Diagram**

