

# TC20

## Touch Computer



## User Guide for Android™ Version 7.1.2



**ZEBRA**

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## Revision History

Changes to the original guide are listed below:

Change	Date	Description
-01 Rev A	9/2017	Initial release.

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# About This Guide

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## Introduction

This guide provides information about using the TC20 touch computer and accessories.

✓ **NOTE** Screens and windows pictured in this guide are samples and can differ from actual screens.

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## Configurations

This guide covers the following configurations:

**Table 1** Configurations

Configuration	Radios	Operating System Android 7.1.2	Keypad	Data Capture	8 MP Camera	Memory RAM/Flash	Audio Jack	Access Door
TC200J-10A111XX	LAN/ PAN	GMS	No	SE2100	No	2 GB/16 GB	3.5 mm	Blank
TC200J-10C112XX	LAN/ PAN	GMS	No	SE4710	Yes	2 GB/16 GB	3.5 mm	2-Pin Connector
TC200J-1KC111XX	LAN/ PAN	GMS	Yes	SE4710	Yes	2 GB/16 GB	3.5 mm	Blank

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## Chapter Descriptions

Topics covered in this guide are as follows:

- [Getting Started](#) provides information on getting the TC20 up and running for the first time.
- [Using the TC20](#) provides information for operating the TC20.

- [Applications](#) provides information on using applications installed on the TC20.
- [Wireless](#) provides information on the various wireless options.
- [Accessories](#) provides information on using the accessories for the TC20.
- [Maintenance and Troubleshooting](#) includes instructions on cleaning and provides troubleshooting solutions for potential problems during TC20 operation.
- [Technical Specifications](#) provides the technical specifications for the TC20.

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## Notational Conventions

The following conventions are used in this document:

- **Bold** text is used to highlight the following:
  - Dialog box, window and screen names
  - Drop-down list and list box names
  - Check box and radio button names
  - Icons on a screen
  - Key names on a keypad
  - Button names on a screen.
- Bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential.
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

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## Related Documents and Software

The following documents provide more information about the TC20 touch computer.

- TC20 Quick Reference Guide, p/n MN-003018-xx
- TC20 Regulatory Guide, p/n MN-003019-xx
- TC20 Integrator Guide, p/n MN-003027-xx
- RS6000 Product Reference Guide, p/n

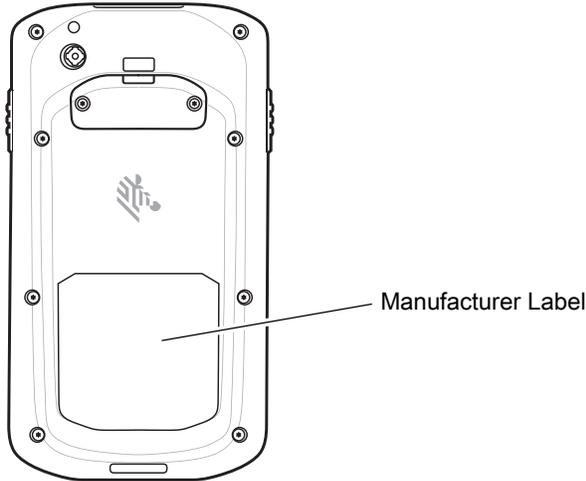
For the latest version of this guide and all guides, go to: [zebra.com/support](http://zebra.com/support).

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## Service Information

If you have a problem with your equipment, please use the Self-Help support resources available at [www.zebra.com](http://www.zebra.com). If the support provided via the Self-Help resources is not sufficient, you may contact Zebra Global Customer Support for your region. Contact information is available at: [zebra.com/support](http://zebra.com/support).

**Figure 1** Manufacturer Label



When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number.

Zebra responds to calls by email, telephone or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

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## Provide Documentation Feedback

If you have comments, questions, or suggestions about this guide, send an email to [EVM-Techdocs@zebra.com](mailto:EVM-Techdocs@zebra.com).

# Getting Started

This chapter provides information for getting the device up and running for the first time.

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## Unpacking

Carefully remove all protective material from the TC20 and save the shipping container for later storage and shipping.

1. Verify that the following were received:
  - TC20 touch computer
  - Regulatory Guide.
2. Inspect the equipment for damage. If any equipment is missing or damaged, contact the Global Customer Support center immediately.
3. Prior to using the TC20 for the first time, remove the protective shipping film that covers the scan window, display and camera window.

## Features

Figure 2 TC20 Front View

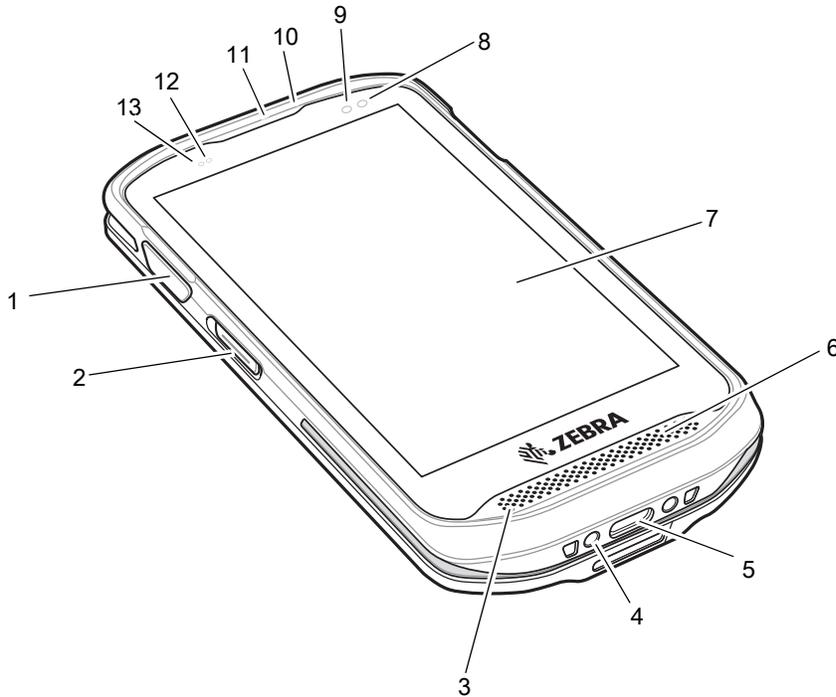


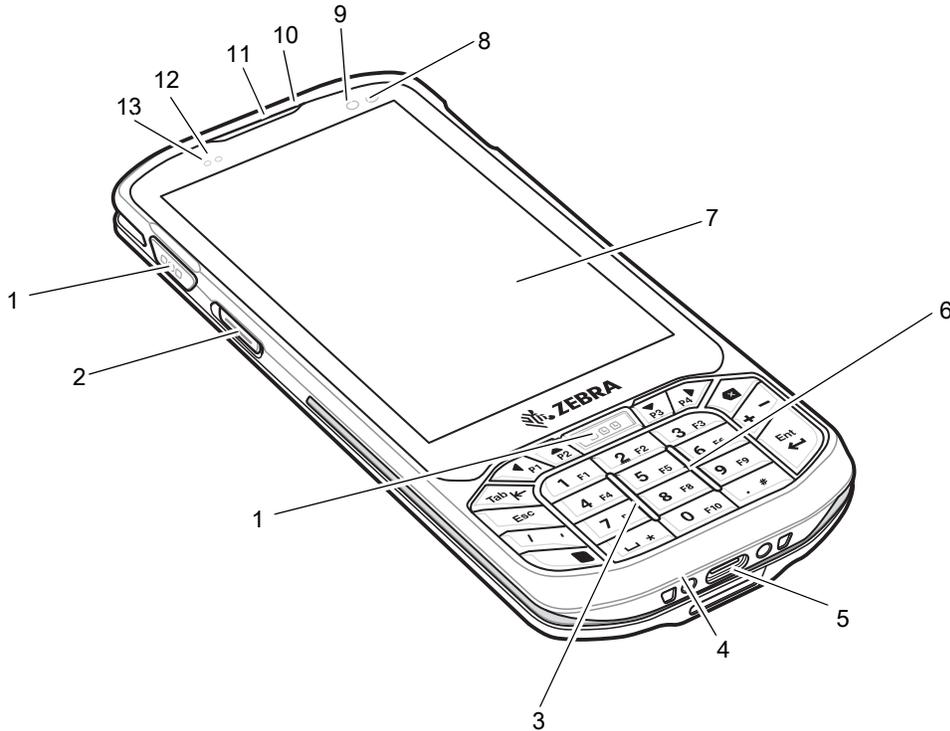
Table 2 TC20 Front View Features

Number	Item	Function
1	Scan Button	Initiates data capture. Yellow button: TC20 with SE4710 imager. Gray button: TC20 with SE2100 imager.
2	PTT Button	Initiates push-to-talk communications.
3	Microphone	Use for communications in Handset mode.
4	Power Contacts	Provides power for charging the TC20.
5	Interface Connector	Provides USB host and client communications and device charging via cables and accessories.
6	Speaker	Provides audio output for video and music playback. Provides audio in speakerphone mode.
7	Touch Screen	Displays all information needed to operate the TC20.
8	Charging/Notification LED	Indicates battery charging status while charging and application generated notifications.
9	Data Capture LED	Indicates data capture status.
10	Microphone	Use for communications in Speakerphone mode.
11	Receiver	Use for audio playback in Handset mode.

**Table 2** TC20 Front View Features (Continued)

Number	Item	Function
12	Light Sensor	Determines ambient light for controlling display backlight intensity.
13	Proximity Sensor	Determines proximity for turning off display when in handset mode.

**Figure 3** TC20K Front View Features



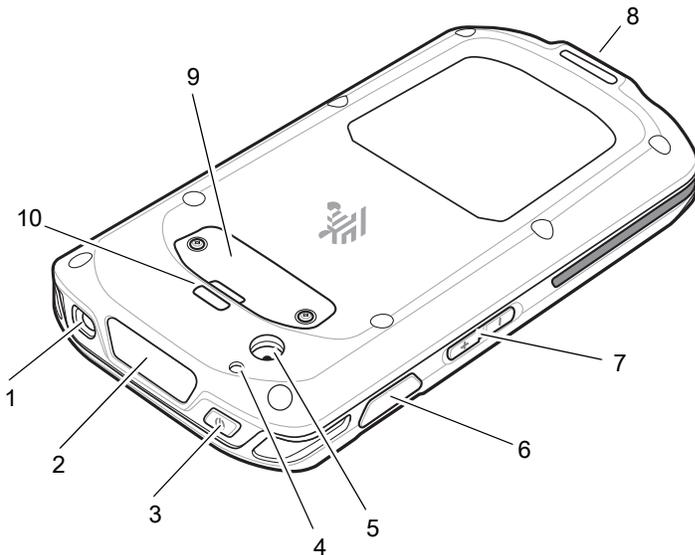
**Table 3** TC20K Front View Features

Number	Item	Function
1	Scan Button	Initiates data capture. Yellow button: TC20 with SE4710 imager. Gray button: TC20 with SE2100 imager.
2	PTT Button	Initiates push-to-talk communications.
3	Microphone	Use for communications in Handset mode.
4	Power Contacts	Provides power for charging the TC20.
5	Interface Connector	Provides USB host and client communications, and device charging via cables and accessories.
6	Speaker	Provides audio output for video and music playback. Provides audio in speakerphone mode.
7	Touch Screen	Displays all information needed to operate the TC20.
8	Charging/Notification LED	Indicates battery charging status while charging and application generated notifications.

**Table 3** TC20K Front View Features (Continued)

Number	Item	Function
9	Data Capture LED	Indicates data capture status.
10	Microphone	Use for communications in Speakerphone mode.
11	Receiver	Use for audio playback in Handset mode.
12	Light Sensor	Determines ambient light for controlling display backlight intensity.
13	Proximity Sensor	Determines proximity for turning off display when in handset mode.

**Figure 4** TC20 Rear View



**Table 4** Back View Features

Number	Item	Function
1	Headset Jack	For audio output to headset.
2	Imager Window	Provides data capture using the imager.
3	Power Button	Turns the display on and off. Press and hold to reset or power off the device.
4	Camera Flash	Provides illumination for the camera (optional).
5	Camera	Takes photos and videos (optional).
6	Scan Button	Initiates data capture.
7	Volume Up/Down Button	Increase and decrease audio volume.
8	Hand Strap Mount Point	Provides latching point for the hand strap.
9	Access Door	Provides access to the microSD card slot. Optional 2-Pin Access Door is available on device with the SE4710 imager for use with the Trigger Handle.
10	Hand Strap Mount Point	Provides latching point for the hand strap.

## Setup

Perform this procedure to start using the TC20 for the first time.

1. Install a micro secure digital (SD) card (optional).
2. Charge the TC20.
3. Power on the TC20.

## Installing a microSD Card

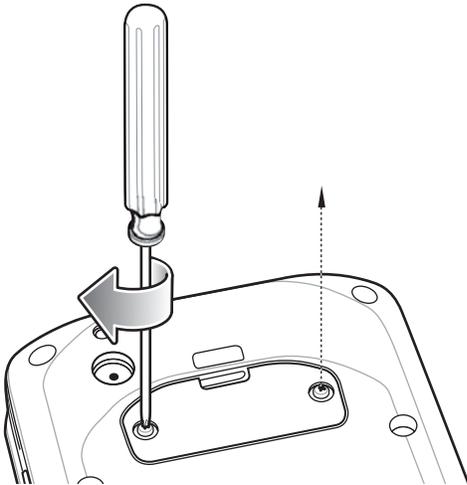
The microSD card slot provides secondary non-volatile storage. The slot is located under the access door. Refer to the documentation provided with the card for more information, and follow the manufacturer's recommendations for use.



**CAUTION** Follow proper electrostatic discharge (ESD) precautions to avoid damaging the microSD card. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded.

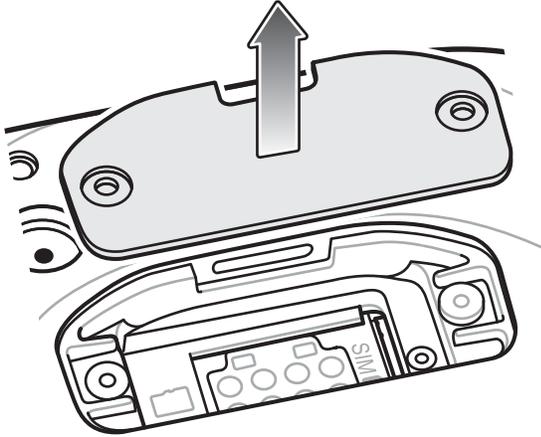
1. Using a Phillips #0 screwdriver, remove two screws securing the access door.

**Figure 5** Remove Access Door



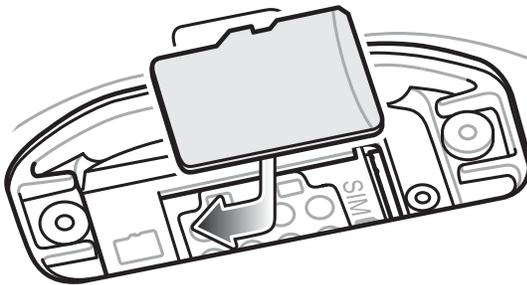
2. Remove access door.

**Figure 6** Remove Access Door



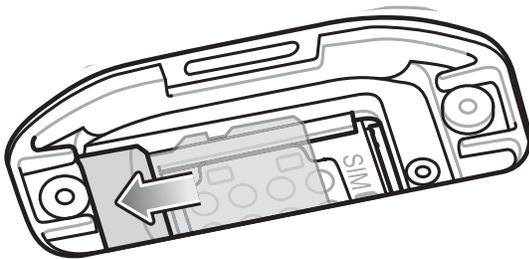
3. Align the microSD card with the SD card slot.

**Figure 7** Align microSD Card

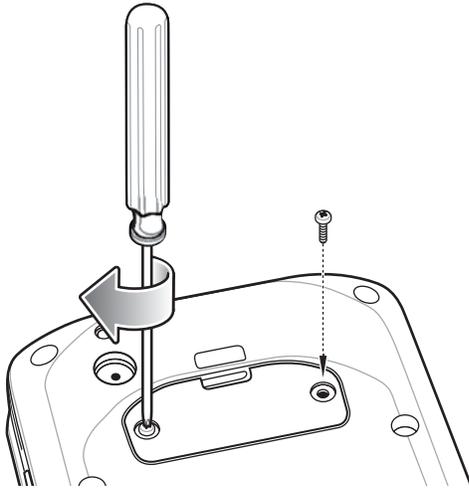


4. Push the microSD card into the SD card slot.

**Figure 8** Push microSD Card into the SD Card Slot



5. Replace the access Door.
6. Secure the access door using the two screws.

**Figure 9** Secure Access Door

## Charging the Battery

Before using the TC20 for the first time, charge the internal battery until the green Charging/Notification light emitting diode (LED) remains lit. To charge the TC20 use a cradle with the appropriate power supply or USB cable and power supply. For information about the accessories available for the TC20 see [Accessories](#) for more information.

The internal battery charges from fully depleted to 90% in approximately four hours and from fully depleted to 100% in approximately five hours.



