







TC20 Specifications


PHYSICAL CHARACTERISTICS	
Dimensions	TC20 ALL-TOUCH: 5.27 in. L x 2.82 in. W x .63 in. D 134 mm L x 73.1 mm W x 16 mm D TC20 WITH KEYBOARD: 6.45 in. L x 2.82 in W x .63 in. D 164 mm L x 73.1 mm W x 16 mm D
Weight	TC20 ALL-TOUCH: 6.88 oz./195 g TC20 WITH KEYBOARD: 7.58 oz./215 g
Display	4.3 in. color WVGA (800x480); LED backlight; Corning Gorilla Glass
Imager Window	Corning Gorilla Glass
Touch Panel	Capacitive Touch Panel; multi-touch
Power	Non-removable Rechargeable Li-Ion: standard capacity, 3000mAh Charge in under 4 hours (10hrs = 1 Shift) RTC backup
Expansion Slot	One 128GB micro SD slot
Network Connections	One USB OTG - host/client (Type C connector)
Notifications	Audible tone; multi-color LEDs; vibration
Keypad	TC20 All-Touch: On-screen Keypad TC20 Keyboard: Numeric
Voice	PTT Pro, PTT Express
Audio	Speaker - 1 Watt (94dBA) Voice support (Internal speaker/microphone) 2 microphones Audio jack
Buttons	Scan on each side, Volume Up/Down, Power, push-to-talk (PTT) Key
PERFORMANCE CHARACTERISTICS	
CPU	QCOM MSM8937® 64-bit 8-Core, ARM® Cortex A53 1.4GHz, 512KB L2 cache, power-optimization
Operating System	Android Nougat 7.X
Memory	2GB RAM/16 GB Flash memory
Security	Verified Boot
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
Drop Specifications	Multiple 4 ft./1.2 m drop to tile over concrete per MIL-STD at room temperature
Tumble Specifications	300 tumbles, 1.6 ft./0.5 m
Sealing	IP54

* Just set up the pre-installed, free Workforce Connect PTT Express software to enable calls between workers carrying the TC20 and any Zebra PTT Express-enabled compatible Android or Windows mobile device.

USER ENVIRONMENT (CONTINUED)	
Vibration	4G peak, 5 Hz to 2 kHz, 1 hour duration per axis
Thermal Shock	-40°C to 70°C rapid transition 10 cycles (1 cycle = 1.25 hours at -40°C and 1.25 hours at 70°C)
Electrostatic Discharge (ESD)	+/-15kv Air, +/-8kv contact, +/-8kv charge body
INTERACTIVE SENSOR TECHNOLOGY (IST)	
Accelerometer (3-axis), ambient light sensor, proximity sensor	
DATA CAPTURE	
Scanning	SE2100 1D/2D imager SE4710 1D/2D imager + rear camera
Rear Camera	8MP autofocus color camera with flash
RFID	RFD2000 UHF RFID snap-on sled
WIRELESS LAN	
WLAN Radio	802.11 a/b/g/n/ac/d/r/h/i IPv4, IPv6
Data Rates	2.4 GHz: 20 MHz, 40 MHz 5 GHz: 20 MHz, 40 MHz, 80 MHz
Operating Channels	2.4 GHz (channels 1-13; 1-11(US)) 5GHz (channels 36-48, 52-64, 100-144, 149-165) Actual operating channels/ frequencies and bandwidths depend on regulatory rules and certification agency.
Security and Encryption	WPA/WPA2 (PSK & Enterprise 802.1x); EAP-TTLS; PEAPv0-MSCHAPv2; EAP-TLS
Certifications	802.11a/b/g/n; WPA; WPA2
Fast Roam	802.11r
WIRELESS PAN	
Bluetooth	Bluetooth 4.2 BLE
MOBILITY DNA SOLUTIONS	
 Mobility Extensions (Mx)	 SmartDEX
 Lifeguard™ for Android™	 DataWedge
 StageNow	 EMM Tool Kit
Mobility DNA is available on Android only. Features may vary by model and a Support Contract may be required. To learn what solutions are supported, please visit: https://developer.zebra.com/mobilitydna	
WARRANTY	
Subject to the terms of Zebra's hardware warranty statement, the TC20 is warranted against defects in workmanship and materials for a period of 1 (one) year from the date of shipment. For complete warranty statement, please visit: www.zebra.com/warranty	
RECOMMENDED SERVICES	
Zebra OneCare™ SV	


