



ECM-WHL

8th Gen Intel® Whiskey Lake 3.5" Micro Module

- > Bottom Layer Soldered
- > Intel® Core™/Celeron® BGA Processor
- > Intel® UHD Graphics 620/610
- > Dual DRAM Socket, Max. Up to 32GB DDR4 2400MHz
- > Triple Display (Dual HDMI, LVDS)
- > HDMI w/CEC Control (Factory Option)
- > Dual Expansion Slot, 2-M.2
- > Dual Gigabit Ethernet, HD Audio Code
- > Support TPM 2.0, RAID 0/1

+ Spec

System	
Processor	Intel® Core™ i7-8665UE Processor (8M Cache, up to 4.40 GHz) Intel® Core™ i5-8365UE Processor (6M Cache, up to 4.10 GHz) Intel® Core™ i3-8145UE Processor (4M Cache, up to 3.90 GHz) Intel® Celeron® Processor 4305UE (2M Cache, 2.00 GHz)
System Memory	2 x 260-Pin SO-DIMM Socket, Max. Up to 64 GB DDR4 2400
I/O Chip	EC ITE IT8528E
BIOS	AMI uEFI BIOS, 256 Mbit SPI Flash ROM
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	Monitoring CPU Temperature, Voltage and FAN Status with Auto Throttling Control
TPM	2.0
Expansion	
Expansion	1 x M.2 (Key-B, 2242/3042, PCIe, SATA, USB 3.0, USB 2.0, SIM Slot) 1 x M.2 (Key-E, 2230, PCIe, USB2.0, CNVi)
Storage	
Storage	1 x SATA III 1 x M.2 (Key-B, 2242)

	Support RAID 0/1
I/O	
Internal I/O Connector	2 x USB 2.0 1 x RS-232 1 x 8-bit GPIO 1 x LPC 1 x SPI 1 x SMBus
Rear I/O Connectors	4 x USB 3.1 (Gen. 2) 2 x RJ-45 2 x HDMI (Factory CEC Controller Option) 1 x Mic-In 1 x Line-Out 1 x LED for Power 1 x LED for Data Access
Display	
Chipset	Intel® UHD Graphics 620 (i7-8665UE, i5-8365UE, i3-8145UE) Intel® UHD Graphics 610 (4305UE)
Resolution	2 x HDMI 1.4: Max. Resolution 4096x2160@24/30Hz 1 x Dual-Channel 18/24-bit LVDS: Max. Resolution 1920x1200@60Hz
Multiple Display	Triple Display
Audio	
Chipset	Realtek ALC892, supports 5.1-CH
Audio Interface	1 x Mic-In 1 x Line-Out
Ethernet	
Chipset	1 x Intel® I210AT 1 x Intel® I219LM
Ethernet Interface	10/100/1000 Base-Tx GbE compatible
LAN Port	2 x RJ45 with ACT/LINK and SPEED LEDs
Mechanical & Environmental	
Power Requirement	+12V
ACPI	Single Power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant

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Power Type	AT/ATX
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F), with 0.2m/s air flow
Storage Temperature	-40°C ~ 75°C (-40°F ~ 167°F)
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing

Dimension (L x W)	5.7" x 4" (146mm x 101mm)
Weight	0.041lbs(0.03kg)
Vibration Test	1.5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 30min/Axis, 3 Axis
Shock Test	10G, IEC 60068-2-27, Half Sine, 11ms, Z Axis
Drop Test	ISTA 2A, IEC-60068-2-32 Test : Ed, 1 Corner, 3 Edges, 6 Faces
Certifications	
Certification Information	CE FCC Class B
Software Support	
OS Information	Win 10 Linux

+ Ordering

ECM-WHL-4305-A1R
3.5" w/Celeron 4305UE/2-DRAM Socket/2-HDMI/6-USB/2-LAN/2-M.2/TPM2.0/Cooler

ECM-WHL-8145-A1R
3.5" w/i3-8145UE/2-DRAM Socket/2-HDMI/6-USB/2-LAN/2-M.2/TPM2.0/Cooler

ECM-WHL-8365-A1R
3.5" w/i5-8365UE /2-DRAM Socket/2-HDMI/6-USB/2-LAN/2-M.2/TPM2.0/Cooler

ECM-WHL-8665-A1R
3.5" w/i7-8665UE/2-DRAM Socket/2-HDMI/6-USB/2-LAN/2-M.2/TPM2.0/Cooler

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