WS50 Android Wearable Computer

Unparalleled functionality and flexibility in the world's smallest all-in-one Android enterprise-class wearable mobile computer

Every task worker without mobile access to relevant information and the rest of your workforce is forced to take more steps and more time to complete tasks, eroding operational efficiency. Now, connecting your disconnected workers is easy with Zebra's WS50 — the world's smallest Android enterprise-class wearable mobile computer. It's rugged, modular and at home everywhere — from manufacturing and warehousing to retail and hospitality. It's versatile — this flexible computing core is modular, allowing you to choose the mount that's right for the job: wrist, back of hand or two-finger. It's small but mighty, packed with powerful business class voice and data features that drive productivity and accuracy into every task. It's lightweight and ergonomic, comfortable and never in the way. And with no host device required, it's the first of its kind, offering powerful data capture with single device simplicity.

Designed for maximum flexibility

True 'no-host' one-piece wearable
With the all-in-one WS50, workers only need to wear one device to capture and access data instead of a host mobile computer and ring scanner, providing a true converged wearable solution. And push-to-talk (PTT) support eliminates the need for separate voice devices.

Wear it your way with modular mounting options
With three different wearing styles, the adaptable WS50 is ideal for virtually any task worker in practically any industry. The WS50 can be worn on a wrist, two fingers or the back of the hand.

All the key features of a full-size mobile computer

Better connect your workforce with push-to-talk (PTT) and task management applications
All models are PTT ready, enabling managers and workers to instantly collaborate for faster issue resolution and increased staff productivity. All models also support task-management applications, enabling better staff utilization and management.

High-resolution camera for light barcode scanning and photo capture
A 13 MP camera in the wrist-mounted model supports occasional barcode scanning and can capture detailed photos to document proof of condition and more.

Advanced enterprise-class scanner for intense barcode scanning
The converged two-finger-and back-of-hand mount WS50 models include Zebra's SE4770 imager, delivering superior data capture performance. Scan virtually any barcode in practically any condition, as fast as you can press the trigger — even if they are damaged or poorly printed. Superior motion tolerance enables the capture of barcodes, even if scanner and barcode are in motion. No need to depress the trigger for every scan — scan continuously with an optional integrated proximity sensor. A wide field of view makes it easy to capture large or multiple barcodes with split-second point-and-shoot simplicity. With a single trigger press, capture, properly format and transmit data on all barcodes on a label with Zebra's Multi-Code Data Formatting.

Simplify backroom device and battery management — and purchasing — with modular accessories
Choose the charging solution that matches your deployment and device management needs — 2- or 10-slot charge-only cradles; 4- or 20-slot battery chargers, or an Ethernet cradle that supports five devices and five batteries. In mixed model deployments, color-coding allows you to instantly see whether a cradle or charger is for the two-finger and back-of-hand mount converged models — or the wrist-mount models.

The power of Android
This industry-standard mobile operating system provides a future proof platform designed to easily accommodate new features.

Integrated audio features
Give users the power of instant voice communications with the embedded speaker and microphone. Wirelessly connect a Bluetooth headset, eliminating cords and enabling more private communications. And you can dedicate a button for PTT communications.

Powerful, centralized management for all models
The WS50 supports major Enterprise Mobility Management (EMM) systems, providing a single pane of glass to manage all of your mobile devices.

All the wireless connections you need
Wi-Fi, Bluetooth and NFC are all standard in the WS50, enabling robust Wi-Fi 'won't fail' connections and easy one-tap connections to Bluetooth peripherals.

Full-shift perpetual power
With removable, hot-swappable batteries, devices can remain in service every minute of every shift. An 800mAh battery powers the wrist mount model, while a 1300mAh battery powers the ring-style and back-of-hand models. With fast charging, batteries are ready to go in less than three hours. And with hot swap support, users can just swap batteries and keep on working — no need to power down.

Automate workflows with programmable buttons
Make task execution even easier on the two-inch screen with programmable buttons that can be mapped to different functions, such as PTT, navigation, scanning, photo capture and more.

Small but mighty with a built-in rugged design
Don't underestimate these small devices. They weigh in at just a handful of ounces, but are built to handle all-day everyday enterprise use. Extreme heat and cold, bumps and drops — the WS50 handles it all. The wrist mount model operates reliably after multiple 4 ft./1.2 m drops and 1,000 consecutive tumbles. The more rugged ring-style and back-of-hand models operate reliably after multiple 6 ft./1.8 m drops and 2,000 consecutive tumbles. With IP65 sealing, all models are dust-tight and survive jetting water. And the protective front shell is replaceable, keeping your devices looking like new.

Advanced touchscreen display
The two-inch AMOLED color display offers exceptional performance. It is extraordinarily bright — no backlight is required. Better contrast and better viewing angles deliver superior readability. And low power consumption extends battery run time.

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

Easier integration into your environment
The Enterprise Mobility Development Kit (EMDK) makes it easy to 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) adds extra layers of features that are crucial to protecting your devices, their resident data and network access. LifeGuard™ for Android™ provides a lifetime security guard for Android, protecting 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
Stage thousands of devices with a scan of a barcode or a tap of an NFC tag. Test major device systems to eliminate unnecessary trips to the Service Center with the on-device Device Diagnostics Tool. And easily integrate all Zebra APIs via your EMM with OEM Config.

Optimize your Wi-Fi network
Mobility DNA Wireless Fusion provides a dependable and superior Wi-Fi experience with Zebra-only features that keep workers connected and productive while roaming your facility.