**NOTE** In many cases the 90% charge provides plenty of charge for daily use. A full 100% charge lasts for approximately 10 hours of use.

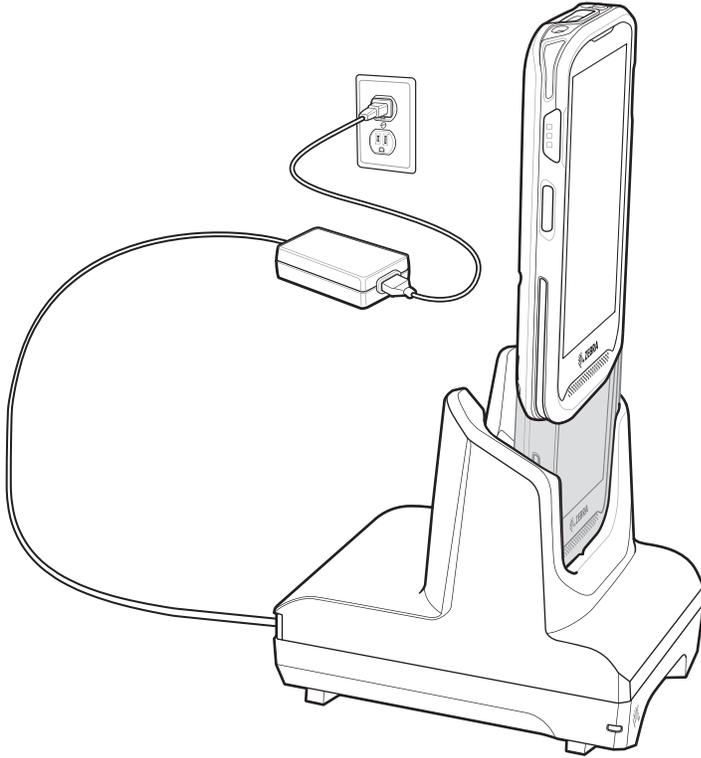
Use only Zebra charging accessories and batteries. Charge batteries at room temperature with the TC20 in sleep mode.

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The TC20 or accessory always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the TC20 or accessory may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The TC20 or accessory indicates when charging is disabled due to abnormal temperatures via its LED and a notification appears on the display.

To charge the internal battery:

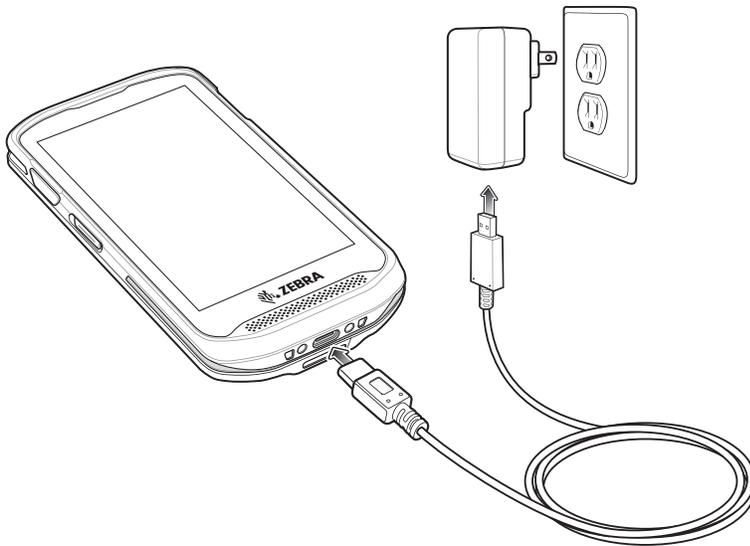
1. Connect the charging accessory to the appropriate power source.
2. Insert the TC20 into a cradle or attach to a USB cable. The TC20 turns on and begins charging. The Charging/Notification LED blinks amber while charging, then turns solid green when fully charged.

**Figure 10** Charging with Cradle



 **IMPORTANT** Use only the Zebra USB-C Cable for charging.

**Figure 11** Charging with USB Cable



## Charging Indicators

**Table 5** Charging/Notification LED Charging Indicators

State	LED	Indication
Off		TC20 is not charging. TC20 is not inserted correctly in the cradle or connected to a power source. Charger/cradle is not powered.
Slow Blinking Amber (1 blink every 4 seconds)		TC20 is charging.
Slow Blinking Red (1 blink every 4 seconds)		TC20 is charging but the battery is at end of useful life. See system administrator for battery replacement services.
Solid Green		Charging complete.
Solid Red		Charging complete but the battery is at end of useful life. See system administrator for battery replacement services.
Fast Blinking Amber (2 blinks/second)		Charging error, e.g.: <ul style="list-style-type: none"> <li>• Temperature is too low or too high.</li> <li>• Charging has gone on too long without completion (typically eight hours).</li> </ul>
Fast Blinking Red (2 blinks/second)		Charging error but the battery is at end of useful life., e.g.: <ul style="list-style-type: none"> <li>• Temperature is too low or too high.</li> <li>• Charging has gone on too long without completion (typically eight hours).</li> </ul> See system administrator for battery replacement services.

## Google Account Setup



**NOTE** The TC20 has to be connected to the internet in-order to set up a Google™ account.

The first time the TC20 starts, the Setup Wizard displays. Follow the on-screen instructions to set up a Google account, configure Google Wallet for purchasing items from the Play Store, entering your personal information, and enabling backup/restore features.

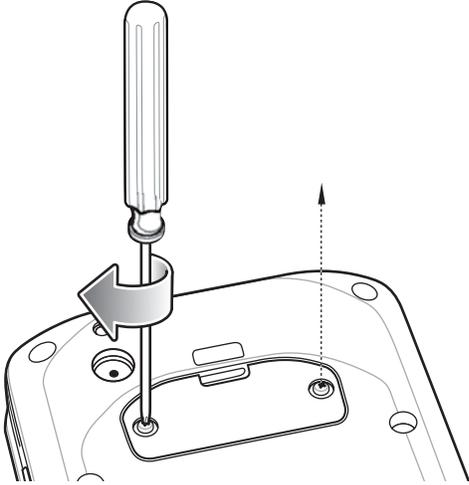
## Replacing the microSD Card

To replace the microSD card:

1. Press the Power button until the menu appears.
2. Touch **Power off**.
3. Touch **OK**.
4. If hand strap is attached, remove the hand strap.

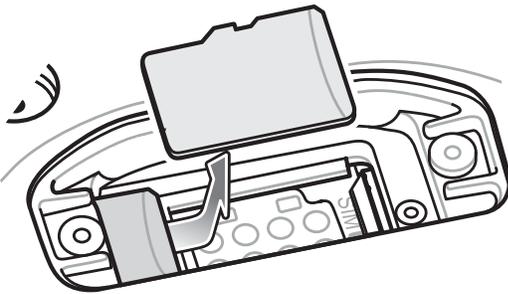
5. Using a #0 Phillips screwdriver, remove two screws securing the access door.
6. Remove access door.

**Figure 12** Remove Access Door



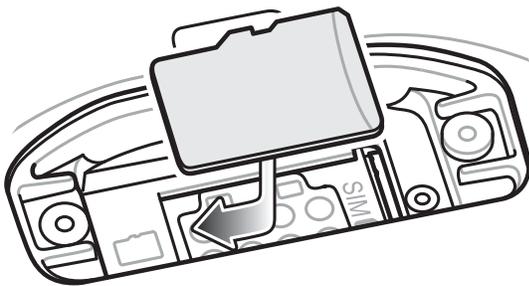
7. Slide the microSD card out of the SD card slot.

**Figure 13** Align microSD Card



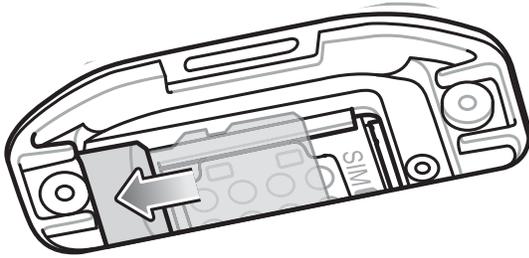
8. Lift the microSD card.
9. Align the replacement microSD card with the SD card slot.

**Figure 14** Align microSD Card



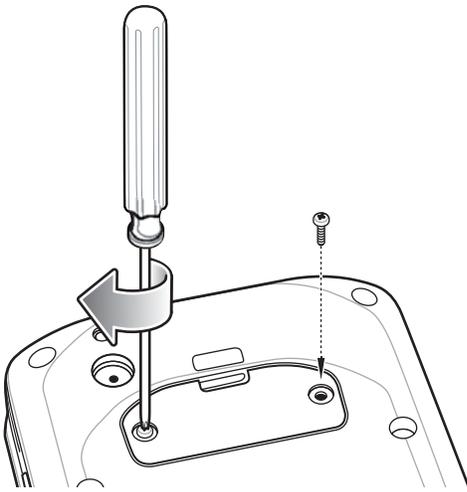
10. Push the microSD card into the SD card slot.

**Figure 15** Push microSD Card into the SD Card Slot



11. Replace the access Door.
12. Secure the access door using the two screws.

**Figure 16** Secure Access Door



13. Replace the hand strap, if required.
14. Press and hold the Power button to turn on the TC20.

---

## Accessing Device Settings

Throughout this guide, the user can access device:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. On the Home screen, swipe up from the bottom of the screen and touch .

---

## Battery Management



**NOTE** Prior to checking the battery charge level, remove the TC20 from any AC power source (cradle or cable).

To check the charge status of the main battery, open Settings and touch  **About phone > Battery Management**.

**Battery status** indicates that the battery is discharging and **Battery level** lists the battery charge (as a percentage of fully charged).

## Monitor Battery Usage

The **Battery** screen lists which applications consume the most battery power. Also use it to turn off applications that were downloaded if they are consuming too much power.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Battery**.

**Figure 17** Battery Screen



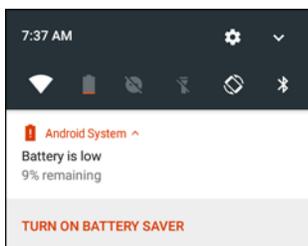
The **Battery** screen lists the applications using the battery. The discharge graph at the top of the screen shows the rate of the battery discharge since last charged (short periods of time when connected to a charger are shown as thin green lines at the bottom of the chart), and how long it has been running on battery power.

Touch an application in the **Battery** screen to display details about its power consumption. Different applications display different information. Some applications include buttons that open screens with settings to adjust power use.

## Low Battery Notification

When the battery charge level drops below 20%, the TC20 displays a notice to connect the TC20 to power. The user should charge the battery using one of the charging accessories.

**Figure 18** Low Battery Notification



When the battery charge drops below 10%, the TC20 displays a notice to connect the TC20 to power. The user must charge the battery using one of the charging accessories.

When the battery charge drops below 4%, the TC20 turns off.

The user must charge the TC20 using one of the charging accessories.

### Battery Optimization

Observe the following battery saving tips:

- Disable DataWedge Launcher profile. Refer to the TC20 Touch Computer Integrator Guide for Android 7.1.2 for instructions.
- Set the screen to turn off after a short period of non-use. See [Setting Screen Timeout Setting on page 25](#).
- Set the TC20 to turn off when not in use. See [Scheduled Power On and Off on page 49](#).
- Reduce screen brightness. See [Setting the Screen Brightness on page 25](#).
- Turn off all wireless radios when not in use.
- Turn off automatic syncing for Email, Calendar, Contacts and other applications.
- Minimize use of applications that keep the TC20 from suspending, for example, music and video applications.

### Turning Off the Radios

To turn off all the radios:

1. Press the Power button until the menu appears.
2. Touch **Airplane mode**. The airplane icon  appears in the Status bar indicating that all the radios are off.

---

## Setting the Date and Time

The user is only required to set the time zone or set the date and time when the wireless LAN does not support Network Time Protocol (NTP).

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Date & time**.
3. Touch **Automatic date & time** to disable automatic date and time synchronization.
4. Touch **Set date**.
5. In the calendar, set today's date.
6. Touch **OK**.
7. Touch **Set time**.
8. Touch the green circle, drag to the current hour and then release.
9. Touch the green circle, drag to the current minute and then release.
10. Touch **AM** or **PM**.
11. Touch **OK**.
12. Touch **Automatic time zone** to disable automatic date and time synchronization.
13. Touch **Select time zone**.
14. Select the current time zone from the list.
15. Touch .

## Display Setting

Use Display settings to change the screen brightness, change the background image, enable screen rotation, set sleep time and change font size.

### Setting the Screen Brightness

To manually set the screen brightness:

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Slide the icon to adjust the screen brightness level.

**Figure 19** Brightness Slider



To let the TC20 automatically adjust the screen brightness using the built-in light sensor:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Display**.
3. Touch **Brightness Level**.
4. Touch **Adaptive brightness** to automatically adjust the brightness.
5. Touch .

### Night Light

To make it easier to look at screen in dim light, reduce the screen's blue color. Set Night Light to turn on automatically from sunset to sunrise, or at other times.

### Setting Screen Timeout Setting

To set the screen sleep time:

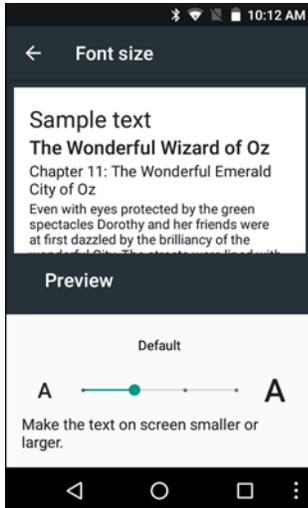
1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Display**.
3. Touch **Sleep**.
4. Select one of the sleep values.
  - **15 seconds**
  - **30 seconds**
  - **1 minute** (default)
  - **2 minutes**
  - **5 minutes**
  - **10 minutes**
  - **30 minutes**
5. Touch .

## Setting Font Size

To set the size of the font in system applications:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Display**.
3. Touch **Font size**.

**Figure 20** Font Settings



4. Select one of the font size values.
  - **Small**
  - **Default** (default)
  - **Large**
  - **Largest**.
5. Touch .

## Setting Screen Rotation

By default, screen rotation is disabled. To enable screen rotation:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Display**.
3. Touch **When device is rotated** and select **Rotate to contents of the screen** to set the TC20 to automatically switch orientation when the TC20 is rotated.
4. Touch .

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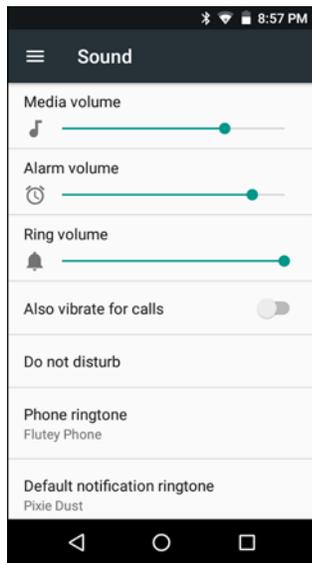
## General Sound Setting

Use the **Sounds** settings to configure media and alarm volumes.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .

## 2. Touch Sounds.

**Figure 21** Sound Screen



- **Media volume** - Controls the music, games and media volume.
- **Alarm volume** - Controls the alarm clock volume.
- **Notification volume** -
- **Do not disturb** - Mutes the TC20 so that it does not make sounds or vibrate when you do not want it to.
  - **Priority only allows** - Use to set priorities.
    - **Alarms** - Disabled.
    - **Reminders and Events** - Switch on or off.
    - **Messages and Calls** - Choose from anyone, starred contacts, any contact, or none. To star contacts, use the Contacts app.
    - **Repeat callers** - Choose whether to let the TC20 ring if the same person calls again within 15 minutes.
  - **Automatic rules** - To automatically silence the TC20 during certain times, like at night or on weekends. Touch a default rule Weekend or Weeknight. Or, to make your own rule, tap Add rule and then Time rule.
  - **Block visual disturbances**
    - **Block when screen is on** - option pertains to notifications you receive when you are actively using the device. If you would like to disable the banner like notifications when Do not Disturb is enabled, turn this option On. This will also prevent you from peeking at notifications.
    - **Block when screen is off** - option pertains to notifications you receive when you are not using your device i.e. the display is asleep. If you want to prevent the display from waking up when a new notification is received, turn this option On. This will additionally disable the LED light alerts your phone sends you when you have new notifications.

- **Default notification ringtone** - Touch to select a sound to play for all system notifications.
- **Default alarm ringtone** - Touch to select a sound to play for alarms.
- **Other sounds**
  - **Screen locking sounds** - play a sound when locking and unlocking the screen (default – enabled)
  - **Charging sounds** - Not applicable.
  - **Touch sounds** - Play a sound when making screen selections (default – enabled).
  - **Vibrate on tap** - Device vibrates when making screen selections (default – disabled).

