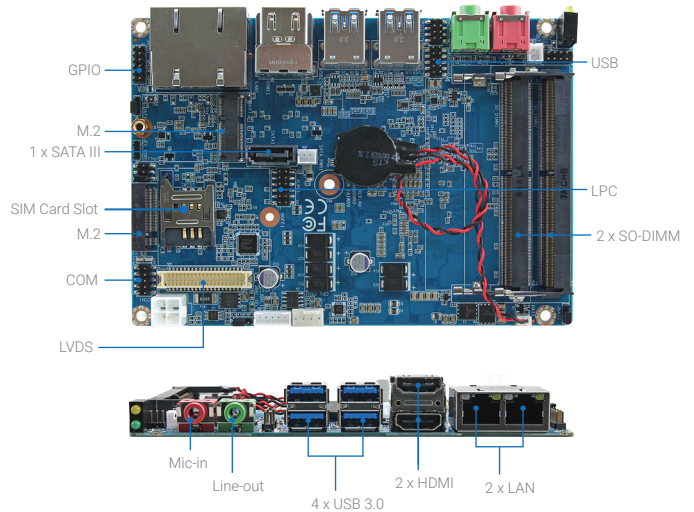


## Features

- Bottom Layer Soldered
- Intel® Core™/Celeron® BGA Processor
- Intel® UHD Graphics 620/610
- Dual DRAM Socket, Max. Up to 64GB DDR4 2400MHz
- Supports Triple Display (2 x HDMI, LVDS)
- HDMI w/CEC Control (Factory Option)
- 2 x M.2 B-Key and E-Key
- Dual Gigabit Ethernet
- HD Audio Code
- TPM 2.0 Onboard
- RAID 0/1



## Specifications

System	
CPU	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)  Please note: CPU coolers is included. Please see manual for included accessories.
System Memory	2 x 260-Pin SODIMM Socket, Max. Up to 64 GB DDR4 2400
BIOS	AMI uEFI BIOS, 256 Mbit SPI Flash ROM
I/O Chip	EC ITE IT8528E
Audio	Realtek ALC892, supports 5.1-CH
Ethernet	LAN 1: Intel® I210AT Gigabit Ethernet Controller LAN 2: Intel® I219LM Gigabit Ethernet Controller
Expansion	1 x M.2 (B-Key, 2242/3042, PCIe, SATA, USB 3.0, USB 2.0, SIM Card Slot) 1 x M.2 (E-Key, 2230, PCIe, USB2.0, CNVi)
Storage	1 x SATA III, Support RAID 0/1 1 x M.2 (Key-B, 2242)
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	Monitoring CPU Temperature, Voltage and FAN Status with Auto Throttling Control
TPM	TPM 2.0 Onboard
OS Support	Win 10, Linux
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	Supports Triple Display
External I/O	
USB	4 x USB 3.1 (Gen. 2)
Display	2 x HDMI
LAN	2 x RJ-45

Internal I/O	
USB	2 x USB 2.0
LVDS	1 x LVDS
COM	1 x RS-232
SATA	1 x SATA III
DIO	1 x 8-bit GPIO
MIO	1 x LPC, 1 x SPI, 1 x SMBus
Mechanical & Environment	
Power	+12V
ACPI	Single Power ATX Support S0, S3, S4, S5. ACPI 5.0 Compliant
Power Type	AT/ATX
Operating Temp	0°C ~ 60°C (32°F ~ 140°F) (Standard)
Storage Temp	-40°C ~ 75°C (-40°F ~ 167°F)
Op. Humidity	40°C @ 95% Relative Humidity, Non-condensing
Form Factor	3.5" Single Board Computer (SBC)
Dimensions	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
Certification Info	CE, FCC Class B

### Ordering Info

<b>ECM-WHL-8665UE</b>	3.5" Intel® Core i7-8665UE SoC Onboard
<b>ECM-WHL-8365UE</b>	3.5" Intel® Core i5-8365UE SoC Onboard
<b>ECM-WHL-8145UE</b>	3.5" Intel® Core i3-8145UE SoC Onboard
<b>ECM-WHL-4305UE</b>	3.5" Intel® Celeron 4305UE SoC Onboard

\* All product specifications and images are subject to change without notice. Last update: 2021/07/29



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