WS501 Android Wearable Computer

The world's smallest all-in-one Android enterprise-class wearable mobile computer — now with more memory and the fastest wireless connections

Introducing the WS501 Android Wearable Computer — the world's smallest and most powerful Android enterprise-class wearable device. The WS501 is designed to bring hands-free high-performance computing to the most scan-intensive jobs — including workers that spend their days picking orders, putting away incoming inventory and loading and unloading incoming and outgoing shipments. Building on its predecessor, the WS50 Android Wearable Computer, the WS501 offers a new powerful processor, triple the RAM, quadruple the Flash, Wi-Fi 6 and Bluetooth 5.3, providing everything required to run multiple demanding applications simultaneously — plus a constant connection to your Enterprise Mobility Management (EMM) system. And the boost in workforce productivity and throughput combines with a future-proof platform to deliver an exceptional return on investment (ROI).

The power to support all of your apps

More memory to support multiple apps
With RAM and Flash memory that rivals market-leading handheld mobile computers, the WS501 can run multiple apps simultaneously, with fast screen refreshes that will never keep your workers waiting.

Fastest and reliable Wi-Fi connections
Wi-Fi 6 enables more simultaneous network connections, with improved speed, security and latency, reducing network congestion and increasing connection reliability. And with Mobility DNA Wireless Fusion — only from Zebra — workers get a superior 'no dropped connections' experience while roaming.

Blazing Bluetooth peripheral performance
Bluetooth 5.3 improves the performance of Bluetooth Low Energy (BLE) peripherals, delivering more speed, more range, more power efficiency, more security and faster pairing.

Maximum flexibility

True 'no-host' all-in-one wearable
With this true converged wearable solution, workers only need to wear one device to capture and access data — instead of a host mobile computer and ring scanner.

Choose your wearing style
With two different wearing styles, the adaptable WS501 is ideal for virtually any task worker in practically any industry. The WS501 can be worn on two fingers or the back of the hand.

Push-to-talk (PTT) support for better collaboration[1]
With an embedded microphone and speaker, the WS501 allows staff to instantly reach co-workers and supervisors with the push of a button for fast issue resolution — without the need to purchase and manage separate voice devices.

Built to last — with built-in investment protection

Compact but mighty with a built-in rugged design for a low TCO

Turbocharge productivity and data capture accuracy in the most scan intensive workflows with the WS501 — the world's smallest, most powerful all-in-one wearable Android mobile computer.

For more information, please visit www.zebra.com/ws501

Don’t underestimate this compact device. It weighs in at just a handful of ounces, but is built to handle all-day everyday enterprise use. Extreme heat and cold, bumps and drops — the WS501 handles it all. The dust-tight WS501 survives jetting water — so you can just hose it off. And the protective front shell is replaceable on site, so you can easily keep devices looking new.

All the key features of a full-size mobile computer

Advanced enterprise-class scanner for intense barcode scanning

Zebra’s SE4770 imager scans virtually any barcode in practically any condition, as fast as you can press the trigger — even if it is damaged or poorly printed. Capture barcodes even if the scanner and barcode are in motion with superior motion tolerance. Capture large or multiple barcodes with a wide field of view. With a single trigger press, capture, properly format and transmit data on all barcodes on a single label with Zebra’s Multi-Code Data Formatting. And with NG SimulScan, easily capture, format and transmit data from multiple barcodes on multiple labels on boxes and items.

Advanced touchscreen display

The two-inch AMOLED color display offers exceptional performance. It is extraordinarily bright — no backlight is required. Low power consumption extends battery run time. Better contrast and viewing angles deliver superior readability. Qualcomm® TruPalette™ Display makes colors look vibrant and true to life, while Qualcomm Low-Power Picture Enhancement adjusts to lighting, making the screen easy to read — without the need to manually adjust display settings.

Save time with programmable buttons

Make task execution easy with two programmable buttons that can be mapped to different functions, such as push-to-talk or opening a specific application. And you can dedicate a button for PTT communications.

Collaboration made easy with integrated audio features

Enable instant voice communications with the embedded speaker and microphone. Wirelessly connect a Bluetooth headset, eliminating cords and enabling more private communications.

Removable batteries for full-shift perpetual power

Devices can remain in service every minute of every shift. With fast charging, batteries are ready to go in less than three hours. And with hot swap, there’s no need to power down to change the battery.