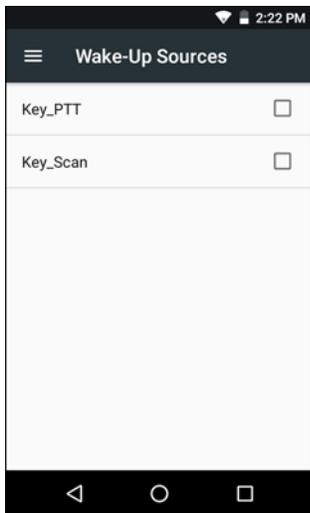
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## Wake-Up Sources

By default the TC20 wakes from suspend mode when the user presses the power button. The TC20 can be configured to wake when the user presses the PTT on the left side of the device or one of the Scan buttons.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Wake-Up Sources**.

**Figure 22** Wake-Up Sources



3. Touch **Key\_PPT** checkbox. A check appears in the checkbox.
4. Touch **Key\_Scan** checkbox. A check appears in the checkbox.
5. Touch .

# Using the TC20

This chapter explains the buttons, status icons, and controls on the TC20, and provides basic instructions for using the TC20 including resetting the TC20 and entering data.

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## Google Mobile Services



**NOTE** This section only applies to TC20 devices with Google Mobile Services (GMS) software.

The TC20 with GMS contains applications and services that provide additional functionality to the TC20.

GMS includes:

- **Applications** - GMS adds a variety of Google applications and associated widgets including Chrome, Gmail, Drive and Maps.
- **Services:**
  - **Speech to Text** - Allows for free format speech to text, in many languages for both connected and disconnected network. Launch by touching the microphone icon on the keyboard.
  - **TalkBack Service** - Provides spoken feedback on various parts of the user interface. To enable, go to **Settings > Accessibility**.
  - **Network Location Provider** - Adds a location provider which uses mobile network tower information and Wi-Fi access point information to provide a location without using GPS. To enable, go to **Settings > Location access**.
  - **Widevine DRM** - Enables the digital rights management so that protected content can be played. Enable via DRM Info from the Play Store.
  - **Google Cloud Messaging** - Allows the sending of data from your server to your TC20 and also to receive messages from devices on the same connection.
  - **Backup and Restore** - Allows the users settings and applications to be backed up to a Google server and subsequently restored from that server after a factory reset.
- **Google accounts** - Create and use a Google account to synchronize mail, files, music, photos, contacts and calendar events.

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## Home Screen

The Home screen displays when the TC20 turns on. Depending upon the configuration, the Home screen might appear different. Contact your system administrator for more information.

After a suspend or screen time-out, the Home screen displays with the lock sliders. Touch the screen and slide up to unlock. For screen locking information see [Un-Locking the Screen on page 48](#).

**Figure 23** Home Screen



**Table 6** Home Screen Items

Item	Description
1 — Status Bar	Displays the time, status icons (right side), and notification icons (left side). For more information see <a href="#">Status Bar on page 31</a> and <a href="#">Managing Notifications on page 33</a> .
2 — Widgets	Launches stand-alone applications that run on the Home screen. See <a href="#">Application Shortcuts and Widgets on page 36</a> for more information.
3 — Back	Displays the previous screen.
4 — Home	Displays the Home screen.
5 — Recent Button	Displays recently used applications.
6 — All Apps	Opens the <b>APPS</b> window.
7 — Folder	Contains apps.
8 — Shortcut Icons	Opens applications installed on the TC20. See <a href="#">Application Shortcuts and Widgets on page 36</a> for more information.

The Home screen provides four additional screens for placement of widgets and shortcuts. Swipe the screen left or right to view the additional screens.

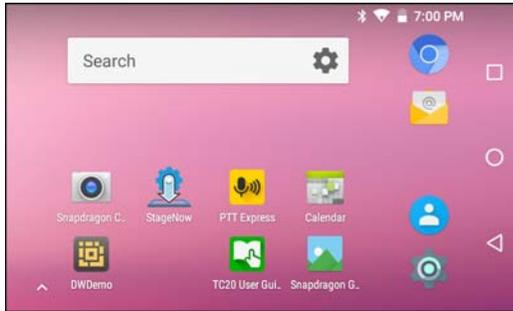
## Setting Home Screen Rotation

By default the Home screen rotation is disabled. To enable Home screen rotation:

1. Touch and hold anywhere on the Home screen until the options appear.
2. Touch .

3. Touch **Allow Home screen rotation** switch.
4. Touch .
5. Rotate the device.

**Figure 24** Rotated Home Screen



## Status Bar

The Status bar displays the notification icons (left side), time and status icons (right side).



**NOTE** Some status icons may not appear in the Status bar if there are too many icons to display.

**Figure 25** Notification and Status Icons



If there are more notifications than can fit in the Status bar , displays indicating that more notifications exist. Open the Notifications panel to view all notifications and status.

## Status Icons

**Table 7** Status Icons

Icon	Description
	Indicates that the Alarm is active.
	Indicates that the main battery is fully charged.
	Indicates that the main battery is partially drained.
	Indicates that the main battery charge is low.
	Indicates that the main battery charge is very low.

**Table 7** Status Icons (Continued)

Icon	Description
	Indicates that the main battery is charging.
	Indicates that all sounds except media and alarms are silenced and vibrate mode is active.
	Indicates that the Airplane Mode is active. All radios are turned off.
	Indicates that Bluetooth is on.
	Indicates that the TC20 is connected to a Bluetooth device.
	Connected to a Wi-Fi network.
	Not connected to a Wi-Fi network or no Wi-Fi signal.
	Connected to an Ethernet network.
	Portable Wi-Fi Hotspot is active.

## Notification Icons

**Table 8** Notification Icons

Icon	Description
	Indicates the main battery is low.
	Indicates that more notifications are available for viewing.
	Indicates that data is syncing.
	Indicates an upcoming event.
	Indicates that an open Wi-Fi network is available.
	Indicates that a song is playing.
	Indicates that a problem with sign-in or sync has occurred.
	Indicates that the TC20 is uploading data.
	Indicates that the TC20 is downloading data when animated and download is complete when static.
	Indicates that USB tethering is active.
	Indicates that the TC20 is connected to or disconnected from virtual private network (VPN).

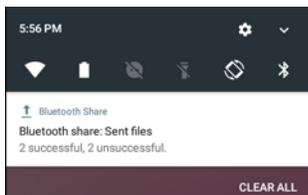
**Table 8** Notification Icons (Continued)

Icon	Description
	Preparing Internal Storage.
	Indicates that USB debugging is enabled on the TC20.
	Headset is connected to device.
	Indicates the status of the PTT Express Voice Client. See Notification Icons for complete list of PTT Express notification icons.
	Indicates that RxLogger application is running.
	Indicates the a Bluetooth scanner is connected to the TC20.

## Managing Notifications

Notification icons report the arrival of new messages, calendar events, and alarms, as well as ongoing events. When a notification occurs, an icon appears in the Status bar with a brief description. See [Notification Icons on page 32](#) for a list of possible notification icons and their description. Open the **Notifications** panel to view a list of all the notifications.

To open the Notification panel drag the Status bar down from the top of the screen.

**Figure 26** Notification Panel

To respond to a notification, open the Notifications Panel and then touch a notification. The Notifications Panel closes and the subsequent activity is dependent on the notification.

To clear all notifications, open the Notifications Panel and then touch **CLEAR ALL**. All event-based notifications disappear. Ongoing notifications remain in the list.

To close the Notification Panel, swipe the Notifications Panel up.

## Setting Application Notifications

To change notification settings for a specific app:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch **Notifications**.
3. Select an app.
4. Select an available option:
  - **Block all**
  - **Show silently**

- **On the lock screen**
- **Override Do Not Disturb.**



**IMPORTANT** In the notification, slide the notification slightly left or right and touch .

## Viewing Notification Settings for All Apps

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch **Notifications**.
3. Touch down-arrow next to **All apps**.
4. To see all the apps currently set to a specific setting, touch that setting.

## Controlling Lock Screen Notifications

To control notification content on the lock screen:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch **Notifications** > .
3. Touch **On the lock screen**.
4. Select **Show all notification content** to or select **Don't show notifications at all**.

## Quick Access Panel

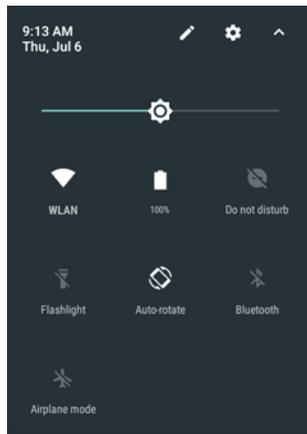
Use Quick Settings to get to frequently used settings, like turning on airplane mode. To open the Quick Settings bar, swipe down once from the top of an unlocked screen.

**Figure 27** Quick Settings Bar



To see the full Quick Settings panel:

- If the TC20 is locked, swipe down once.
- If the TC20 is unlocked, swipe down once with 2 fingers, or twice with one finger.
- If the Quick Settings bar is open, touch the Down arrow.

**Figure 28** Full Quick Settings

Available setting tiles:

- Display brightness: Slide to lower or increase the brightness of the screen.
- Wi-Fi network: Turn Wi-Fi on or off. To open Wi-Fi settings, touch the Wi-Fi network name.
- Battery Power - Indicates percentage of battery power remaining. Touch to view battery usage.
- Do not disturb: Control how and when to receive notifications.
- Flashlight: Turn camera flash on or off.
- Auto-rotate: Lock the device's orientation in portrait or landscape mode or set to automatically rotate.
- Bluetooth settings: Turn Bluetooth on or off. To open Bluetooth settings, touch the **Bluetooth**.
- Airplane mode: Turn airplane mode on or off. Airplane mode means device will not connect to Wi-Fi or Bluetooth.
- Location - Turn locationing on or off.
- Hotspot - Turn mobile hotspot on or off.
- Invert colors - Invert the display colors.
- Data Saver - Turn on to prevent some apps from sending or receiving data in the background.
- Night Light - Tint the screen amber to make it easier to look at the screen in dim light. Set Night Light to turn on automatically from sunset to sunrise, or at other times.
- Nearby - Helps find and interact with services and devices close to the device.

## Edit Icons on Quick Settings

The first several setting tiles become the Quick Settings bar.

To move a setting tile:

1. Touch and drag a setting tile to another location.
2. Release the tile.
3. Touch  to save tiles and return to quick settings.

To add a setting tile:

1. Open Quick Settings.
2. Touch .

3. Slide Quick Settings panel up to reveal additional tiles.
4. Touch and drag a setting tile from the **Drag to add tiles** area to the main area.
5. Release the tile.
6. Touch  to save tiles and return to quick settings.

To remove a setting tile:

1. Open Quick Settings.
2. Touch .
3. Touch and drag a setting tile to the **Drag here to remove** area.
4. Release the tile.
5. Touch  to save tiles and return to quick settings.

## Application Shortcuts and Widgets

Application shortcuts placed on the Home screen allow quick and easy access to applications. Application Widgets are self-contained applications placed on the Home screen to access frequently used features.

### Adding an Application to the Home Screen

1. Go to the desired Home screen.
2. Swipe up from the bottom of the screen.
3. Scroll through the list to find the application icon.
4. Touch and hold the icon until the Home screen appears.
5. Position the icon on the screen and then release.

### Adding a Widget to the Home Screen

To add a widget to the Home screen:

1. Go to the desired Home screen.
2. Touch and hold onto the menu appears.
3. Touch **WIDGETS**.
4. Scroll through the list to find the widget.
5. Touch and hold the widget until the Home screen appears.
6. Position the widget on the screen and then release.

### Moving Items on the Home Screen

1. Touch and hold the item until it floats on the screen.
2. Drag the item to a new location. Pause at the edge of the screen to drag the item onto an adjacent Home screen.
3. Lift finger to place the item on the Home screen.

### Removing an Application Shortcut or Widget from the Home Screen

1. Go to the desired Home screen.
2. Touch and hold the application shortcut or widget icon until it floats on the screen.
3. Drag the icon to  **Remove** on the top of the screen and then release.

## Folders

Use **Folders** to organize similar applications together. Tap the folder to open and display items in the folder.

### Creating a Folder

To create a folder, there must be at least two app icons on the Home screen.

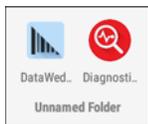
1. Go to the desired Home screen.
2. Touch and hold on one application icon.
3. Drag the icon and stack on top of another icon.
4. Lift and release.

### Naming Folders

To name a folder:

1. Touch the folder.

**Figure 29** Open Folder



2. Touch the title area and enter a folder name using the keyboard.
3. Touch  on the keyboard.
4. Touch anywhere on the Home screen to close the folder. The folder name appears under the folder.

**Figure 30** Renamed Folder



### Removing a Folder

To remove a folder:

1. Touch and hold the folder icon until it enlarges.
2. Drag the folder to  **Remove** and release.

## Home Screen Wallpaper

To change the Home screen wallpaper:

1. Touch and hold on the screen until the menu appears.
2. Touch **WALLPAPERS**.
3. Touch **My photos** to select a photo from Gallery or select one of the pre-installed photos.
4. Touch **Save wallpaper**.

## Using the Touchscreen

Use the multi-tap sensitive screen to operate the device.

- **Tap** - Tap to:
  - select items on the screen
  - type letters and symbols using the on-screen keyboard
  - press on-screen buttons.
- **Tap and Hold** - Tap and hold:
  - an item on the Home screen to move it to a new location or to the trash.
  - an item in Apps to create a shortcut on the Home screen.
  - the Home screen to open a menu for customizing the Home screen.
  - an empty area on the Home screen until the menu appears.
- **Drag** - Tap and hold an item for a moment and then move finger on the screen until reaching the new position.
- **Swipe**- Move finger up and down or left and right on the screen to:
  - unlock the screen
  - view additional Home screens
  - view additional application icons in the Launcher window
  - view more information on an application's screen.
- **Double-tap** - Tap twice on a web page, map, or other screen to zoom in and out.
- **Pinch** - In some applications, zoom in and out by placing two fingers on the screen and pinching them together (to zoom out) or spreading them apart (to zoom in).

## TC20K Keypad

The numeric keypad contains application keys, scroll keys, and function keys. The keypad is color-coded to indicate the alternate function key (blue) values. Note that an application can change keypad functions so the TC20's keypad may not function exactly as described. See the tables below for key and button descriptions and for the keypad's special functions.

**Figure 31** Numeric Keypad



**Table 9** Numeric Keypad Descriptions

Key	Description
<p>Blue Key</p> 	<p>Use this key to launch applications or access items (shown on the keypad in blue). The icon appears on the Status bar. Press and release the Blue key again to return to the default keypad functions.</p>
<p>ESC</p> 	<p>Produces the ESC function by default.</p>
<p>Scan (yellow or gray)</p> 	<p>Activates the imager in a scan enabled application or takes a picture or records a video in a camera application.</p>
<p>Back</p> 	<p>Displays the previous screen. Closes the on-screen keyboard if open.</p>
<p>Scroll Left</p> 	<p>Moves left one item.</p>
<p>Scroll Right</p> 	<p>Moves right one item.</p>
<p>Scroll Up</p> 	<p>Moves up one item.</p>
<p>Scroll Down</p> 	<p>Moves down one item.</p>
<p>Numeric</p> 	<p>Produces a space, period or the numeric value on the key.</p>
<p>Enter</p> 	<p>Executes a selected item or function.</p>
<p>Tab</p> 	<p>Produces a TAB function.</p>



**IMPORTANT** Refer to the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for scan code information.

**Table 10** Numeric Keypad Input States

Key	Numeric State	
		Blue + Key
1	1	F1
2	2	F2
3	3	F3
4	4	F4
5	5	F5
6	6	F6
7	7	F7
8	8	F8
9	9	F9
0	0	F10
.	.	#
	space	*

Note: An application can change the key functions. The keypad may not function exactly as described.

## On-Screen Keyboards

Use the on-screen keyboard to enter text in a text field.

### Editing Text

Edit entered text and use menu commands to cut, copy, and paste text within or across applications. Some applications do not support editing some or all of the text they display; others may offer their own way to select text.

### Entering Numbers, Symbols and Special Characters

To enter numbers and symbols:

- Touch and hold one of the top-row keys until a menu appears then select a number. Keys with alternate characters display an ellipsis ( ... ) below the character.
- Touch and hold the Shift key with one finger, touch one or more capital letters or symbols to enter them, and then lift both fingers to return to the lowercase keyboard.
- Touch  to switch to the numbers and symbols keyboard.

- Touch the  key on the numbers and symbols keyboard to view additional symbols.

To enter special characters, touch and hold a number or symbol key to open a menu of additional symbols.

- A larger version of the key displays briefly over the keyboard.
- Keys with alternate characters display an ellipsis ( ... ) below the character.

## Hiding On-Screen Keyboard

On devices with keypads, the user can hide the on-screen keyboard.

Touch in a text field to display the on-screen keyboard. Touch  at the bottom right corner of the screen.

**Figure 32** Hide Keyboard Option



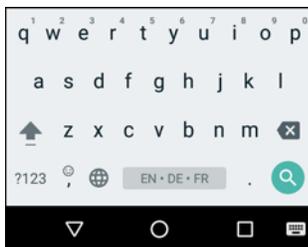
Touch the **Show virtual keyboard** switch to off. The on-screen keyboard automatically disappears.

