



## 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	
<b>Processor</b>	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)
<b>System Memory</b>	2 x 260-Pin SO-DIMM Socket, Max. Up to 64 GB DDR4 2400
<b>I/O Chip</b>	EC ITE IT8528E
<b>BIOS</b>	AMI uEFI BIOS, 256 Mbit SPI Flash ROM
<b>Watchdog Timer</b>	H/W Reset, 1sec. ~ 65535sec.
<b>H/W Status Monitor</b>	Monitoring CPU Temperature, Voltage and FAN Status with Auto Throttling Control
<b>TPM</b>	2.0
Expansion	
<b>Expansion</b>	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	
<b>Storage</b>	1 x SATA III 1 x M.2 (Key-B, 2242) Support RAID 0/1
I/O	
<b>Internal I/O Connector</b>	2 x USB 2.0 1 x RS-232 1 x 8-bit GPIO 1 x LPC 1 x SPI 1 x SMBus
<b>Rear I/O Connectors</b>	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	
<b>Chipset</b>	Intel® UHD Graphics 620 (i7-8665UE, i5-8365UE, i3-8145UE) Intel® UHD Graphics 610 (4305UE)
<b>Resolution</b>	2 x HDMI 1.4: Max. Resolution 4096x2160@24/30Hz 1 x Dual-Channel 18/24-bit LVDS: Max. Resolution 1920x1200@60Hz
<b>Multiple Display</b>	Triple Display
Audio	
<b>Chipset</b>	Realtek ALC892, supports 5.1-CH
<b>Audio Interface</b>	1 x Mic-In 1 x Line-Out
Ethernet	
<b>Chipset</b>	1 x Intel® I210AT 1 x Intel® I219LM
<b>Ethernet Interface</b>	10/100/1000 Base-Tx GbE compatible
<b>LAN Port</b>	2 x RJ45 with ACT/LINK and SPEED LEDs
Mechanical & Environmental	
<b>Power Requirement</b>	+12V
<b>ACPI</b>	Single Power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant



<b>Power Type</b>	AT/ATX
<b>Operating Temperature</b>	0°C ~ 60°C (32°F ~ 140°F), with 0.2m/s air flow
<b>Storage Temperature</b>	-40°C ~ 75°C (-40°F ~ 167°F)
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing
<b>Dimension (L x W)</b>	5.7" x 4" (146mm x 101mm)
<b>Weight</b>	0.041lbs(0.03kg)
<b>Vibration Test</b>	1.5Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 30min/Axis, 3 Axis
<b>Shock Test</b>	10G, IEC 60068-2-27, Half Sine, 11ms, Z Axis
<b>Drop Test</b>	ISTA 2A, IEC-60068-2-32 Test : Ed, 1 Corner, 3 Edges, 6 Faces
<b>Certifications</b>	
<b>Certification Information</b>	CE FCC Class B
<b>Software Support</b>	
<b>OS Information</b>	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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