

Single Board Computer WL551 – 3.5” SBC

Datasheet v1.0



WL551 is a 3.5” Single Board Computer based on the 8th Gen Intel® Core™ Processors, ideal for many applications where graphics performances are a must, such as medical, industrial automation, IOT and multimedia applications.

This powerful SBC enables impressive system integration and meets the needs of the harshest industrial environments. It also features brilliant graphics performance and supports high 4K resolution and dual independent displays, making it ideal for demanding graphics applications.

The WL551 SBC offers a wide range of I/O, including 3 Intel GbE, 1 COM, 4 USB 3.1 Gen2, 2 USB 2.0. It also features expansion and storage. The advanced M.2 interface is the ideal choice for industrial automation, storage and design of IoT devices.

Key Features:

- 8th Gen Intel® Core™ Processors
- Dual independent displays: DP + HDMI, 1 LVDS or eDP (opt.)
- 4K High Resolution: Supports 4K/2K resolution
- Multiple Expansion: 1 M.2 M Key, 1 M.2 B Key, 1 M.2 E Key
- Rich I/O 1: 3 Intel GbE, 1 COM, 4 USB 3.1 Gen2, 2 USB 2.0

WL551 – 3.5” SBC

CPU Core

Feature	Specification
CPU	8th Generation Intel® Core™ Processors, BGA 1528 Intel® Core™ i7-8665UE, Quad Core, 8M Cache, 1.7GHz (4.4GHz), 15W Intel® Core™ i5-8365UE, Quad Core, 6M Cache, 1.6GHz (4.1GHz), 15W Intel® Core™ i3-8145UE, Dual Core, 4M Cache, 2.2GHz (3.9GHz), 15W Intel® Core™ Celeron® 4305UE, Dual Core, 2M Cache, 2.0GHz (2.0GHz), 15W
Memory	One 260-pin SODIMM up to 32GB Single Channel DDR4 up to 2400MHz
BIOS	AMI SPI 128Mbit

Graphics

Controller	Intel® UHD Graphics 620/ Intel® UHD Graphics 610 (for Celeron 4305UE)
Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9
Display	1 x DP/HDMI 1 x LVDS or 1 x eDP (opt.) DP1.2: resolution up to 4096*2160@60Hz HDMI1.4: resolution up to 3840*2160@30Hz LVDS: resolution up to 1920x1200 @60Hz eDP: resolution up to 3840x2160 @ 60Hz
Dual display	1x COMBO port (DP++/HDMI) + 1 x LVDS 1x COMBO port (DP++/HDMI) + 1 x eDP (opt.)

Extension

Interface	1 x M.2 M key 2280/2242 (PCIe x4/SATA 3.0) 1 x M.2 B key 3042/2242 (USB 3.1 Gen2/USB 2.0/SATA 3.0 or PCIe x1) Support Nano SIM slot (opt.) 1 x M.2 E key 2230 (PCIe x2/USB 2.0) Support Innodisk InnoAGE™ SSD
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Audio

Feature	Specification
Audio codec	Realtek ALC262-VC2-GR

Ethernet

Controller	3 x Intel® I211AT PCIe (10/100/1000Mbps) or 3 x Intel® I210IT PCIe (10/100/1000Mbps)
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I/O

Rear	
Ethernet	3 x GbE (RJ-45)
USB	4 x USB 3.1 Gen 2
Display	1 x COMBO port (DP++/HDMI)
Inside	
Serial	1 x RS-232/422/485 (2.00mm pitch) RS485 support auto flow control
USB	2 x USB 2.0 (2.00mm pitch)
Display	1 x LVDS LCD Panel connector or 1 x eDP LCD panel connector 1 x LCD/Inverter Power
Audio	1 x audio (line-out / mic-in)
SATA	1 x SATA 3.0 (up to 6Gb/s) 1 x SATA Power
DIO	1 x 8-bit DIO
SMBus	1 x SMBus

Watchdog Timer and Safety

Output and interval	System reset, programmable via software from 1 to 255 seconds
TPM	fTPM2.0 (default) dTPM2.0 (opt.)