- Put the TC20 to work in:
- Retail**
- Front of store
 - Back of store
 - Stocking
 - Receiving
 - Shipping/Truck loading
 - BOPIS (buy online, pick up in store)
- Hospitality**
- Order taking
- Light warehouse**
- Stocking
 - Receiving
 - Shipping/Truck loading

TC51/TC56 Specifications

PHYSICAL CHARACTERISTICS	
Dimensions	6.1 in. L x 2.9 in. W x 0.73 in. H 155 mm L x 75.5 mm W x 18.6 mm H
Weight	8.8 oz./249 g with battery
Display	5.0 in. High Definition (1280 x 720); exceptionally bright, outdoor viewable; optically bonded to touch panel
Imager Window	Corning Gorilla Glass
Touchpanel	Dual mode capacitive touch with stylus or bare or gloved fingertip input (conductive stylus sold separately); Corning Gorilla Glass
Backlight	LED backlight
Power	 Rechargeable Li-Ion, Power Precision + Standard Capacity, 4300 mAh typical/ 4030 mAh minimum; improved battery technology for longer cycle times and real-time visibility into battery metrics for better battery management; fast USB charging (500mA)
Expansion Slot	User accessible MicroSD up to 32GB SDHC and up to 128 GB SDXC
SIM	1 Nano SIM slot (TC56 only)
Network Connections	WWAN, WLAN, WPAN (Bluetooth)
Notification	Audible tone; multi-color LEDs; vibration
Keypad	On-screen keypad and enterprise keyboard
Voice and Audio	Two microphones with noise cancellation; vibrate alert; speaker; Bluetooth wireless headset support; High quality speaker phone; PTT headset support; cellular circuit switch voice; HD Voice
Buttons	Programmable back button; dual dedicated scan buttons; dedicated push-to-talk button, and volume up/down buttons
PERFORMANCE CHARACTERISTICS	
CPU	Snapdragon 650 64-bit hexa-core 1.8GHz ARM Cortex A72, power optimization
Operating System	Android 7.0 Nougat
Memory	Standard: 2GB RAM/16GB Flash Optional: 4GB RAM/32GB Flash
USER ENVIRONMENT	
Operating Temperature	-4°F to 122°F/-20°C to 50°C (RH 5% to 95% Non-condensing)
Storage Temperature	-40°F to 158°F/-40°C to 70°C
Humidity	5% to 85% non-condensing
Drop Specifications	Multiple 4 ft./1.2 m to tile over concrete over -10°C to 50°C (14°F to 122°F) Multiple 6ft. drops to concrete with the rugged boot accessory per MIL STD 810 G
Tumble Specification	500 1.6 ft./0.5 m tumbles, meets or exceeds IEC tumble specification
Sealing	IP67 and IP65 per applicable IEC sealing specifications
Vibration	4 g's PK Sine (5 Hz to 2 kHz); 0.04 g 2/Hz Random (20 Hz to 2 kHz); 60 minute duration per axis, 3 axis
Thermal Shock	-40° F to 158° F/-40° C to 70° C rapid transition
Electrostatic Discharge (ESD)	+/-15kv Air; +/-8kv contact; +/-8kv charge body