To show the on-screen keyboard, Touch in a text field. Touch  at the bottom right corner of the screen. Touch the **Show virtual keyboard** switch to on. The keyboard re-appears.

## Switching Language Keyboards

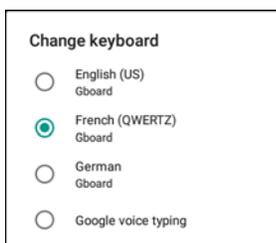
The user can enable multiple language keyboards. The available language codes appear on the space bar.

**Figure 33** Keyboard with Multiple Languages



To switch between language keyboard, touch  at the bottom right corner of the screen.

**Figure 34** Change Keyboard Option



Select one of the keyboard languages. The keyboard automatically changes to the selected language.

## Configuring the Keyboard

To configure the keyboard, See the Keyboard Settings section in the TC20 Touch Computer Integrator Guide for Android Version 7.1.2.

### GMS Keyboard

To configure the keyboard settings, touch and hold  (comma) >  and then select **Gboard Keyboard settings**.

---

## Do Not Disturb Feature

This mode mutes the TC20 so that it does not make sounds or vibrate.

For example, use Do Not Disturb to:

- Automatically limit sounds at night or during events
- Mute interruptions other than alarms
- Get alerted to messages only from favorite contacts.

## Limit Sounds and Vibrations

Mute the TC20 completely, or let through the important alarms or important calls.

### Total Silence

To completely mute the TC20 so that it does not make a sound or vibrate, choose **Total silence**.

In Total silence mode:

- Alarms do not make noise.
- TC20 does not vibrate or make sounds when receiving a message, or notification.
- Sounds from music, videos, games, and other media are muted.



**NOTE:** The user will not hear alarms in Total silence mode.

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Touch **Do not disturb > Total silence**.
3. Choose **Until you turn it off** or select a time period.
4. Touch **Done**.

When Total Silence is on,  appears in the quick access panel and the Status Bar.

To turn off Total Silence, open quick access panel and touch **Total silence**.

### Alarms Only

To mute the TC20 so that the user hears alarms, choose **Alarms only**. This option does not mute sounds from music, videos, games, or other media.

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Touch **Do not disturb > Alarms only**.

3. Choose **Until you turn it off** or select a time period.
4. Tap **Done**.

When Alarms Only is on,  appears in the quick access panel and the Status Bar.

To turn off Alarms Only, open quick access panel and touch **Alarms only**.



**NOTE:** To quickly turn on Alarms Only, with the screen on, press and hold the Volume Down button until the volume is all the way down. Then, press Volume Down again to turn on Alarms Only.

To turn off Alarms Only, press either the Volume Up or Volume Down button and the touch **END NOW** in the alert message. Then, press Volume Up again to turn on Alarms Only.

### Priority Notifications Only

To only be interrupted by important notifications, choose Priority Only. This option does not mute sounds from music, videos, games, or other media.

Before turning on Priority Only mode, set the notification priorities:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Sounds and notifications** > **Do not disturb** > **Priority only allows**.
3. Set priorities.
  - **Alarms:** Disabled by default.
  - **Reminders and Events:** Switch on or off.
  - **Messages and Calls:** Choose **From anyone**, **From contacts only**, **From starred contacts only**, or **none**. To star contacts, use the **Contacts** app.
  - **Repeat callers:** Choose whether to let the TC20 ring if the same person calls again within 15 minutes.

After setting notification priorities, turn on Priority only mode to limit interruptions. The priority notifications make a sound or vibrate based on the current ringer volume, but other notifications will be silenced.

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Touch **Do not disturb** > **Priority only**.
3. Choose **Until you turn it off** or select a time period.
4. Tap **Done**.

When Priority Only is on,  appears in the quick access panel and the Status Bar.

To turn off Priority Only, open quick access panel and touch **Priority only**.

---

## Automatically Block Sounds and Vibrations

### Silence Sounds During Certain Times

To automatically silence the TC20 during certain times, like at night or on weekends, set the time rules.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Sound & notification** > **Do not disturb** > **Automatic rules**.
3. Touch a default **Weekend** or **Weeknight**. Or, to make a new rule, touch **Add rule** and then **Time rule**.

4. Edit the new rule:
  - **Rule name:** Name the rule.
  - **Days, Start time, and End time:** Set the rule's schedule.
  - **Do not disturb:** Choose whether the rule uses **Alarms only**, **Priority only**, or **Total silence**.
5. Touch the On/Off text or switch at the top to turn on the rule.

## Silence Sounds During Events and Meetings

To automatically silence the TC20 during events or meetings, set an event rules.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Sound & notification > Do not disturb > Automatic rules**.
3. To edit the default rule, touch **Event**. Or, to create a new rule, touch **Add rule > Event rule**.
4. Edit the rule settings.
  - **During events for:** Select which Google Calendar events the rule uses.
  - **Where reply is:** Options: **Yes, Maybe, or Not replied, Yes or Maybe, or Yes**.
  - **Do not disturb:** Choose whether the rule uses **Priority only**, **Alarms only**, or **Total silence**.
5. Touch the On/Off switch at the top to turn on the rule.

## Turn Sounds Back On

When the TC20 is in Do Not Disturb mode, Alarms or Priority only  or Total silence  display.

To turn off Do Not Disturb, either:

- In the quick access panel, touch **Alarms only**, **Priority only**, or **Total silence**.
- Press the Volume Down button and touch **End Now**.

## Override Do Not Disturb for Specific Apps

To let through notifications from specific apps:

1. Open **Settings > Sounds**.
2. Touch an app.
3. Touch **Override Do Not Disturb**.

---

## Applications

The **APPS** screen displays icons for all installed applications. The table below lists the applications installed on the TC20. Refer to the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for information on installing and uninstalling application.

**Table 11** Applications

Icon	Description
	<b>Bluetooth Pairing Utility</b> – Use to pair a Bluetooth Imager with the TC20 by scanning a barcode.
	<b>Calculator</b> - Provides the basic and scientific arithmetic functions.
	<b>Camera</b> - Take photos or record videos. For more information see <a href="#">Camera on page 58</a> .
	<b>Calendar</b> - Use to manage events and appointments.
	<b>Chrome</b> - Use to access the Internet or intranet.
	<b>Clock</b> - Use to schedule alarms for appointments or as a wake-up.
	<b>Contacts</b> - Use to manage contact information. See <a href="#">Contacts on page 56</a> for more information.
	<b>DataWedge</b> - Enables data capture using the imager.
	<b>Diagnostic Tool</b> - Use to diagnose the ET5X. Refer to <a href="#">Diagnostic Tool on page 77</a> .
	<b>Downloads</b> - lists all downloads files.
	<b>Drive</b> - Upload photos, videos, documents, and other files to personal storage site.
	<b>DWDemo</b> - Provides a way to demonstrate the data capture features using the imager. See <a href="#">DataWedge Demonstration on page 68</a> for more information.
	<b>File Browser</b> - Organize and manage files on the TC20. See <a href="#">File Browser on page 54</a> for more information.

**Table 11** Applications (Continued)

Icon	Description
	<b>Gmail</b> - Use to send and receive email using a Google email account.
	<b>Google</b> - Launches Google search application.
	<b>Hangouts</b> - Use to communicate with friends using text messages and photos.
	<b>Maps</b> - Use to see your location on a map (with public transit, traffic or satellite overlays). Search for any business or place of interest. Provides turn-by-turn navigation with voice guidance and traffic-avoidance and alternate routes, for drivers, cyclist, walkers and users of public transportation.
	<b>Notes</b> - Use to take and save notes.
	<b>Photos</b> - Use to sync photos with Google account.
	<b>Play Movies &amp; TV</b> - View movies and video on your device.
	<b>Play Music</b> - Use to listen to music.
	<b>Play Store</b> - Download music, movies, books, and Android apps and games from the Google Play™ Store.
	<b>PTT Express</b> - Use to launch PTT Express client for VoIP communication.
	<b>RxLogger</b> - Use to diagnose device and application issues. See the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for more information.
	<b>RxLogger Utility</b> - Use for viewing logs in the TC20 while RxLogger is running.
	<b>Settings</b> - Use to configure the TC20.

**Table 11** Applications (Continued)

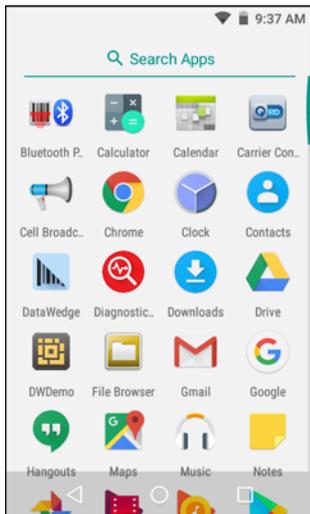
Icon	Description
	<b>Sound Recorder</b> - Use to record audio.
	<b>StageNow</b> - Allows the TC20 to stage a device for initial use by initiating the deployment of settings, firmware and software.
	<b>TC20 User Guide</b> - Opens the on-device User Guide for the TC20.
	<b>Voice Search</b> - Use to perform searches by asking questions.
	<b>YouTube</b> - Use to view videos on the YouTube™ web site.

## Accessing Applications

All applications installed on the device are accessed using the **APPS** window.

1. On the Home screen, swipe up from the bottom of the screen.

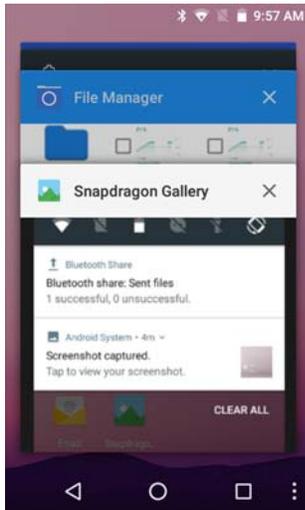
**Figure 35** APPS Window Example



2. Slide the **APPS** window up or down to view more application icons. Touch an icon to open the application.  
See [Application Shortcuts and Widgets on page 36](#) for information on creating a shortcut on the Home screen.

## Switching Between Recent Applications

1. Touch . A window appears on the screen with icons of recently used applications.

**Figure 36** Recently Used Applications

2. Slide the window up and down to view all recently used applications.
3. Swipe left or right to remove application from the list and force close the application.
4. Touch an icon to open it or touch  to return to the current screen.

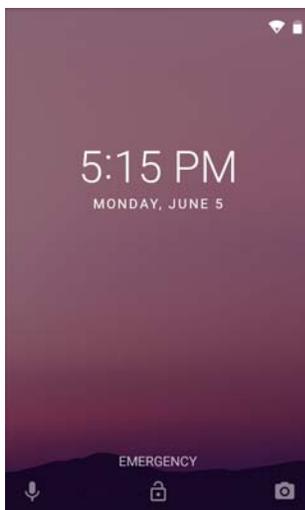
---

## Un-Locking the Screen

Use the Lock screen to protect access to data on the TC20. Some email accounts require locking the screen. Refer to the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for information on setting up the locking feature.

When locked, a pattern, PIN or password is required to unlock the device. Press the Power button to lock the screen. The device also locks after a pre-defined time-out.

Press and release the Power button to wake the device. The Lock screen displays. Swipe the screen up to unlock. If the Pattern screen unlock feature is enabled, the Pattern screen appears instead of the Lock screen. If the PIN or Password screen unlock feature is enabled, enter the PIN or password after unlocking the screen.

**Figure 37** Lock Screen

**Figure 38** PIN Screen

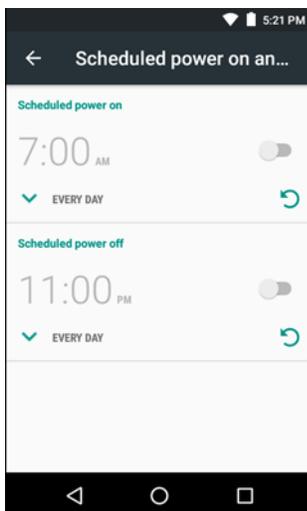

---

## Scheduled Power On and Off

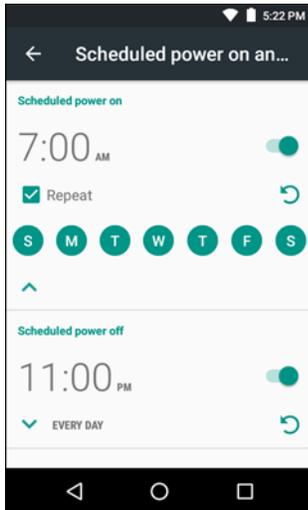
The user can set the TC20 to turn on or off at a specific time. This can save battery power when the TC20 is not in use.

To set the power on and off schedule:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Scheduled power on and off**.

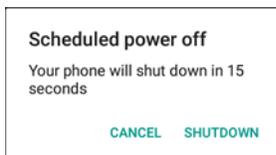
**Figure 39** Scheduled Power On and Off

3. In the **Scheduled power on** section, touch the on/off switch.

**Figure 40** Set Power Schedule

4. Touch the time.
5. Use the clock dialog box to set the power on time and touch **Done**. by default, the power on time occurs everyday.
6. Touch the day circles disable power on for a specific day.
7. Deselect the **Repeat** checkbox to disable daily repeating and set the TC20 power on at the next set time.
8. Repeat for scheduled power off settings.
9. Touch .

When the TC20 starts automatic power off, a dialog box appears.

**Figure 41** Power Off

Touch **Shutdown** to power off, Cancel to not power off or the device powers off automatically after a 20 seconds.

---

## Resetting the Device

There are two reset functions, soft reset and hard reset.

### Performing a Soft Reset

Perform a soft reset if applications stop responding.

1. Press and hold the Power button until the menu appears.
2. Touch **Reset**.
3. The device reboots.

## Performing a Hard Reset



**CAUTION** Performing a hard reset with a microSD card installed in the TC20 may cause damage or data corruption to the microSD card.

Perform a hard reset if the TC20 stops responding.

1. Simultaneously press the Power and Volume Up buttons for at least five seconds.
2. When the screen turns off, release the buttons.
3. The TC20 reboots.

---

## Suspend Mode

The TC20 goes into suspend mode when the user presses the Power button or after a period of inactivity (set in the Display settings window).

To wake the TC20 from Suspend mode, press the Power button. The Lock screen displays. Swipe the screen up to unlock. If the Pattern screen unlock feature is enabled, the Pattern screen appears instead of the Lock screen. If the PIN or Password screen unlock feature is enabled, enter the PIN or password after unlocking the screen.



**NOTE** If the user enters the PIN, password or pattern incorrectly five times, they must wait 30 seconds before trying again.

If the user forgets the PIN, password or pattern contact the system administrator.

---

## Transferring Files with a Host Computer via USB

Connect the TC20 to a host computer using the USB Charging cable or the 1-Slot USB cradle to transfer files between the TC20 and the host computer. See [Accessories](#) for more information.

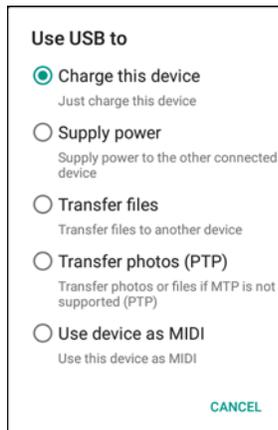
When connecting the TC20 to a host computer, follow the host computer's instructions for connecting and disconnecting USB devices, to avoid damaging or corrupting files.

## Transferring Files using Media Transfer Protocol



**NOTE** Use Media Transfer Protocol (MTP) to copy files between the TC20 (internal memory or microSD card) and the host computer.

1. Connect the Rugged Charge/USB Cable to the TC20 or place the TC20 into the 1-Slot USB/Charge Only Cradle. See [Accessories](#) for setup information.
2. Pull down the Notification panel and touch **USB charging this device**.

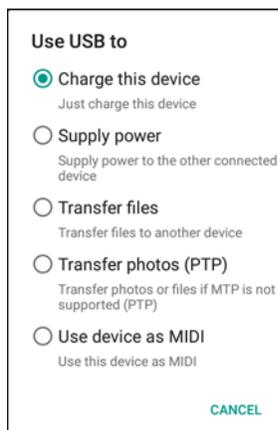
**Figure 42** Use USB Dialog Box

3. Touch **Transfer files**.
4. On the host computer, open a file explorer application.
5. Locate the **TC20** as a portable device.
6. Open the **SD card** or the **Internal storage** folder.
7. Copy files to and from the TC20 or delete files as required.

## Transferring Files using Photo Transfer Protocol

✓ **NOTE** Use Photo Transfer Protocol (PTP) to copy photos from either the microSD card or internal memory to the host computer.

1. Connect the USB Cable to the TC20 or place the TC20 into the 1-Slot Ethernet Cradle. See [Accessories](#) for setup information.
2. Pull down the Notification panel and touch **USB charging this device**.

**Figure 43** Use USB Dialog Box

3. Touch **Transfer photos (PTP)**.
4. On the host computer, open a file explorer application.
5. Open the **SD card** or the **Internal storage** folder.
6. Copy or delete photos as required.

## Disconnect from the Host Computer



**CAUTION** Carefully follow the host computer's instructions to unmount the microSD card and disconnect USB devices correctly to avoid losing information.