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Electrical, Mechanical and Environmental Specifications

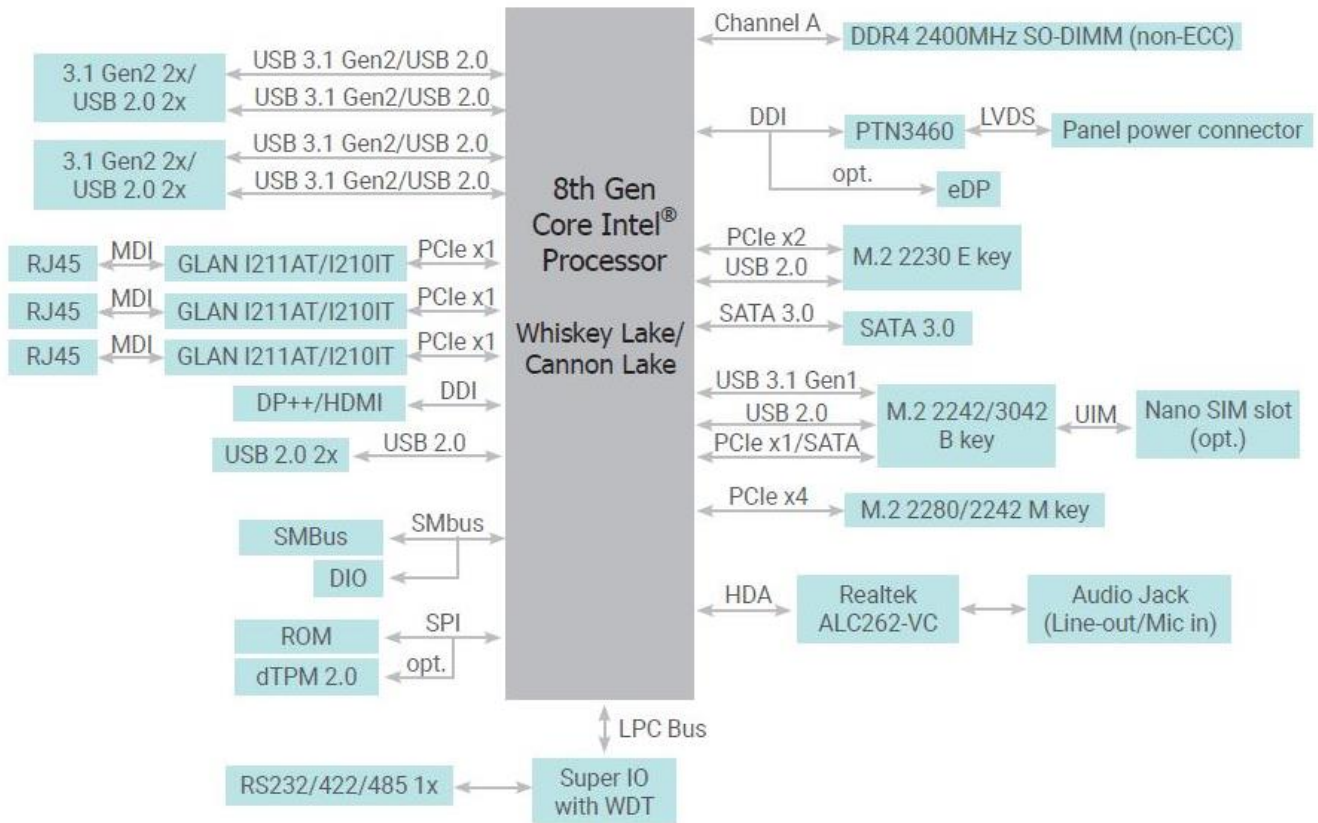
Feature	Specification
Supply Voltage	Single 12V +/- 10% DC
Connection	4-pin Right Angle Type Connector (default) DC Jack (available upon request) 4-pin Vertical Type Connector (available upon request)
Power Consumption	Typical: 8665UE, 12V @ 0.64A (7.68W) Max: 8665UE, 12V @ 2.5A (30W)
RTC Battery	CR2032 Coin Cell
Dimensions	3.5" SBC Form Factor 146mm (5.75") x 102mm (4.02")
Height	PCB: 1.6mm Top Side: 15mm Bottom Side: 4mm
Operating temperature	Commercial: -5° to 65° C Industrial: -20° to 80° C
Storage temperature	-40° to 85° C
Relative humidity	5% to 90% RH (operating) 5% to 90% RH (storage)
MTBF	495,295 hrs @ 25°C 326,059 hrs @ 45°C 223,300 hrs @ 60°C 128,660 hrs @ 80°C
Certifications	CE, FCC, RoHS