INTERACTIVE SENSOR TECHNOLOGY (IST)	
Light Sensor	Automatically adjusts display backlight brightness
Motion Sensor	3-axis Accelerometer with MEMS Gyro
Proximity Sensor	Automatically detects when the user places the handset against head during a phone call to disable display output and touch input
DATA CAPTURE	
Scanning	SE4710 imager (1D and 2D) with extraordinary range: Scan range – Code 39 barcode: 20 Mil: 1.8 in. to 32.0 in./4.5 cm to 81.3 cm 3 Mil: 3.1 in. to 5.6 in./7.9 cm to 14.2 cm
Camera	Rear — 13 MP autofocus; f/2.4 aperture; rear camera flash LED generates balanced white light; supports Torch mode
NFC	ISO 14443 Type A and B; F; FeliCa and ISO 15693 cards; P2P mode and Card Emulation via UICC and Host
WIRELESS WAN DATA AND VOICE COMMUNICATIONS (TC56 ONLY)	
Radio Frequency Band	Worldwide: LTE: 700,800/900/1800/2100/2600 (FDD 28,20,8,3,1,7); UMTS/HSPA/HSPA+: 850/900/ AWS/1900/2100; GSM/GPRS/EDGE: 850/900/1800/1900 Americas: LTE: 700/850/1900/AWS, (FDD 13,12,17,5,2,4); UMTS/HSPA/HSPA+: 850, 900, AWS, 1900, 2100 GSM/GPRS/EDGE: 850/900/1800/1900; CDMA: 850,1900 (BC0, BC1)
GPS	TC56 only: Integrated; Autonomous; Assisted GPS (A-GPS); Navstar; GLONASS; BeiDou
WIRELESS LAN	
Radio	IEEE 802.11a/b/g/n/ac/d/h/i/k/r/w; Wi-Fi™ certified; IPv4, IPv6; 2X2 MIMO (TC51 only) 1x1 SISO (for TC56)
Data Rates	5GHz: 802.11a/n/ac — up to 866.7 Mbps (up to 433.3Mbps for TC56) 2.4GHz: 802.11b/g/n — up to 144 Mbps (up to 72.2Mbps for TC56)
Operating Channels	Channel 1-13 (2412-2472 MHz); Chan 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); WPA/WPA2 Enterprise (TKIP and AES) — EAP-TTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PEAPv0-MSCHAPv2, PEAPv1-EAP-GTC and LEAP Data in Motion: FIPS 140-2 Level 1 Data at Rest: FIPS 140-2 Level 1
Certifications	WFA (802.11n, 802.11ac, WMM-AC, Voice Enterprise, WMM-PS), Miracast WFA (Mobile AP / Personal Hotspot) - TC56 only
Fast Roam	PMKID caching; Cisco CCKM; 802.11r; OKC
WIRELESS PAN	
Bluetooth	Class 2, Bluetooth v4.1 (Bluetooth® Smart technology); Bluetooth Wideband support HFPv1.6; Bluetooth v4.1 Low Energy (LE)
Bluetooth	Class 2, Bluetooth v4.1 (Bluetooth® Smart technology); Bluetooth Wideband support HFPv1.6; Bluetooth v4.1 Low Energy (LE)

TC70 Series Specifications


PHYSICAL CHARACTERISTICS	
Dimensions	6.3 in. L x 3.3 in. W x 1.1 in. D 161 mm L x 84 mm W x 28 mm D
Weight	13.3 oz./376 g
Display	4.7 in. High Definition (1280 x 720); exceptionally bright, outdoor viewable; optically bonded to touch panel
Imager Window	Corning Gorilla Glass
Touch Panel	Dual mode capacitive touch with stylus, finger or gloved fingertip input (conductive stylus sold separately); Corning Gorilla Glass
Backlight	LED backlight
Power	 Li-Ion 3.7 V, 4620 mAh. PowerPrecision/PowerPrecision+: Improved battery technology for longer cycle times and real-time visibility into battery metrics for better battery management.
Expansion Slot	TC70: User accessible MicroSD with 32GB SDHC and up to 64GB SDXC TC70x: User accessible MicroSD with 32GB SDHC and up to 128GB SDXC
Network Connections	WLAN, WPAN (Bluetooth)
Notification	Audible tone; multi-color LEDs; vibration
Keypad	On-screen keypad; Enterprise Keyboard
Voice and Audio	Three microphone support with noise cancellation; vibrate alert; speaker; Bluetooth wireless headset support
PERFORMANCE CHARACTERISTICS	
CPU	TC70: 1.7 GHz dual core processor TC70x: 1.8 GHz hexa-core 64 bit processor
Operating System	TC70: Android 5 Lollipop TC70x: Android 8.0 (Oreo)
Memory	TC70: 1 GB RAM / 8 GB Flash pSLC TC70x: 2 GB RAM / 16 GB Flash pSLC or 4 GB RAM / 32 GB Flash pSLC
USER ENVIRONMENT	
Operating Temp.	-4° F to 122° F/-20° C to 50° C
Storage Temp.	-40° F to 158° F/-40° C to 70° C
Humidity	5% to 85% non-condensing
Drop Specification	Multiple 6 ft./1.8 m drop to concrete across full operating temperature range, multiple 8 ft./2.4 m drop to concrete at room temperature per MIL-STD 810G
Tumble Specification	2,000 3.2 ft./1.0 m tumbles; meets and exceeds IEC tumble specifications
Sealing	IP65 and IP67 per applicable IEC sealing specifications
Vibration	4 g's PK Sine (5 Hz to 2 kHz); 0.04g2/Hz Random (20 Hz to 2 kHz); 60 minute duration per axis, 3 axis