1. On the host computer, unmount the device.
2. Remove the USB cable from the device or remove the device from the cradle.

# Applications

This section describes the applications installed on the device.

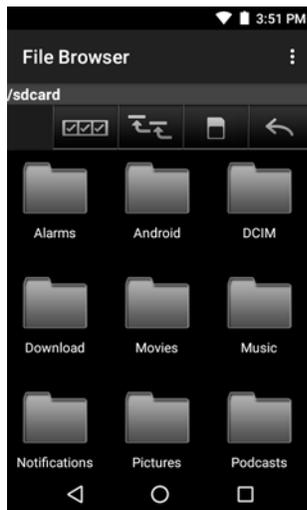
---

## File Browser

Use the **File Browser** application to view and manage files on the device.

To open **File Browser**, swipe up from the bottom of the screen and touch .

**Figure 44** File Browser Screen



The address bar indicates the current folder path. Touch the current folder path to manually enter a path and folder name.

Use  to select multiple files/folder.

Use  to view the internal storage root folder.

Use  to view the microSD card root folder.

Use  to view the previous folder the application.

Touch and hold an item to perform an operation on that item. Select one of the options from the **File Operations** menu:

- **Information** - View detailed information about the file or folder.
- **Move** - Move the file or folder to a new location.

- **Copy** - Copy the select file.
- **Delete** - Delete the selected file.
- **Rename** - Rename the select file.
- **Open as** - Open the selected file as a specific file type.
- **Share** - Share the file with other devices.

Touch  to open menu options:

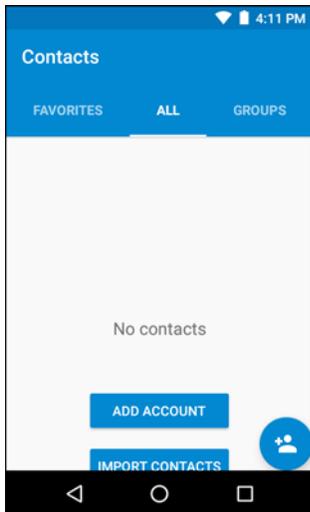
- **New Folder** - Create a new folder.
- **Search** - Search for a specific file on the device.
- **Sort** - Select the sort order of the files by name, type, size or date.
- **Refresh** - Refresh the current folder.
- **List View** - Change the folder to display item is a list.
- **Grid View** - Change the folder to display item is a grid.
- **Change Size** - Change the size of the icons.
- **About File Browser** - Displays the app version.

## Contacts

Use the **Contacts** application to manage contacts.

From a Home or **Apps** screen, touch . **People** opens to the main list of contacts. View contacts in three ways at the top of the screen: Groups, All contacts, and Favorites. Touch the tabs to change how to view the contacts. Swipe up or down to scroll through the lists.

**Figure 45** Contacts Screen



### Adding a Contact

1. In the **Contacts** application, touch .
2. If there are more than one account with contacts, touch the one to use.
3. Type the contact's name and other information. Touch a field to start typing, and swipe down to view all categories.
4. To open a menu with preset labels, such as Home or Work for an email address, touch the label to the right of the item of contact information. Or, to create your own label, touch **Custom** in the menu.
5. Touch .

### Editing Contacts

1. In the **Contacts** application, touch a contact name to edit.
2. Touch .
3. Edit the contact information.
4. Touch .

### Deleting Contacts

1. In the **Contacts** application, touch a contact name to delete.
2. Touch .
3. Touch **Delete**.

4. Touch **Delete** to confirm.

## Camera



**IMPORTANT** Camera application is available only on configurations with cameras.

This section provides information for taking photos and recording videos using the integrated digital cameras.



**NOTE** If a microSD card is installed, The TC20 saves photos and videos on the microSD card. If a microSD card is not installed, the TC20 saves photos and videos on the internal storage.

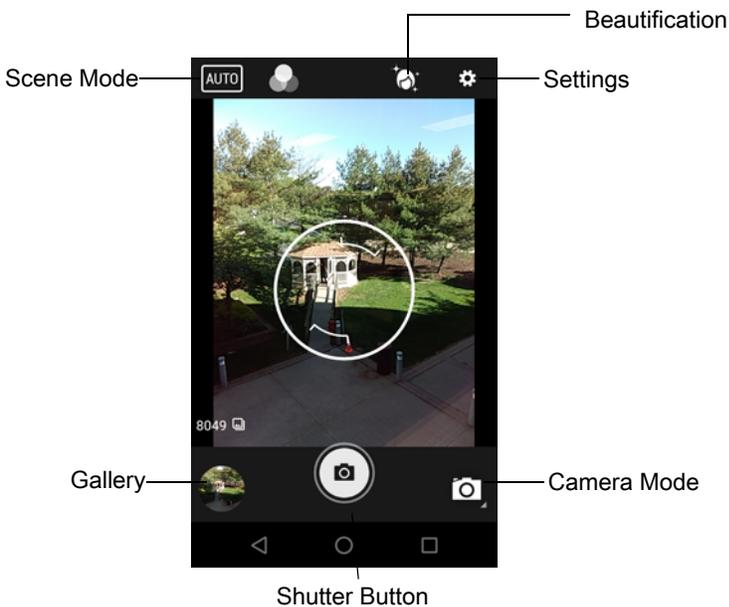
## Taking Photos



**NOTE** Camera settings are described in [Photo Settings on page 60](#).

1. Swipe up from the bottom of the Home screen and touch .

**Figure 46** Camera Mode



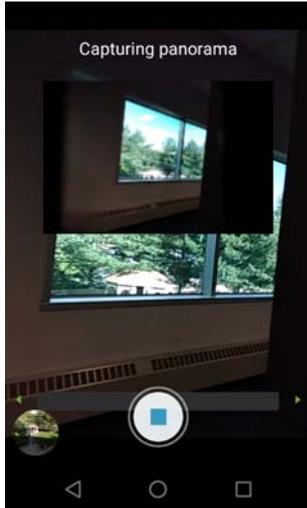
2. If necessary, touch the Camera Mode icon and touch .
  3. Frame the subject on the screen.
  4. To zoom in or out, press two fingers on the display and pinch or expand fingers. The zoom controls appear on the screen.
  5. Touch an area on the screen to focus. The focus circle appears on the screen. The two bars turn green when in focus.
  6. Touch .
- The camera takes a photo and a shutter sound plays.  
The photo momentarily displays as a thumbnail in the lower left corner.

## Taking a Panoramic Photo

Panorama mode lets the user create a single wide image by panning slowly across a scene.

1. Swipe up from the bottom of the Home screen and touch .

**Figure 47** Panoramic Mode



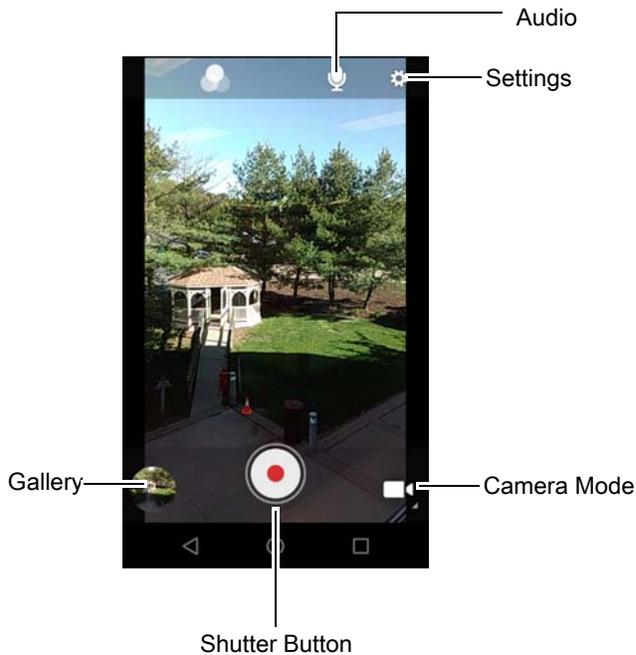
2. Touch the Camera Mode and touch .
3. Frame one side of the scene to capture.
4. Touch  and slowly start panning across the area to capture. A small white square appears inside the button indicating the capture is in progress.  
If panning too quickly, the message **Too fast** appears.
5. Touch  to end the shot. The panorama appears immediately and a progress indicator displays while it saves the image.

## Recording Videos

To record a video:

1. Swipe up from the bottom of the Home screen and touch .
2. Touch the options bar and touch .

**Figure 48** Video Mode



3. Point the camera and frame the scene.
4. To zoom in or out, press two fingers on the display and pinch or expand fingers. The zoom controls appear on the screen.
5. Touch  to start recording.  
The device starts recording the video. The video time remaining appears in the top left of the screen.
6. Touch  to end recording.  
The video momentarily displays as a thumbnail in the lower left corner.

## Photo Settings

When in Photo mode, photo settings are displayed on screen. Touch  to display the photo settings options.

- **Flash** - Touch to set whether the camera relies on its light meter to decide whether a flash is necessary, or to turn it on or off for all shots.
  -  **Off** - Disable flash.
  -  **Auto** - Camera adjusts flash automatically depending upon light meter (default).
  -  **On** - Enable flash upon taking a photo.
- **Picture size** - Touch to set the size (in pixels) of the photo. Options: **8M pixels** (default), **5M pixels**, **4M pixels (16:9)**, **3M pixels**, **HD 1080**, **2M pixels**, **1.5M pixels**, **1.3M pixels**, **WXGA**, **HD 720**, **1M pixels**, **SVGA**, **WVGA**, **720 x 480**, **VGA**, **CIF** or **QVGA**.
- **Picture quality** - Touch to select picture quality setting. Options: **Low**, **Standard** (default) or **High**.
- **Countdown timer** - Select amount of time after pressing the camera button that the photo is taken. Options: **Off** (default), **2 seconds**, **5 seconds** or **10 seconds**.
- **Storage** - Touch to select location to store the photo. Options: **Phone** or **SD Card** (default).
- **Continuous Shot** - Select to take a series of photos quickly while holding the capture button. Options: **Off** (default) or **On**.

- **Face Detection** - Select to enable face detection. Options: **Off** (default) or **On**.
- **ZSL** - Set the camera to immediately take a picture when the button is pressed (default – enabled)
- **Focus mode** - Disabled.
- **Anti Banding** - Select to prevent the appearance of vertical or horizontal lines (banding) when photographing images on TV and monitor screens. Options: **Off** (default), **50 Hz**, **60 Hz**, or **Auto**.
- **ISO** - Set how sensitive the camera is to light. Options: **Auto** (default), **ISO Auto (HJR)**, **ISO100**, **ISO200**, **ISO400**, **ISO800** or **ISO1600**.
- **Exposure** - Touch to adjust the exposure settings. Options: **+2**, **+1**, **0**(default), **-1** or **-2**.
- **White balance** - Touch to select how Camera adjusts colors in different kinds of light, to achieve the most natural-looking colors.
  -  **Incandescent** - Adjust the white balance for incandescent lighting.
  -  **Fluorescent** - Adjust the white balance for florescent lighting.
  -  **Auto** - Adjust the white balance automatically (default).
  -  **Daylight** - Adjust the white balance for daylight.
  -  **Cloudy** - Adjust the white balance for a cloudy environment.
- **Chroma Flash** - Select to simultaneously take a flash and a non-flash version of the same subject and combine these two images to improve the quality of flash photography. Options: **Off** (default) or **On**.
- **Redeye Reduction** - Select to reduce the red-eye phenomenon when using the flash. Options: **Disable** (default) or **Enable**.
- **Shutter Sound** - Select to play a shutter sound when taking a photo. Options: **Disable** (default) or **Enable**.

## Video Settings

When in Video mode, video settings are displayed on screen. Touch  to display the video settings options.

- **Flash** - Touch to set whether Rear-facing Camera relies on its light meter to decide whether a flash is necessary, or to turn it on or off for all shots.
  -  **Off** - Disable flash (default).
  -  **On** - Enable flash.
- **Video quality** - Touch to select video quality. Options: **HD 1080p** (default), **HD 720p**, **SD 480p**, **VGA**, **CIF**, or **QVGA**.
- **Video duration** - Options: **30 seconds (MMS)**, **10 minutes** (default), **30 minutes** or **no limit**.
- **Storage** – Touch to select location to store the photo. Options: **Phone** (default) or **SD Card**.
- **White balance** - Touch to select how Camera adjusts colors in different kinds of light, to achieve the most natural-looking colors.
  -  **Incandescent** - Adjust the white balance for incandescent lighting.
  -  **Fluorescent** - Adjust the white balance for florescent lighting.
  -  **Auto** - Adjust the white balance automatically (default).
  -  **Daylight** - Adjust the white balance for daylight.
  -  **Cloudy** - Adjust the white balance for a cloudy environment.

## Applications

- **Video High FrameRate** - Select a high frame rate for videos to capture movement more clearly. Options: **Off** (default), **HFR 60**, **HFR 90**, **HFR 120**, **HSR 60**, **HSR 90**, or **HSR 120**.
- **Image Stabilization** - Select to help stabilize zoom while shooting video. Options: **Off** (default), or **On**.

## Photos

Use Photos to:

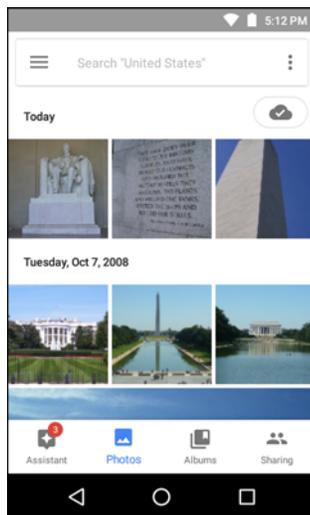
- view photos
- play videos
- perform basic editing of photos
- set photos as wallpaper
- set photos as a contact photo
- share photos and videos.

**Photos** presents all photos and videos stored on the microSD card and internal memory.

To open the **Photos** application, swipe up from the bottom of the Home screen and touch .

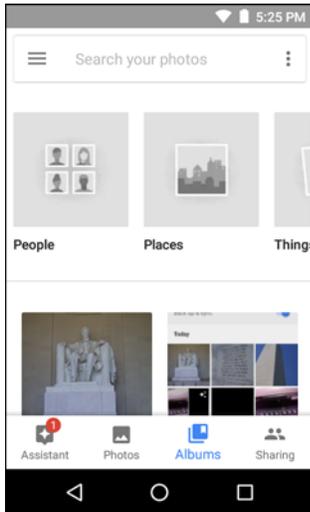
By default, Photos open to the Photos view.

**Figure 49** Photos View



Touch **Albums** to view photos sorted by albums.

**Figure 50** Albums View

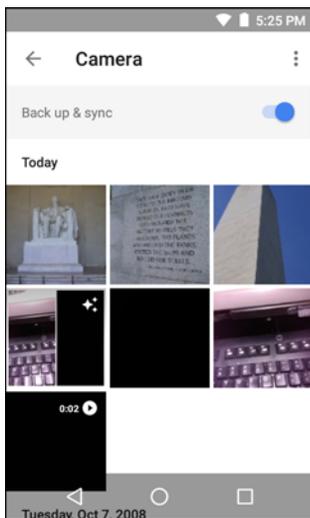


- Touch an album to open it and view its contents. The photos and videos in the album display in chronological order.
- Touch a photo or video in an album to view it.
- Touch ← to return to the main screen.

## Working with Albums

Albums are groups of images and videos in folders. Touch an album to open it. The photos and videos are listed in a chronologically ordered grid. The name of the album displays at the top of the screen.

**Figure 51** Photos Inside an Album



Swipe up to scroll images across the screen.

## Deleting an Album

To delete an album and its contents:

1. Touch an album to open it.

2. Touch  > **Delete device folder**.
3. In the delete folder dialog box, touch **Delete**.

## Working with Photos

Use **Photos** to view photos on the internal memory and the microSD card.

### Viewing and Browsing Photos

To view a photo:

1. Touch an album to open it.
2. Touch a photo.

**Figure 52** Photo Example



- Swipe left or right to view the next or previous photo in the album.
- Turn the device to view the photo in upright (portrait) or sideways (landscape) orientation. The photo is displayed (but not saved) in the new orientation.
- Touch the photo to view the controls.
- Pinch two fingers together or spread them apart to zoom in or out.
- Drag the photo to view parts that are not in view.

### Cropping a Photo

1. Touch a photo to view the controls.
2. Touch  > . The cropping tool appears.

**Figure 53** Cropping Tool

3. Use the cropping tool to select the portion of the photo to crop.
  - Drag from the inside of the cropping tool to move it.
  - Drag an edge of the cropping tool to resize it to any proportion.
4. Touch **DONE**.
5. Touch **SAVE** to save a copy of the cropped photo. The original version is retained.

### Setting a Photo as a Contact Icon

1. Touch the photo to open it.
2. Touch .
3. Touch **Use as**.
4. Touch **Contact photo**.
5. In the **Contacts** application, touch a contact.
6. Touch the white box and crop the photo accordingly.
7. Touch **Done**.