Simplify backroom device and battery management

Modular enterprise accessories include 2- or 10-slot charge-only cradles; 4- or 20-slot battery chargers, and an Ethernet cradle that supports five devices and five batteries.

Drive workforce productivity and device value to a new level with powerful Zebra DNA tools

Easier integration into your environment

The Enterprise Mobility Development Kit (EMDK) makes it easy to develop applications that take full advantage of all device features. And DataWedge easily captures, properly formats and transmits data in the right order to the right applications — without coding or modifying existing apps.

Increase device and data security

Mobility Extensions (Mx) offers over 100 features that add enterprise functionality to standard Android to improve security, mobile application management, mobile device management and more. LifeGuard™ for Android™ provides a lifetime security guard for Android through timely updates that protect your devices every day they are in service. And Enterprise Home Screen allows you to specify the apps and device features users can access, protecting productivity and increasing device and network security.

Simplify deployment and management

Zebra DNA software tools help you set up, secure, manage and optimize your Zebra mobile computers — and now you can conveniently access, deploy and manage all of those applications in one place with Zebra DNA Cloud. Just a few of the many available apps include StageNow, which enables the staging of thousands of devices with a barcode scan or NFC tap. Minimize service center visits with the on-device Device Diagnostics Tool, a powerful user-friendly tool that tests key mobile device systems for fast troubleshooting and resolution of device issues. Manage the many unique settings and features of Zebra’s Android enterprise mobile devices through your EMM with OEMConfig — no proprietary integration or waiting for your EMM provider to add support for new features. And Zebra Zero Touch automatically enrolls Zebra Android devices into your EMM when powered on, instantly loading the correct settings and apps.

Find missing devices

Find lost and misplaced WS501 devices quickly and easily with Device Guardian. The easy-to-use proximity indicator makes devices easy to find — and you can trigger an alarm to assist in recovery. The result? Device loss is practically eliminated.

Specifications

Physical Characteristics

Dimensions	2.52 in L x 2.44 in W x 1.10 in D (64mm L x 62mm W x 28mm D)
Weight	4.73 oz (134g)
Display	2 in. AMOLED 460 x 460 color display; optically bonded to touch panel
Imager Window	Corning® Gorilla® Glass
Touch Panel	Capacitive touch panel; fingertip and glove support; Corning® Gorilla® Glass
Power	5 Wh; 1300 mAh; PowerPrecision; Hot Swap — two (2) minutes, memory persistent)
Network Connections	USB 2.0 High Speed (host and client), WLAN and Bluetooth
Notifications	Audible tone; charge LED; OS notification LED; multi-color application LEDs (2); haptic feedback
Voice and Audio	Speaker (90dBA); internal mic; Bluetooth headset support
Buttons	2 buttons (programmable)
Interfaces	Docking contacts; via interface cables: USB 2.0 host/client and charging

Scanner Performance

Optical Resolution	1280 x 800 pixels
Roll	360°
Pitch	±60°
Skew	±60°
Aiming Element	655 nm Laser
Illumination Element	1 Hyper Red 660 nm LED or 1 Warm-White LED
Field of View	Horizontal: 48°, Vertical: 30°
Ambient Light Immunity (from total darkness)	Maximum 107,639 lux (direct sunlight)
Supported 1D Symbologies	Code 39, Code 128, Code 93, Codebar/NW7, Code 11, MSI, UPC/EAN, I 2 of 5, Korean 3 of 5, GSI DataBar, Base 32 (Italian Pharma)
Supported 2D Symbologies	PDF417, Micro PDF417, Composite Codes, TLC-39, Aztec, DataMatrix, MaxiCode, QR Code, Micro QR, Chinese Sensible (Han Xin), Postal Codes
Supported OCR Symbologies	OCR-A, OCR-B
Scan Triggering	Manual ambidextrous trigger

Performance Characteristics

CPU	Qualcomm® QC2290
Operating System	Android; for supported Android versions, visit: www.zebra.com/android-versions
Memory	3 GB RAM/32 GB Flash

Interactive Sensor Technology (IST)

Light Sensor	Automatically adjusts display backlight brightness
Motion Sensor	6-axis accelerometer with MEMS Gyro

Data Capture

Scanning	SE4770 1D/2D standard range omni-directional imager; manual triggering
NFC	Tap to Pair, ISO 14443 Type A and B, Felica and ISO 15693 cards, and Card Emulation via Host (HCE) support