USER ENVIRONMENT (CONTINUED)	
Thermal Shock	-40° F to 158° F/-40° C to 70° C rapid transition
Electrostatic Discharge (ESD)	+/-15kVdc air discharge +/-8kVdc direct discharge +/-8kVdc indirect discharge
AUDIO	
High quality speaker phone with up to 108 dB SPL volume; wireless (Bluetooth) headset support; PTT headset support; handset/ speakerphone modes	
INTERACTIVE SENSOR TECHNOLOGY (IST)	
Light Sensor	Automatically adjusts display backlight brightness
Motion Sensor	3-axis accelerometer for dynamic screen orientation
DATA CAPTURE ²	
Scanning	SE4750 imager (1D and 2D); extraordinary range: Scan range – Code 39 barcode: 20 Mil: 1.6 in to 36.3 in/4.1 cm to 92.2 cm 3 Mil: 2.8 in to 6.2 in/7.1 cm to 15.8 cm
Camera	TC70: Front-1.3 MP fixed focus Rear - 8 MP autofocus TC70x: Front-1.3 MP fixed focus Rear - 13 MP autofocus
NFC	ISO 14443 Type A and B; FeliCa ³ , and ISO 15693 cards. P2P mode and Card Emulation via UICC and Host
WIRELESS LAN	
Radio	TC70: IEEE 802.11a/b/g/n/d/h/i/k/r TC70x: IEEE 802.11a/b/g/n/ac/d/h/i/k/r/w
Data Rates	TC70 5GHz: 802.11a/n — up to 150 Mbps; 2.4GHz: 802.11b/g/n — up to 72.2 Mbps TC70x 5GHz: 802.11a/n/ac — up to 866.7 Mbps; 2.4GHz: 802.11b/g/n — up to 144.4 Mbps
Operating Channels	TC70: Chan 1 - 13 (2412 - 2472 MHz); Chan 36 - 165 (5180 - 5825 MHz); Channel Bandwidth: 20, 40 MHz TC70x: Chan 1 - 13 (2412 - 2472 MHz); Chan 36 - 165 (5180 - 5825 MHz); Channel Bandwidth: 20, 40, 80 MHz Actual operating channels/ frequencies depend on regulatory rules and certification agency
Security and Encryption	TC70: WEP (40 or 104 bit); WPA/WPA2 Personal (TKIP, and AES); WPA/WPA2 Enterprise (TKIP, and AES) — EAP-TLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PE APv0-MSCHAPv2, PE APv1-EAP-GTC, EAP Fast and LEAP TC70x: WEP (40 or 104 bit); WPA/WPA2 Personal (TKIP, and AES); WPA/WPA2 Enterprise (TKIP, and AES) — EAP TTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PEAPv0-MSCHAPv2, PEAPv1-EAP-GTC and LEAP Data in Motion: FIPS 140-2 Level 1 Data at Rest: FIPS 140-2 Level 1


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TC8000 Specifications Chart

PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

Dimensions	9.17 in. L x 2.99 in. W x 2.52 in. D 233 mm L x 76 mm W x 64 mm D
Weight	Standard: 17.2 oz./490 g; Premium: 17.6 oz./500 g
Display	800 x 480 pixels; 4.0 in. diagonal; transreflective LCD display; 16.7 Million (24-bit) color support; 400 NITS
Touch Panel	Multi-touch projected capacitive; fingertip (bare or gloved) input; conductive stylus supported (sold separately); Corning® Gorilla® Glass
Power	 PowerPrecision+ Lithium ion 6700 mAh with hot swap battery backup
Notifications	Audible tone, multi-color LEDs, vibration
Keypad	On-screen keypad
Voice and Audio	Dual speakers, Bluetooth wireless headset support
Expansion	USB, Serial for ISV developers (optional)