### Share a Photo

1. Touch an album to open it.
2. Touch a photo to open it.
3. Touch .
4. Touch the application to use to share the selected photo. The application selected opens with the photo attached to a new message.

### Deleting a Photo

1. Touch a photo to open it.
2. Touch .
3. Touch **Move to Trash** to delete the photo.

## Working with Videos

Use **Photos** to view videos and share videos.

### Watching Videos

1. Touch an album to open it.
2. Touch a video. The video automatically start playing.
3. Touch the screen to view the playback controls.

### Sharing a Video

1. Touch an album to open it.
2. Touch a video to open it.
3. Touch . The Share menu appears.
4. Touch the application to use to share the selected video. The application selected opens with the video attached to a new message.

### Deleting a Video

1. Touch an album to open it.
2. Touch a video to open it.
3. Touch .
4. Touch **Move to trash**.

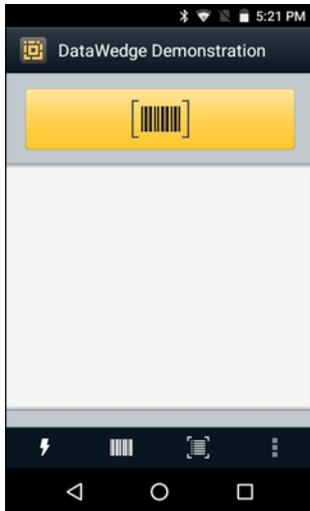
## DataWedge Demonstration



**NOTE** See the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for information on DataWedge configuration.

Use **DataWedge Demonstration** to demonstrate data capture functionality.

**Figure 54** DataWedge Demonstration Window

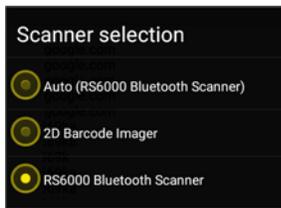


**Table 12** DataWedge Demonstration Icons

Feature	Icon	Description
Illumination		Indicates imager illumination is off. Touch to turn illumination on.
		Indicates imager illumination is on. Touch to turn illumination off.
Data Capture		Indicates that the data capture function is through the internal imager.
		Indicates that an RS6000 Bluetooth imager is not connected to the TC20.
		Indicates that an RS6000 Bluetooth imager is connected to the TC20.
Scan Mode		Indicates imager is in picklist mode. Touch to change to normal scan mode.
		Indicates imager is in normal scan mode. Touch to change to picklist mode.
Menu		Opens a menu to view the application information or to set the application DataWedge profile.

Touch the Data Capture icon to select the data capture mode.

**Figure 55** Data Capture Options Menu



Select a scanner to use. See [Data Capture](#) for configuring scanner options.

Either press the programmable button or touch the yellow scan button to enable data capture. The captured data appears in the text field below the yellow button.

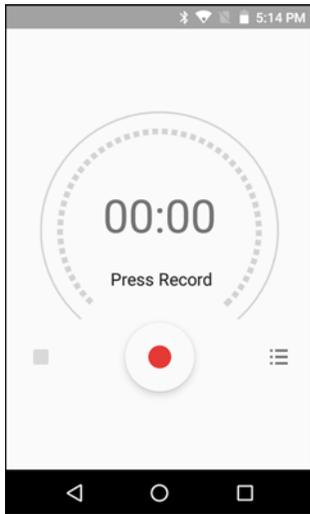
---

## Sound Recorder

Use **Sound Recorder** to record audio messages.

Recordings are saved on the microSD card (if installed) or the Internal Storage and available in the Music application playlist titled “Audio Recordings.”

**Figure 56** Sound Recorder Application



## PTT Express Voice Client



**NOTE** PTT Express Voice Client creates Push-To-Talk (PTT) communication capability between disparate enterprise devices. Leveraging existing Wireless Local Area Network (WLAN) infrastructure, PTT Express delivers simple PTT communication without the need of a voice communication server.

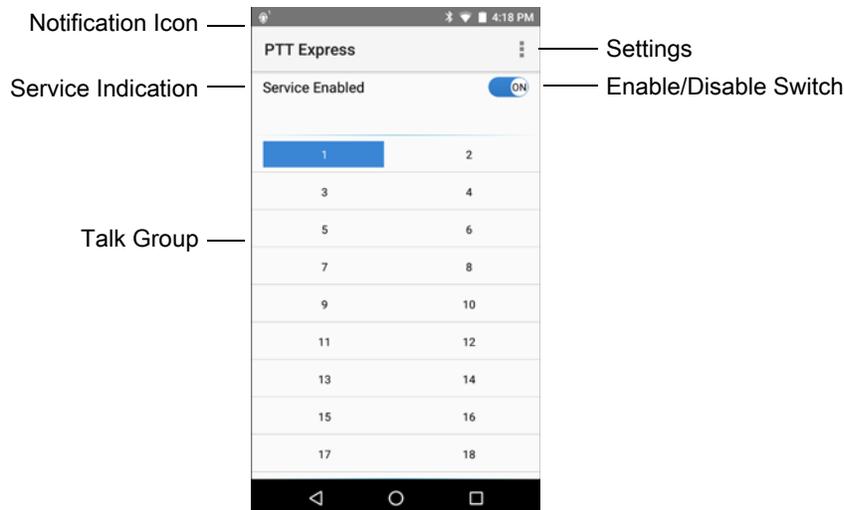
- **Group Call:** Press and hold the PTT button to start communicating with other voice client users.
- **Private Response:** Double-press and the PTT button to respond to the originator of the last broadcast or to make a Private Response.

### PTT Audible Indicators

The following tones provide helpful cues when using the voice client.

- **Talk Tone:** Double chirp. Plays when the Talk button is depressed. This is a prompt for the user to start talking.
- **Access Tone:** Single beep. Plays when another user just finished a broadcast or response. The user is now able to initiate a Group Broadcast or Private Response.
- **Busy Tone:** Continuous tone. Plays when the Talk button is depressed and another user is already communicating on the same talkgroup. Plays after the maximum allowed talk time is reached (60 seconds).
- **Network Tone:**
  - Three increasing pitch beeps. Plays when PTT Express has acquired the WLAN connection and the service is enabled.
  - Three decreasing pitch beeps. Plays when PTT Express has lost the WLAN connection or the service is disabled.

**Figure 57** PTT Express Default User Interface



**Table 13** PTT Express Default User Interface Descriptions

Item	Description
Notification Icon	Indicates the current state of the PTT Express client.
Service Indication	Indicates the status of the PTT Express client. Options: <b>Service Enabled</b> , <b>Service Disabled</b> or <b>Service Unavailable</b> .
Talk Groups	Lists all 32 Talk Groups available for PTT communication.
Settings	Opens the PTT Express Settings screen.
Enable/Disable Switch	Turns the PTT service on and off.

## Notification Icons

Indicates the current state of the PTT Express Voice client.

**Table 14** PTT Express Default User Interface Descriptions

Status Icon	Description
	Indicates that PTT Express Voice client is disabled.
	Indicates that PTT Express Voice client is enabled but not connected to a WLAN.
	Indicates that PTT Express Voice client is enabled, connected to a WLAN and listening on the Talk Group indicated by the number next to the icon.
	Indicates that PTT Express Voice client is enabled, connected to a WLAN and communicating on the Talk Group indicated by the number next to the icon.
	Indicates that PTT Express Voice client is enabled, connected to a WLAN and in a private response.
	Indicates that PTT Express Voice client is enabled and muted.
	Indicates that the PTT Express Voice client is enabled but it is not able to communicate due to a VoIP telephony call is in progress.

## Enabling PTT Communication

1. Swipe up from the bottom of the Home screen and touch .
2. Slide the **Enable/Disable Switch** to the **ON** position. The button changes to an **ON** button.

## Selecting a Talk Group

One of 32 Talk Groups can be selected by PTT Express users. However, only one talk group may be enabled at a time on the device. Touch one of the 32 Talk Groups. The selected Talk Group is highlighted.

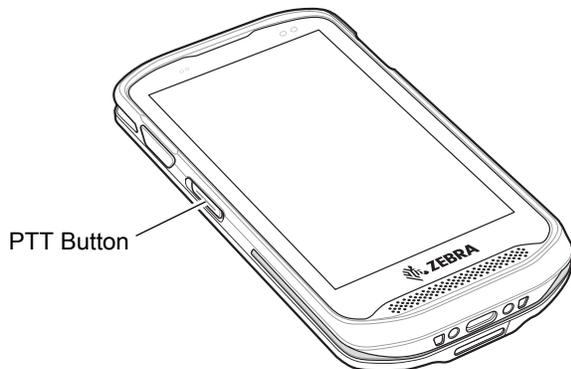
## PTT Communication



**NOTE** This section describes the default PTT Express client configuration. See the PTT Express V1.2 User Guide for detailed information on using the client.

PTT communication may be established as a Group Call. When PTT Express is enabled, the PTT button on the left side of the device is assigned for PTT communication. When the Wired Headset is used, Group Calls can also be initiated using the headset Talk button.

**Figure 58** PTT Buttons



## Creating a Group Call

1. Press and hold the PTT button (or the Talk button on the headset) and listen for the talk tone to play.  
If a busy tone is heard, release the button and wait a moment before making another attempt. Ensure that PTT Express and the WLAN are enabled.
2. Start talking after the talk tone is heard.



**NOTE** If the user holds the button for more than 60 seconds (default), the call is dropped allowing others to make Group calls. The user should release the button when finished talking to allow others to make calls.

3. Release the button when finished talking.

## Responding with a Private Response

The Private Response can only be initiated once a Group Call has been established. The initial Private Response is made to the originator of the Group Call.

1. Wait until an access tone is heard.
2. Within 10 seconds, double-press the PTT button, and listen for the talk tone to play.
3. If a busy tone is heard, release the button and wait a moment before making another attempt. Ensure that PTT Express and the WLAN are enabled.
4. Start talking after the talk tone plays.
5. Release the button when finished talking.

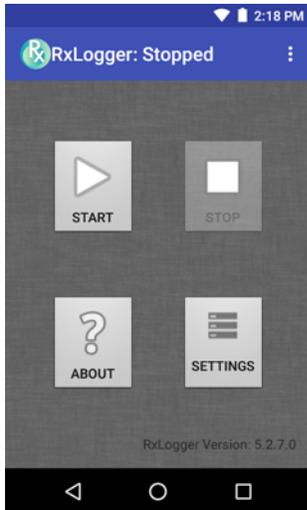
## Disabling PTT Express Voice Client Communication

1. Swipe up from the bottom of the Home screen and touch .
2. Slide the **Enable/Disable Switch** to the **OFF** position. The button changes to **OFF**.
3. Touch .

## RxLogger

RxLogger is a comprehensive diagnostic tool that provides application and system metrics. It allows for custom plug-ins to be created and work seamlessly with this tool. RxLogger is used to diagnose device and application issues. Its information tracking includes the following: CPU load, memory load, memory snapshots, battery consumption, power states, wireless logging, cellular logging, TCP dumps, Bluetooth logging, GPS logging, logcat, FTP push/pull, ANR dumps, etc. All logs and files generated are saved onto flash storage on the device (internal or external).

**Figure 59** RxLogger



### Enabling Logging

To enable RxLogger:

1. Swipe up from the bottom of the Home screen and touch .
2. Touch **START**. RxLogger begins collecting data.
3. Touch .

### Disabling Logging

To disable RxLogger:

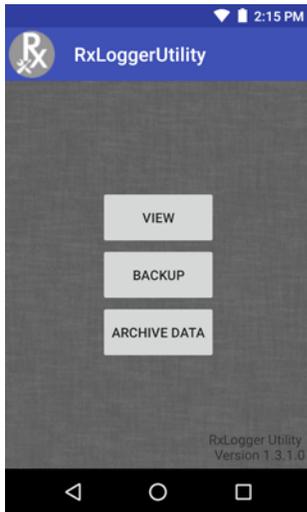
1. Swipe up from the bottom of the Home screen and touch .
2. Touch **STOP**. RxLogger stops collecting data.
3. Touch .

## RxLogger Utility

RxLogger Utility is a data monitoring application for viewing logs in the TC20 while RxLogger is running. The user can access the logs and RxLogger Utility features in the App View or the Overlay View.

In the App View the user views logs in the RxLogger Utility.

**Figure 60** RxLogger Utility App View



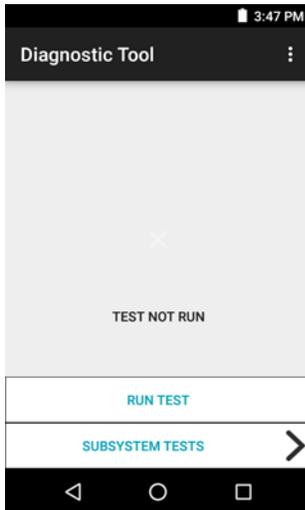
Refer to the TC20 Touch Computer Integrator Guide for detailed information about using RxLogger Utility.

## Diagnostic Tool

The **Diagnostic Tool** is a utility that determines the health of the TC20. Use the Diagnostic Tool to troubleshooting the device and determine issues.

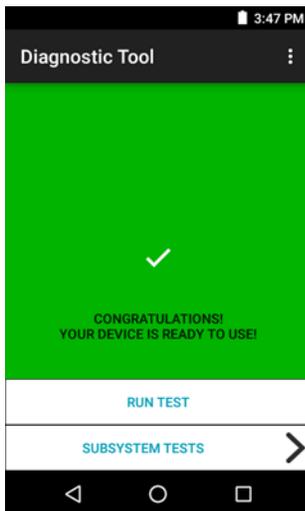
1. Swipe up from the bottom of the Home screen and touch .

**Figure 61** Diagnostic Tool

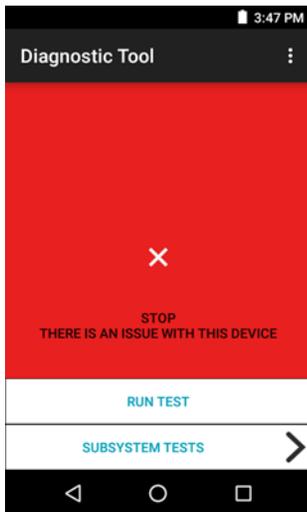


2. Touch **Run Test**. The app tests all enabled subsystems (by default only the Battery and System tests are enabled). See [Settings on page 79](#) to enable subsystem tests.

**Figure 62** Test Passed Screen

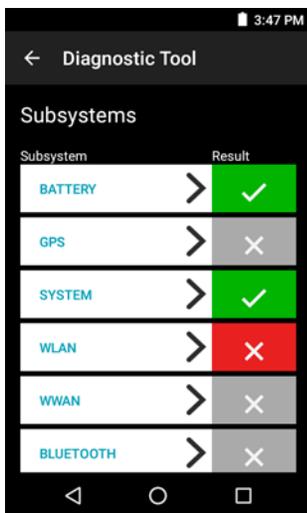


**Figure 63** Test Failed Screen



3. To view each individual subsystem test, touch **Subsystem Tests**.

**Figure 64** Subsystem Screen

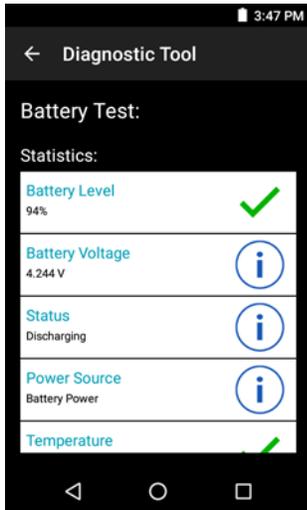


**Table 15** Subsystem Test Result Indicators

Status Icon	Description
	Indicates test passed.
	Indicates test failed.
	Indicates test not supported or not enabled.

4. Touch one of the subsystems to view details.

Figure 65 Battery Subsystem Details



## Settings

By default only the Battery and System tests are enabled. To enable other tests:

1. Touch **☰** > **Settings**.
2. Touch to the left of the test name. A green box with a checkmark appears.
3. Touch **SAVE**.
4. Touch **Yes** to confirm.
5. Touch **◀**.

## Battery Test Information

The Battery Test obtains the following information:

- **Battery Level** - Indicates the current battery charge level.
- **Battery Voltage** - Indicates the current battery voltage.
- **Status** - Indicates if the battery is charging (on AC power) or discharging (on battery power).
- **Power Source** - Indicates whether the device is receiving power from the battery or from an external source.
- **Temperature** - Indicates the current battery temperature.
- **Charge Cycles** - Not applicable.
- **Backup Battery Voltage** - Indicates backup battery voltage.
- **Manufacture Date** - Not applicable (Displays the manufacture date of the battery).

## GPS Test Information

Not supported on the TC20.

## System Test Information

Use the System Test to determine if the CPU or memory loads are too high, there are too many processes running on the device, or that storage on the device is almost full. The System Test obtains the following information:

- **CPU Load** - Indicates the amount of CPU being used.
- **Free Physical Memory** - Indicates the amount of RAM available.
- **Free Storage** - Indicates the amount of internal Flash memory available.
- **Process Count** - Indicates the number of processes currently running.