Wireless LAN

Radio	IEEE 802.11 a/b/g/n/ac/d/h/i/r/k/v/w/mc/ax; Wi-Fi 6; 2x2 MU-MIMO; Wi-Fi™ certified; IPv4, IPv6
Data Rates	5GHz: 802.11a/n/ac/ax — 20MHz, 40MHz, 80MHz - up to 1201 Mbps 2.4GHz: 802.11b/g/n/ax — 20MHz up to 286.8 Mbps
Operating Channels	Channel 1-13 (2412-2472 MHz): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 Channel 36-165 (5180-5825 MHz): 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 149, 153, 157, 161, 165 Channel Bandwidth: 20/40/80 MHz Actual operating channels/ frequencies and bandwidths depend on regulatory rules and certification agency.
Security and Encryption	WEP (40 or 104 bit); WPA/WPA2 Personal (TKIP, and AES); WPA3 Personal (SAE); WPA/WPA2 Enterprise (TKIP and AES); WPA3 Enterprise (AES) — EAP-TTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PEAPv0-MSCHAPv2, PEAPv1-EAP-GTC, LEAP and EAP-PWD; WPA3 Enterprise 192-bit mode (GCMP256) - EAP-TLS; Enhanced Open (OWE)
Certifications	WFA (802.11n, 802.11ac, 802.11ax, WPA2-Personal, WPA3-Personal, WPA2-Enterprise, WPA3-Enterprise, PMF); Wi-Fi 6, Agile Multiband

Wireless PAN

Bluetooth	Bluetooth 5.3; Classic Bluetooth Basic Rate (BR)/Enhanced Data Rate (EDR) and Bluetooth Low Energy (BLE) support; Class 1

Warranty

Subject to the terms of Zebra's hardware warranty statement, the WS501 is warranted against defects in workmanship and materials for a period of one (1) year from the date of shipment. For complete warranty statement, please visit www.zebra.com/warranty

Recommended Services

When supported by Zebra OneCare™ Essential or Select maintenance plans, our customers experience improved operational efficiency. Our maintenance plans ensure minimal downtime through efficient depot repair or advanced device replacement, while technical support and software maintenance keeps your business running smoothly. LifeGuard updates and

Markets and Applications

Warehousing/Manufacturing

- Sorting
- Put away
- Picking
- Loading/unloading
- Task management

Transportation and Logistics

- Sorting
- Loading/unloading

User Environment

Operating Temperature	+14F to +122F (-10C to +50C)
Storage Temperature	-40F to +158F (-40C to +70C)
Humidity	5% - 95% non condensing
Drop Specification	6 ft (1.8m) drop to tile over concrete across operating temperature
Tumble Specification	2,000 tumbles @ 1.6 ft (0.5m) meets and exceeds IEC tumble specifications
Sealing	IP65
Vibration	4 g's PK Sine, 5hz to 2khz, 1 hour duration per axis; 0.04 g2/Hz Random (20 Hz to 2 kHz), 1 hour duration per axis.
Electrostatic Discharge (ESD)	+/-15 kV air discharge, +/-8 kV direct/indirect discharge

Recommended Services

Device Diagnostics further secure and optimize your operations. Included with every Zebra OneCare maintenance plan, our cloud-based VisibilityIQ™ OneCare provides comprehensive insights into repairs, cases, contracts and LifeGuard reports, empowering you to make informed decisions for better operational outcomes.Zebra's optional VisibilityIQ™ Foresight complements your Zebra OneCare maintenance plan. This service provides a comprehensive view of device performance that allows you to proactively address device issues — before they impact your operations. Critical device intelligence is consolidated into a single, intuitive dashboard, enabling you to identify areas for improvement and make informed decisions that boost productivity. By offering actionable insights, Zebra Visibility IQ Foresight helps streamline workflows, ensuring that your operations run efficiently and effectively.

Software

Zebra DNA for Mobile Computers empowers businesses to achieve peak performance with exceptional accuracy and reliability. Zebra DNA allows workers to complete work faster, smarter and better, shift after shift, inside or outside of the four walls. For more information visit www.zebra.com/zebradnaZebra DNA for Mobile Computers is available on Android only. Features may vary by model and a Support Contract may be required. For more information on these Zebra-only features and for the most recent list of supported apps, please visit: https://techdocs.zebra.com/dnamobilecomputers/

Footnotes

1. Available Q1 2026

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