PERFORMANCE CHARACTERISTICS

CPU	Dual core 1.7 GHz processor
Operating System	 Android AOSP 5.1.x (Lollipop) with Mobility Extensions (Mx)
Memory	Standard model: 1GB RAM/4 GB Flash pSLC Premium model: 1 GB RAM/8 GB Flash pSLC Premium model optional: 2 GB RAM/16 GB Flash pSLC
Storage	SDXC compliant micro SD card slot
App Development	EMDK available through Zebra Support Central Web site

DATA CAPTURE

Scanning Options	SE965: 1D standard range scan engine SE4750 SR or MR: Standard or medium range omnidirectional 1D/2D imaging engine SE4850 ER: Extended range 1D/2D imaging engine
Camera	8MP autofocus, f/2.4 aperture (optional)
NFC	Multi-protocol NFC (optional)

ZEBRA INTERACTIVE SENSOR TECHNOLOGY

Light Sensor	Automatically adjusts display backlight
Motion Sensor	3-axis accelerometer; 3-axis gyroscope (optional)
Navigation	Digital compass (optional)
Proximity	Sensor for auto hands free scanning

USER ENVIRONMENT

Operating Temp.	-4° F to 122° F/-20° C to 50° C
Storage Temp.	-40° F to 158° F/-40° C to 70° C
Humidity	5% - 95% non condensing (condensing resistant optional)
Drop Spec.	Multiple 8 ft./2.4 m drop to concrete at room temperature per MIL-STD 810G ; multiple 6 ft./1.8 m drop to concrete across full operating temperature range
Tumble Spec.	2,000 3.28 ft./1 m tumbles
Sealing	IP65
Vibration	Sine 5-2000 Hz, 4g peak, 1 hour per axis; random 20-2000 Hz, 6g RMS or 0.04g2/Hz, 1 hour per axis

* Results are dependent upon use case and scan frequency.

USER ENVIRONMENT (continued)

Thermal Shock	-40° F to 158° F/-40° C to 70° C rapid transition
Scanner Window	Corning® Gorilla® Glass
Electrostatic Discharge (ESD)	±20kVdc air discharge; ±10kVdc direct discharge; ±10kVdc indirect discharge

WIRELESS LAN

Radio	IEEE 802.11a/b/g/n/d/h/i
Data Rates	5GHz: 802.11a/n — up to 150 Mbps; 2.4GHz: 802.11b/g/n — up to 72.2 Mbps
Operating Channels	Chan 36 - 165 (5180 - 5825 MHz); Chan 1 - 13 (2412 - 2472 MHz); Actual operating channels/frequencies depend on regulatory rules and certification agency

Security and Encryption	WEP, WPA - TKIP, WPA2- TKIP, WPA2-TKIP AES EAP TTLS, PAP, MSCHAP, MSCHAP v2, PEAPv0-MSCHAPv2, PEAPv1- EAP-GTC, EAP-TLS, EAP-FAST, LEAP
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Multimedia	Wi-Fi Multimedia™ (WMM)
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Certifications	802.11n, WMM, WMM-PS, CCXv4, Wifi Direct, Wi-Fi Display (Miracast)
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Fast Roam	PMKID caching, Cisco CCKM, OKC, 802.11r
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Network Connections	Bluetooth; USB 2.0 OTG Host docking interface; 802.11r and 802.11k for enterprise voice roaming included
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WIRELESS PAN

Bluetooth	Bluetooth 4.0 (Bluetooth® Smart technology)
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ADDITIONAL MOBILITY DNA SOLUTIONS



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



All-touch Terminal Emulation



AppGallery



EMDK



Enterprise Browser



Enterprise Home Screen



SimulScan



StageNow



SwipeAssist



WorkForce Connect

Available Mobility DNA features may vary by model.

PERIPHERALS AND ACCESSORIES

Visit www.zebra.com/tc8000 for a complete list of accessories and peripherals.

WARRANTY

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

RECOMMENDED SERVICES

Zebra *OneCare*



THE TC8000 IS AT HOME IN...

Warehousing/ Distribution

- Warehouse management
- Truck unload/load
- Picking
- Put away
- Replenishment
- Shipping
- Returns processing
- EDI transactions
- Yard management

Retail

- Back of store/ warehouse management
- Price audits/changes
- Store receiving
- Inventory management
- In-store communications

Manufacturing

- Inventory management
- Supply-line replenishment
- Parts tracking
- Maintenance/repair operations
- Shop floor communications
- Compliance verification
- Receiving/put away/ shipping

Third-party Logistics

- Warehouse management



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