### WLAN Test Information

If the WiFi radio is not present or disabled the test may be skipped. Use this information to determine if the device's WLAN configuration is correct or whether there is any connection with an access point or network. The WLAN Test obtains the following information:

- **WLAN Enabled** - Indicates if the WLAN radio is enabled or disabled.
- **WLAN Status** - Indicates the current status of association with the access point.
- **ESSID** - Displays the name of the wireless network.
- **BSSID** - Displays the MAC address of the connected access point.
- **MAC Address** - Displays the device's MAC address.
- **Signal** - Indicates the strength of the Wi-Fi signal (in dBm).
- **IP Address** - Displays the IP address of the device.

### WWAN Test Information

Not supported on the TC20.

### Bluetooth Test Information

The Bluetooth Test obtains the following information:

- **Enabled** - Indicates if the Bluetooth radio is enabled or disabled.
- **Status** - Indicates if the device is paired to another Bluetooth device.
- **Connectable/Discoverable** - Indicates if the device is discoverable or connectable.
- **Address** - Displays the Bluetooth radio MAC address.
- **Name** - Displays the Bluetooth name for the device.

# Data Capture

The TC20 supports data capture using:

- integrated imager
  - SE4710 scan engine
  - SE2100 scan engine
- RS507 Hands-free Imager
- RS6000 Bluetooth Ring Scanner.



**IMPORTANT** To determine the integrated scan engine in the device, go to **Settings > About phone > Hardware components > Scanner**.

---

## Imaging

The TC20 with an integrated 2D imager has the following features:

- Omnidirectional reading of a variety of barcode symbologies, including the most popular linear, postal, PDF417, and 2D matrix code types.
- The ability to capture and download images to a host for a variety of imaging applications.
- Advanced intuitive laser aiming cross-hair and dot aiming for easy point-and-shoot operation.

The imager uses imaging technology to take a picture of a barcode, stores the resulting image in its memory, and executes state-of-the-art software decoding algorithms to extract the barcode data from the image.

## Operational Modes

The TC20 with an integrated imager supports two modes of operation, listed below. Activate each mode by pressing the Scan button.

- **Decode Mode:** In this mode, the TC20 attempts to locate and decode enabled barcodes within its field of view. The imager remains in this mode as long as the user holds the scan button, or until it decodes a barcode.



**NOTE** Picklist mode is only available on TC20 with SE4710 imager.

To enable Pick List Mode, configure in DataWedge or set in an application using a API command.

- **Pick List Mode:** This mode allows the user to selectively decode a barcode when more than one barcode is in the TC20's field of view. To accomplish this, move the aiming crosshair or dot over the required

barcode to decode only this barcode. This feature is ideal for pick lists containing multiple barcodes and manufacturing or transport labels containing more than one barcode type (either 1D or 2D).

---

### RS507 Hands-Free Imager

The RS507 Hands-free Imager is a wearable barcode scan solution for both 1D and 2D barcode symbologies.

**Figure 66** RS507 Hands-Free Imager



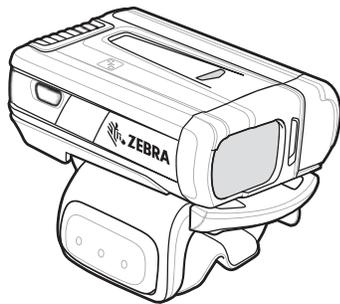
See to the RS507 Hands-free Imager Product Reference Guide for more information.

---

### RS6000 Bluetooth Ring Scanner

The RS6000 Bluetooth Ring Scanner is a wearable barcode scan solution for both 1D and 2D barcode symbologies.

**Figure 67** RS6000 Bluetooth Ring Scanner



See to the RS6000 Bluetooth Ring Scanner Product Reference Guide for more information.

---

### Scanning Considerations

Typically, scanning is a simple matter of aim, scan, and decode and a few quick trial efforts master it. However, consider the following to optimize scanning performance:

- **Range:** Any scanning device decodes well over a particular working range — minimum and maximum distances from the barcode. This range varies according to barcode density and scanning device optics. Scanning within range brings quick and constant decodes; scanning too close or too far away prevents decodes. Move the scanner closer and further away to find the right working range for the barcodes being scanned.
- **Angle:** Scanning angle is important for promoting quick decodes. When laser beams reflect directly back into the scanner from the barcode, this specular reflection can “blind” the scanner. To avoid this, scan the

barcode so that the beam does not bounce directly back. But don't scan at too sharp an angle; the scanner needs to collect scattered reflections from the scan to make a successful decode. Practice quickly shows what tolerances to work within.

- Hold the TC20 farther away for larger symbols
- Move the TC20 closer for symbols with bars that are close together.



**NOTE** Scanning procedures depend on the application and TC20 configuration. An application may use different scanning procedures from the one listed above.

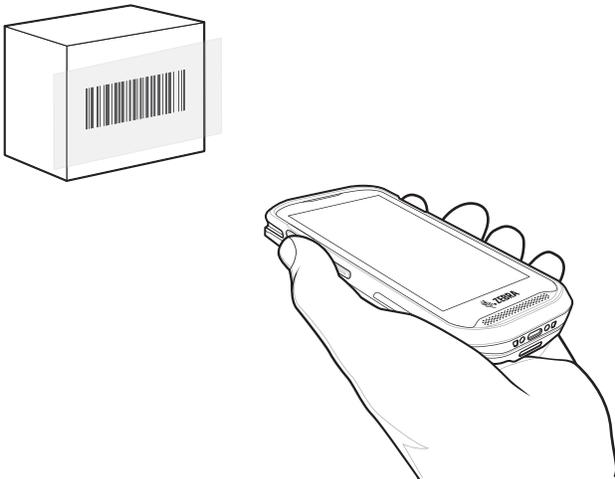
---

## Barcode Scanning with Internal SE2100 Imager

To read a barcode, a scan-enabled application is required. The TC20 contains the DataWedge application that allows the user to enable the imager, decode the barcode data and display the barcode content.

1. Ensure that an application is open on the TC20 and a text field is in focus (text cursor in text field).
2. Point the exit window on the top of the TC20 at a barcode.

**Figure 68** SE2100 Imager Scanning



3. Press and hold the scan button.  
The white aiming pattern turns on to assist in aiming.
4. Ensure the barcode is within the area formed by the aiming pattern.

**Figure 69** SE2100 Aiming Pattern



5. The Data Capture LED lights green and a beep sounds, by default, to indicate the barcode was decoded successfully.
6. Release the scan button.



**NOTE** Imager decoding usually occurs instantaneously. The TC20 repeats the steps required to take a digital picture (image) of a poor or difficult barcode as long as the scan button remains pressed.

7. The barcode content data displays in the text field.

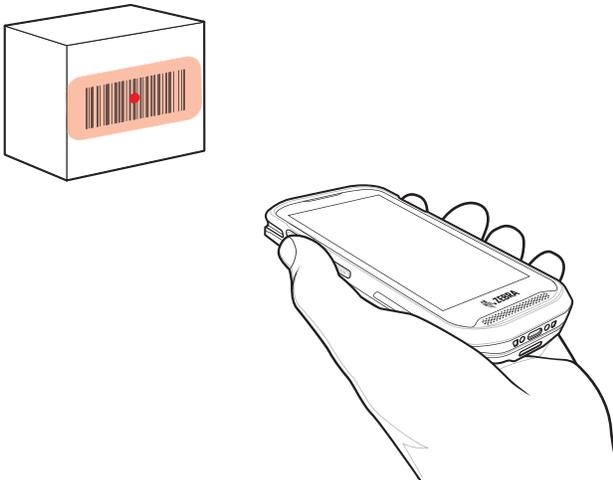
---

## Barcode Scanning with Internal SE4710 Imager

To read a barcode, a scan-enabled application is required. The TC20 contains the DataWedge application that allows the user to enable the imager, decode the barcode data and display the barcode content.

1. Ensure that an application is open on the TC20 and a text field is in focus (text cursor in text field).
2. Point the exit window on the top of the TC20 at a barcode.

**Figure 70** SE4710 Imager Scanning



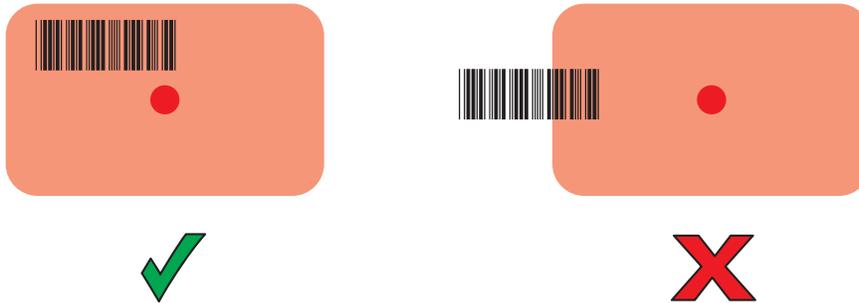
3. Press and hold the scan button.  
The red LED aiming pattern turns on to assist in aiming.



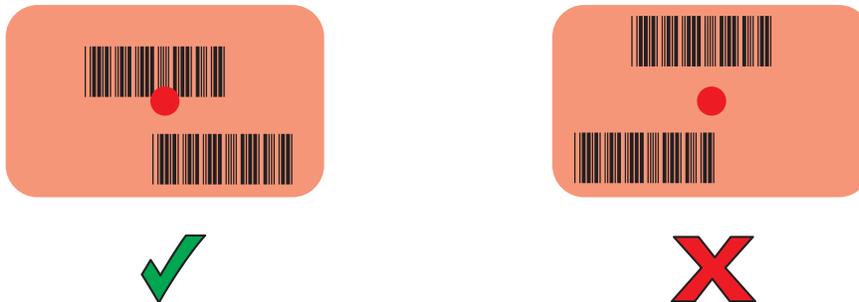
**NOTE** When the TC20 is in Picklist mode, the imager does not decode the barcode until the crosshair or aiming dot touches the barcode.

4. Ensure the barcode is within the area formed by the aiming pattern. The aiming dot is used for increased visibility in bright lighting conditions.

**Figure 71** SE4710 Aiming Pattern



**Figure 72** SE4710 Pick List Mode with Multiple barcodes in Aiming Pattern



5. The Data Capture LED lights green and a beep sounds, by default, to indicate the barcode was decoded successfully.
6. Release the scan button.



**NOTE** Imager decoding usually occurs instantaneously. The TC20 repeats the steps required to take a digital picture (image) of a poor or difficult barcode as long as the scan button remains pressed.

7. The barcode content data displays in the text field.

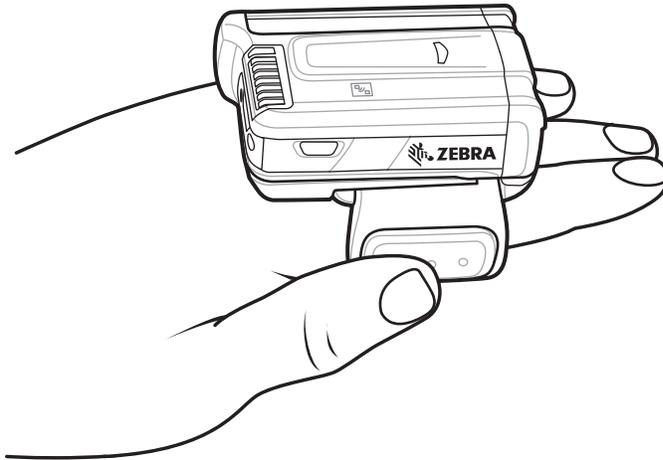
## Barcode Capture with RS6000 Bluetooth Ring Scanner

To read a barcode, a scan-enabled application is required. The TC20 contains the **DataWedge** application that allows the user to enable the scanner to decode barcode data and display the barcode content. See [DataWedge Demonstration on page 68](#) for more information on launching DataWedge.

Pair the RS6000 with the TC20. See [Pairing Using Simple Serial Interface on page 88](#) or [Pairing Using Bluetooth Human Interface Device on page 88](#) for more information.

1. Ensure that an application is open on the device and a text field is in focus (text cursor in text field).
2. Point the RS6000 at a barcode.

**Figure 73** barcode Scanning with RS6000

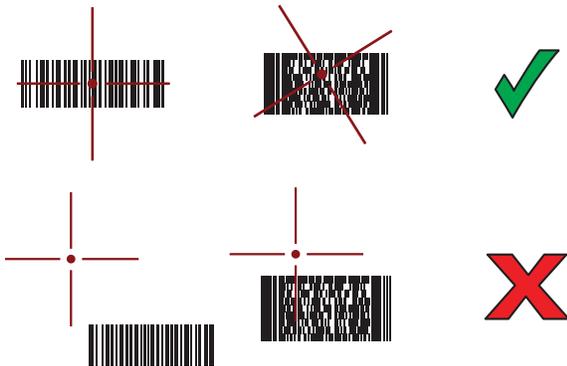


3. Press and hold the trigger.

The red laser aiming pattern turns on to assist in aiming. Ensure the barcode is within the area formed by the cross-hairs in the aiming pattern. The aiming dot is used for increased visibility in bright lighting conditions.

The RS6000 LEDs light green, a beep sounds to indicate the barcode was decoded successfully. Note that when the RS6000 is in Pick List Mode, the RS6000 does not decode the barcode until the center of the crosshair touches the barcode.

**Figure 74** Aiming Pattern



**Figure 75** Pick List Mode with Multiple barcodes in Aiming Pattern



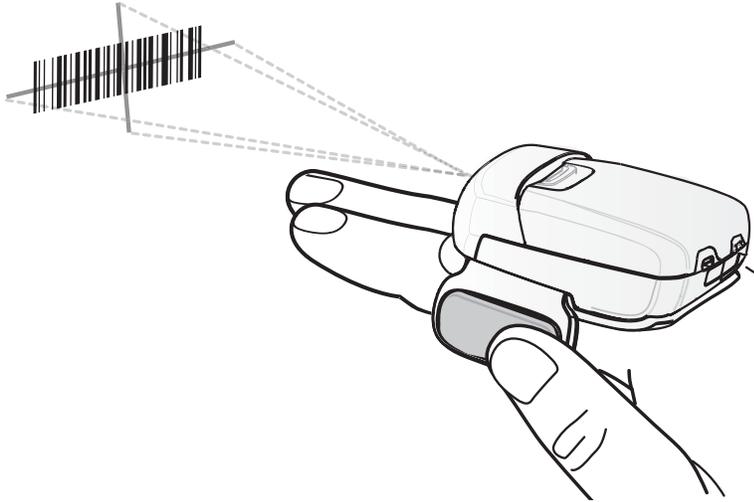
4. The captured data appears in the text field.

## Barcode Capture with RS507 Hands-Free Imager

Pair the RS507 with the TC20. See [Pairing the Bluetooth Imager on page 88](#) for more information.

1. Ensure that an application is open on the device and a text field is in focus (text cursor in text field).
2. Point the RS507 at a barcode.

**Figure 76** barcode Scanning with RS507

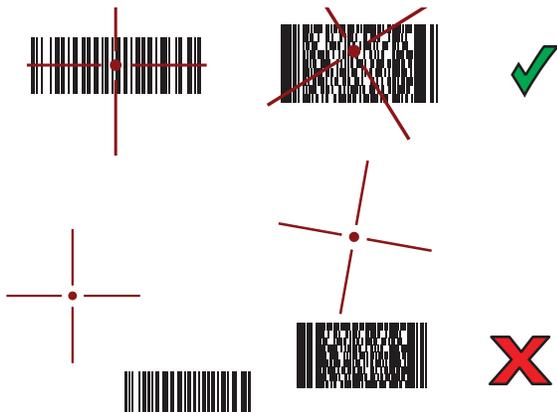


3. Press and hold the trigger.

The red laser aiming pattern turns on to assist in aiming. Ensure the barcode is within the area formed by the cross-hairs in the aiming pattern. The aiming dot is used for increased visibility in bright lighting conditions.

The RS507 LEDs light green, a beep sounds to indicate the barcode was decoded successfully. Note that when the RS507 is in Pick List Mode, the RS507 does not decode the barcode until the center of the crosshair touches the barcode.

**Figure 77** Aiming Pattern



**Figure 78** Pick List Mode with Multiple barcodes in Aiming Pattern



4. The captured data appears in the text field.

## Pairing the Bluetooth Imager

To connect the RS507 or RS6000 imagers to the TC20, use one of the following methods:

- Simple Serial Interface (SSI)
- Bluetooth Human Interface Device (HID) Mode.

### Pairing Using Simple Serial Interface

To pair the RS507/RS6000 with the TC20 using SSI:

1. Ensure that the two devices are within 10 meters (32.8 feet) of one another.
2. Install the battery into the RS507/RS6000.
3. On the TC20, touch  > .

**Figure 79** Bluetooth Pairing Utility



4. Using the RS507/RS6000, scan the barcode on the screen.  
The RS507/RS6000 emits a high/low/high/low beeps. The Scan LED flashes green indicating that the RS507/RS6000 is attempting to establish connection with the TC20. When connection is established, the Scan LED turns off and the RS507/RS6000 emits one string of low/high beeps.
5. On the TC20, touch .