Software

BSP	Full Board Support Package and ready-to-run images
OS Support (UEFI only)	Windows 10 IoT Enterprise (64-bit) Linux

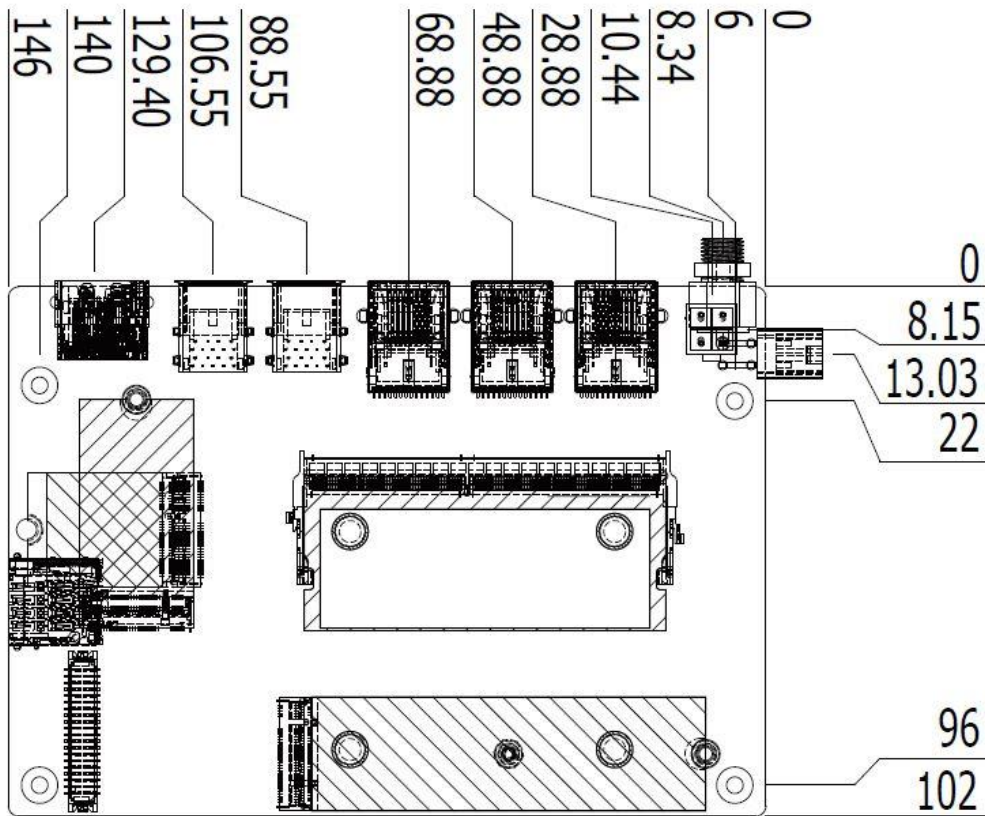
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Block Diagram