Specifications

Physical Characteristics	
Dimensions	**Wrist (device):** 2.44 in. L x 2.32 in. W x 0.71 in. D 62 mm L x 59 mm W x 18 mm D **Wrist (with mount):** 2.91 in. L x 2.51 in. W x 0.751 in. D 74 mm L x 64 mm W x 19 mm D **Converged:** 2.52 in. L x 2.44 in. W x 1.10 in. D 64 mm L x 62 mm W x 28 mm D
Weight	**Wrist (device):** 2.47 oz./70 g; **Wrist (with mount):** 3.95 oz./112 g **Converged:** 4.73 oz./134 g
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	Standard (Wrist): 3.08 Watt Hours; 800 mAh High Capacity (Converged): 5 Watt Hours; 1300 mAh PowerPrecision; Hot Swap (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; PTT ready; Bluetooth headset support
Buttons	**Wrist:** 4 buttons (programmable) **Converged:** trigger; 2 buttons (programmable)
Interfaces	Docking contacts; Via interface cables: USB-C (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 or automatic via Proximity Sensor technology

Performance Characteristics	
CPU	Qualcomm® Snapdragon Wear W4100+ Platform/ SDA429w, quad-core, 2.0 GHz
Operating System	Android 11 AOSP
Memory	1 GB RAM/8 GB Flash
User Environment	
Operating Temperature	14° F to 122° F/-10° C to +50° C
Storage Temperature	-40° F to 158° F/-40° C to +70° C
Humidity	5% - 95% non condensing
Drop Specification	**Wrist:** 4 ft./1.2 m drop to concrete per MIL-STD 810G across operating temperature **Converged:** 6 ft./1.8 m drop to tile over concrete per MIL-STD 810G across operating temperature
Tumble Specification	**Wrist:** 1,000 tumbles @ 1.6 ft./0.5 m **Converged:** 2,000 tumbles @ 1.6 ft./0.5 m Meets and exceeds IEC tumble specifications
Sealing	IP65
Vibration	4 g's PK Sine, 5hz to 2khz, 1 hour duration per axis; 0.04 g^2/Hz Random (20 Hz to 2 kHz), 1 hour duration per axis.
Electrostatic Discharge (ESD)	+/-15 kV air discharge, +/-8 kV direct/indirect discharge
Interactive Sensor Technology (IST)	
Light Sensor	Automatically adjusts display backlight brightness
Motion Sensor	6-axis accelerometer with MEMS Gyro
Data Capture	
Scanning	Converged: SE4770 1D/2D standard range omni-directional imager Wrist: 13 MP camera with flash, or no data capture option
Camera	13 MP with Flash (Wrist only)
NFC	Tap to Pair, ISO 14443 Type A and B, Felica and ISO 15693 cards, and Card Emulation via Host (HCE) support
Scan Triggering	Manual or automatic via proximity sensor technology
Wireless LAN	
Radio	IEEE 802.11 a/b/g/n/ac/d/h/i/r; Wi-Fi™ certified; IPv4, IPv6, 1x1 SISO
Data Rates	2.4 GHz: 802.11b/g/n/ac — 20 MHz, 40 MHz — up to 200 Mbps 5 GHz: 802.11a/g/n/ac — 20 MHz, 40 MHz, 80 MHz — up to 433 Mbps
Operating Channels	Channel 1-13 (2412-2472 MHz); Channel 36-165 (5180-5825 MHz) 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); — EAP-TTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PEAPv0-MSCHAPv2, PEAPv1-EAP-GTC, EAP-PWD

Markets and Applications

Retail
- Pricing/markdowns
- Back of store operations
- Task management

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

Transportation and Logistics
- Sorting
- Loading/unloading

Hospitality
- Food service: restaurant servers; room service
- Housekeeping
- Janitorial service

Specifications — continued

Wireless LAN — continued	
Certifications	WFA (802.11n, 80211ac, WPA2-Personal, WPA3-Personal, WPA2-Enterprise, PMF)
Fast Roam	PMKID caching; 802.11r (Over-The-Air); OKC
Wireless PAN	
Bluetooth	Bluetooth 4.2; Bluetooth Low Energy (BLE) support; Class 1

Warranty

Subject to the terms of Zebra's hardware warranty statement, the WS50 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

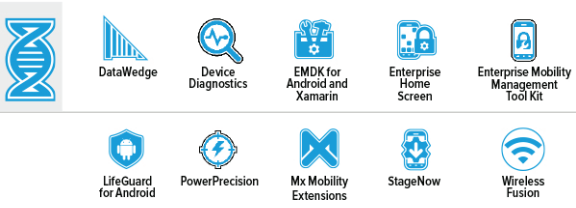
Support Services: Maximize device availability, operational efficiency, and security updates with Zebra OneCare™ Essential or Select services. Protect your investment with depot repair or advanced device replacement, technical support, software and support, LifeGuard updates, Device Diagnostics and included cloud-based VisibilityIQ™ OneCare™ for insight into repair, case, contract, LifeGuard reports and more.

Zebra VisibilityIQ™ Foresight: With 24+ reports, this optional business intelligence service aggregates device data onto a single, color-coded, cloudbased pane of glass, letting you know how your devices are performing, so you can decide what next steps you can take to improve your operations, maximize productivity and provide actionable insight to streamline workflows.

Mobility DNA™

Mobility DNA solutions help you get more value out of our mobile computers by adding functionality as well as simplifying deployment and management of our mobile devices. For more information on these Zebra-only features, please visit www.zebra.com/mobilitydna

Mobility DNA 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://developer.zebra.com/mobilitydna



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