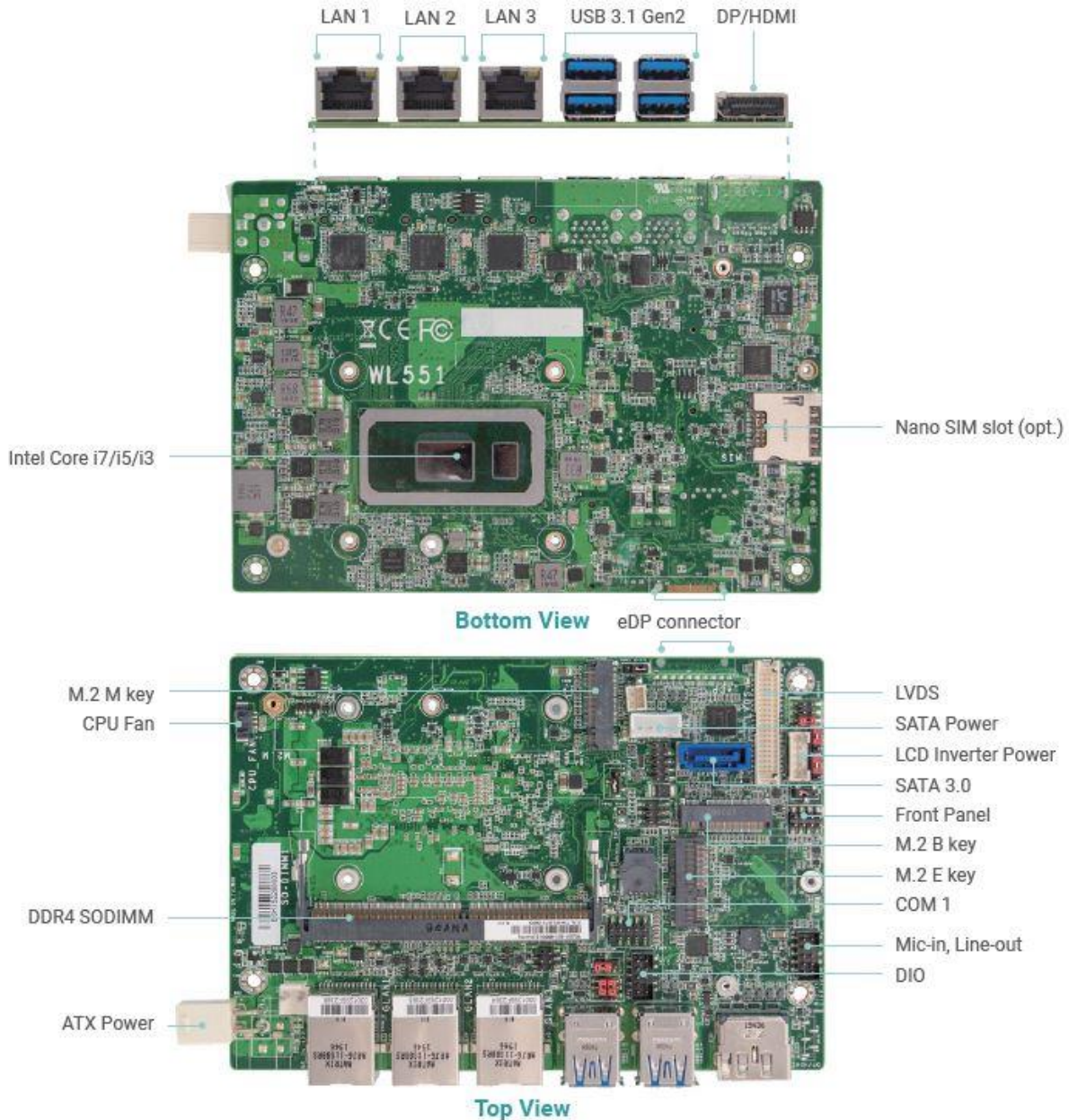
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Mechanical Drawings



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Board Layout



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WL551 Packing list

- 1 WL551 board
- 1 SATA cable (Length: 300mm)
- 1 SATA power cable (Length: 250mm)
- 1 COM cable (Length: 250mm)
- 1 Heatsink -5~65°C/-20 to 80°C (Height: 35.5mm)

Optional Items

- 4-pin power to DC jack cable (Length: 100mm)
- Power adapter (60W, 12V, DC Jack)
- Heat spreader (Height: 11mm)
- USB 2.0 cable (Length: 200mm)
- Audio cable (Length: 160mm)