### Pairing Using Bluetooth Human Interface Device

To pair the RS507/RS6000 with the TC20 using HID:

1. Ensure that Bluetooth is enabled on both devices.
2. Ensure that the Bluetooth device to discover is in discoverable mode.
3. Ensure that the two devices are within 10 meters (32.8 feet) of one another.
4. Place the RS507/RS6000 in Human Interface Device (HID) mode. If the RS507/RS6000 is already in HID mode, skip to step 5.
  - a. Remove the battery from the RS507/RS6000.
  - b. Press and hold the Restore key.

- c. Install the battery onto the RS507/RS6000.
- d. Keep holding the Restore key for about five seconds until a chirp is heard and the Scan LEDs flash green.
- e. Scan the barcode below to place the RS507/RS6000 in HID mode.

**Figure 80** Bluetooth HID barcode



5. Remove the battery from the RS507/RS6000.
6. Re-install the battery into the RS507/RS6000.
7. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
8. Touch  **Bluetooth**.
9. Touch **SCAN FOR DEVICES**. The device begins searching for discoverable Bluetooth devices in the area and displays them under **AVAILABLE DEVICES**.
10. Scroll through the list and select RS507/RS6000.

The device connects to the RS507/RS6000 and **Connected** appears below the device name. The Bluetooth device is added to the **Bluetooth devices** list and a trusted ("paired") connection is established.

---

## DataWedge

DataWedge is a utility that adds advanced barcode scanning capability to any application without writing code. It runs in the background and handles the interface to built-in barcode scanners. The captured barcode data is converted to keystrokes and sent to the target application as if it was typed on the keypad.

To configure DataWedge refer to the TC20 Touch Computer Integrator Guide for Android Version 6.0.1.

### Enabling DataWedge

1. Touch .
2. Touch .
3. Touch .
4. Touch **Settings**.
5. Touch the **DataWedge enabled** checkbox. A blue checkmark appears in the checkbox indicating that DataWedge is enabled.
6. Touch .

### Disabling DataWedge

1. Touch .
2. Touch .
3. Touch .
4. Touch **Settings**.
5. Touch the **DataWedge enabled** checkbox. The blue checkmark disappears from the checkbox indicating that DataWedge is disabled.

6. Touch .

# Wireless

This section provides information on the wireless features:

- Wireless Local Area Network (WLAN)
- Bluetooth.

---

## Wireless Local Area Networks

Wireless local area networks (WLANs) allow the TC20 to communicate wirelessly inside a building. Before using the TC20 on a WLAN, the facility must be set up with the required hardware to run the WLAN (sometimes known as infrastructure). The infrastructure and the TC20 must both be properly configured to enable this communication.

Refer to the documentation provided with the infrastructure (access points (APs), access ports, switches, Radius servers, etc.) for instructions on how to set up the infrastructure.

Once the infrastructure is set up to enforce the chosen WLAN security scheme, use the **Wireless & networks** settings configure the TC20 to match the security scheme.

The TC20 supports the following WLAN security options:

- Open
- Wireless Equivalent Privacy (WEP).
- Wi-Fi Protected Access (WPA)/WPA2 Personal (PSK).
- Extensible Authentication Protocol (EAP).

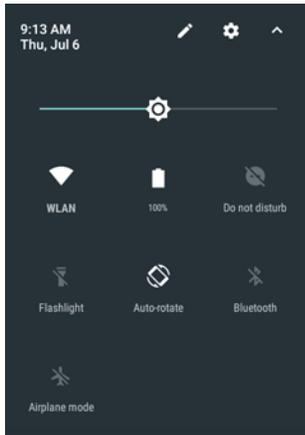
The **Status** bar displays icons that indicate Wi-Fi network availability and Wi-Fi status. See Status Bar for more information.



**NOTE** Turn off Wi-Fi when not using it, to extend the life of the battery.

## Scan and Connect to a Wi-Fi Network

1. Swipe down with two fingers from the status bar to open the quick access panel.

**Figure 81** Quick Access Panel

2. Touch **WLAN** to open the **WLAN** screen. The TC20 searches for WLANs in the area and lists them.

**Figure 82** WLAN Screen

3. Scroll through the list and select the desired WLAN network.
4. For open networks, touch profile once or press and hold and then select **Connect to network** or for secure networks enter the required password or other credentials then touch **Connect**. See the system administrator for more information.

The TC20 obtains a network address and other required information from the network using the dynamic host configuration protocol (DHCP) protocol. To configure the TC20 with a fixed internet protocol (IP) address, Refer to the TC20 Touch Computer Integrator Guide for Android Version 7.1.2.

5. In the Wi-Fi setting field, **Connected** appears indicating that the TC20 is connected to the WLAN.

## Remove a Wi-Fi Network

To remove a remembered or connected network:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Wi-Fi**.
3. In the **Wi-Fi** list, touch and hold the name of the network.
4. In the menu, touch **Forget network**.

5. Touch 


---

## Bluetooth

Bluetooth-equipped devices can communicate without wires, using frequency-hopping spread spectrum (FHSS) radio frequency (RF) to transmit and receive data in the 2.4 GHz Industry Scientific and Medical (ISM) band (802.15.1). Bluetooth wireless technology is specifically designed for short-range (10 meters (32.8 feet)) communication and low power consumption.

Devices with Bluetooth capabilities can exchange information (e.g., files, appointments, and tasks) with other Bluetooth enabled devices such as printers, access points, and other mobile devices.

The TC20 support Bluetooth Low Energy. Bluetooth Low Energy is targeted at applications in the healthcare, fitness, security, and home entertainment industries. It provides reduced power consumption and cost while maintaining standard Bluetooth range.

## Adaptive Frequency Hopping

Adaptive Frequency Hopping (AFH) is a method of avoiding fixed frequency interferers, and can be used with Bluetooth voice. All devices in the piconet (Bluetooth network) must be AFH-capable in order for AFH to work. There is no AFH when connecting and discovering devices. Avoid making Bluetooth connections and discoveries during critical 802.11b communications. AFH for Bluetooth consists of four main sections:

- Channel Classification - A method of detecting an interference on a channel-by-channel basis, or pre-defined channel mask.
- Link Management - Coordinates and distributes the AFH information to the rest of the Bluetooth network.
- Hop Sequence Modification - Avoids interference by selectively reducing the number of hopping channels.
- Channel Maintenance - A method for periodically re-evaluating the channels.

When AFH is enabled, the Bluetooth radio “hops around” (instead of through) the 802.11b high-rate channels. AFH coexistence allows Enterprise devices to operate in any infrastructure.

The Bluetooth radio in this device operates as a Class 2 device power class. The maximum output power is 2.5 mW and the expected range is 10 meters (32.8 ft.). A definition of ranges based on power class is difficult to obtain due to power and device differences, and whether one measures open space or closed office space.



**NOTE** It is not recommended to perform Bluetooth wireless technology inquiry when high rate 802.11b operation is required.

## Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific need. Link-level security occurs between devices, not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures required to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key used to authenticate the devices and create a link key for them. Entering a common personal identification number (PIN) in the devices being paired generates the initialization key. The PIN is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to user to respond to the key request event). Authentication of Bluetooth devices is based-upon a challenge-response transaction. Bluetooth allows for a PIN or passkey used to create

other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also worthy of note is the limited range and fast frequency hopping of the Bluetooth radios that makes long-distance eavesdropping difficult.

Recommendations are:

- Perform pairing in a secure environment
- Keep PIN codes private and do not store the PIN codes in the device
- Implement application-level security.

## Bluetooth Profiles

The device supports the following Bluetooth services:

- Service Discovery Protocol (SDP) - Handles the search for known and specific services as well as general services.
- Serial Port Profile (SPP) - Allows use of RFCOMM protocol to emulate serial cable connection between two Bluetooth peer devices. For example, connecting the device to a printer.
- Object Push Profile (OPP) - Allows the device to push and pull objects to and from a push server.
- Advanced Audio Distribution Profile (A2DP) - Allows the device to stream stereo-quality audio to a wireless headset or wireless stereo speakers.
- Audio/Video Remote Control Profile (AVRCP) - Allows the device to control A/V equipment to which a user has access. It may be used in concert with A2DP.
- Personal Area Network (PAN) - Allows the use of Bluetooth Network Encapsulation Protocol to provide L3 networking capabilities over a Bluetooth link. Only PANU role is supported.
- Human Interface Device Profile (HID) - Allows Bluetooth keyboards, pointing devices, gaming devices and remote monitoring devices to connect to the device.
- Headset Profile (HSP) - Allows a hands-free device, such as a Bluetooth headset, to place and receive calls on the device.
- Hands-Free Profile (HFP) - Allows car hands-free kits to communicate with the device in the car.
- Phone Book Access Profile (PBAP) - Allows exchange of Phone Book Objects between a car kit and a mobile device to allow the car kit to display the name of the incoming caller; allow the car kit to download the phone book so the user can initiate a call from the car display.
- Symbol Serial Interface (SSI) - Allows for communication with Bluetooth Imager.
- File Transfer Profile (FTP) - Provides the capability to browse, manipulate and transfer files in file system of another system. Uses GOEP as a basis.
- Generic Attribute Profile (GATT) - Provides profile discovery and description services for Bluetooth Low Energy protocol. It defines how attributes are grouped together into sets to form services.
- HID Over GATT Profile (HOGP) - Defines the procedures and features used by Bluetooth low energy HID Devices using GATT and Bluetooth HID Hosts using GATT.
- Scan Parameters Profile (ScPP) - Provides devices with information to assist them in managing their connection idle timeout and advertising parameters to optimize for power consumption and/or reconnection latency.

## Bluetooth Power States

The Bluetooth radio is off by default.

- Suspend - When the TC20 goes into suspend mode, the Bluetooth radio stays on.

- Airplane Mode - When the TC20 is placed in Airplane Mode, the Bluetooth radio turns off. When Airplane mode is disabled, the Bluetooth radio returns to the prior state. When in Airplane Mode, the Bluetooth radio can be turned back on if desired.

## Bluetooth Radio Power

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, other Bluetooth devices cannot see or connect to the device. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.



**NOTE** To achieve the best battery life turn off radios when not in use.

### Enabling Bluetooth

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Touch  to turn Bluetooth on.
3. Touch **Done**.
4. Touch .

### Disabling Bluetooth

1. Swipe down with two fingers from the status bar to open the quick access panel.
2. Touch .
3. Touch the slider switch to turn off Bluetooth.
4. Touch .

## Discovering Bluetooth Device(s)

The TC20 can receive information from discovered devices without pairing. However, once paired, the TC20 and a paired device exchange information automatically when the Bluetooth radio is on. To find Bluetooth devices in the area:

1. Ensure that Bluetooth is enabled on both devices.
2. Ensure that the Bluetooth device to discover is in discoverable mode.
3. Ensure that the two devices are within 10 meters (32.8 feet) of one another.
4. Swipe down with two fingers from the status bar to open the quick access panel.
5. Touch **Bluetooth**.
6. Touch **More Settings**. The **Bluetooth** screen appears.
7. The TC20 begins searching for discoverable Bluetooth devices in the area and displays them under **Available devices**.
8. Scroll through the list and select a device. The **Bluetooth pairing request** dialog box appears.
9. Enter a PIN in the text box and touch **OK**. Enter the same PIN on the other device.
10. For Simple Pairing, touch **Pair** on both devices.
11. The Bluetooth device is added to the **Bluetooth devices** list and a trusted (“paired”) connection is established.

## Changing the Bluetooth Name

By default, the TC20 has a generic Bluetooth name that is visible to other devices when connected.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Bluetooth**.
3. If Bluetooth is not on, touch the switch to turn Bluetooth on.
4. Touch .
5. Touch **Rename this device**.
6. Enter a name and touch **Rename**.
7. Touch .

## Connecting to a Bluetooth Device

Once paired, connect to a Bluetooth device.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch **Bluetooth**.
3. In the list, touch the unconnected Bluetooth device.
4. When connected, Connected appears below the device name.

## Selecting Profiles on the Bluetooth Device

Some Bluetooth devices have multiple profiles. To select a profile:

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch  **Bluetooth**.
3. In the **PAIRED DEVICES** list, touch  next to the device name.
4. Under **PROFILES**, check or uncheck a profile to allow the device to use that profile.
5. Touch .

## Unpairing a Bluetooth Device

To unpair a Bluetooth device and erase all pairing information:

1. Swipe up from the bottom of the Home screen and touch  >  **Bluetooth**.
2. In the **PAIRED DEVICES** list, touch  next to the device name.
3. Touch **Forget**.
4. Touch .

# Accessories

This chapter provides information for using the accessories for the device.

## Accessories

This table lists the accessories available for the TC20.

**Table 16** TC20 Accessories

Accessory	Part Number	Description
<b>Cradles</b>		
1-Slot Base Charge Only Cradle	CRD-TC2X-BS1CO-01	Provides charging for device and Extended power pack. Requires power supply (PWR-WUA5V12W0xx), and USB-C cable.
1-Slot Ethernet Cradle	CRD-TC2X-SE1ET-01	Provides device charging and communication, and charging for Extended Power Pack. Requires power supply (PWR-BGA12V50W0WW), DC line cord (CBL-DC-388A1-01), and country-specific AC line cord.
5-Slot Charge Only Cradle	CRD-TC2X-SE5CO-01	Charges up to five devices. Requires power supply (PWR-BGA12V108W0WW), DC line cord (CBL-DC-382A1-01), and country-specific AC line cord.
Cradle Mount	BRKT-SCRD-SMRK-01	Mounts the 5-Slot Charge Only Cradle to a wall or rack.
<b>Batteries and Chargers</b>		
Extended Power Pack	BTRY-TC2X-PRPK1-01	Charges the TC20 internal battery to provide additional power and extend the shift time.
<b>Vehicle Solutions</b>		
Cigarette Light Adapter Auto Charge Cable	CHG-AUTO-USB1-01	Provides power to the device from a cigarette lighter socket.

**Table 16** TC20 Accessories (Continued)

Accessory	Part Number	Description
<b>Audio Accessories</b>		
3.5 mm Audio Adapter	CBL-TC51-HDST35-01	Plugs into the device and provides audio to a wired headset with collared 3.5 mm plug.
3.5 mm Headset	HDST-35MM-PTVP-01	Use for PTT calls.
<b>Miscellaneous</b>		
Trigger Handle	TRG-TC2X-SNP1-01	Adds gun-style handle with a scanner trigger for comfortable and productive scanning.
Screen Protector	KT-TC20-SCRNP1-01	Add additional screen protection.
SmartDEX Solution	DEX30	Provides wireless DEX communications to the TC20.
Ethernet Bracket	BRKT-TC51-ENET1-01	Use to connect the USB/Ethernet Adapter to the 1-Slot Ethernet Cradle.
USB/Ethernet Module	MOD-MT2-EU1-01	Use with 1-Slot Ethernet Cradle to provide Ethernet connectivity.
Cradle Mating Adapter	KIT-TC2X-BS1FT-05	Use the optional mating adapter to connect two or more cradles together. Each cradle still requires a power supply (5-pack).
<b>Carrying Solutions</b>		
TC2X Soft Holster	SG-TC2X-HLSTR1-01	Use to hold the device on hip. Accepts TC20 device with Trigger Handle.
TC20K Soft Holster	SG-TC20K-HLST1-01	Use to hold the device on hip. Accepts TC20K device with Trigger Handle.
TC2X Hand Strap	SG-TC2X-HSTRP1-01	Replacement hand strap (3-pack).
TC20K Hand Strap	SG-TC20K-HSTP1-01	Replacement hand strap for TC20K (3-pack).
Wrist/Arm Mount	SG-TC2X-ARMNT-01	Use to mount the TC20 to the forearm.
Small Wrist Mount	SG-WT4023221-03R	Replacement small wrist mount strap.
Large Wrist Mount	SG-WT4023221-04R	Replacement long wrist mount strap.
<b>Power Supplies</b>		
Power Supply	PWR-BGA12V50W0WW	Provides power to the 1-Slot Ethernet Cradle. Requires DC Line Cord, p/n CBL-DC-388A1-01 and country specific three wire grounded AC line cord sold separately.
Power Supply	PWR-BGA12V108W0WW	Provides power to the 5-Slot Charge Only cradle. Requires DC Line Cord, p/n CBL-DC-382A1-01 and country specific three wire grounded AC line cord sold separately.

## Accessories

**Table 16** TC20 Accessories (Continued)

Accessory	Part Number	Description
Power Supply	PWR-WUA5V12W0US	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in the United States.
Power Supply	PWR-WUA5V12W0GB	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in the European Union.
Power Supply	PWR-WUA5V12W0EU	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in the United Kingdom.
Power Supply	PWR-WUA5V12W0AU	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in Australia.
Power Supply	PWR-WUA5V12W0CN	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in China.
Power Supply	PWR-WUA5V12W0BR	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in Brazil.
Power Supply	PWR-WUA5V12W0KR	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in Korea.
Power Supply	PWR-WUA5V12W0IN	Provides 5 VDC, 2.5 A power to the USB-C cable. Includes plug adapter for use in India.
DC Line Cord	CBL-DC-382A1-01	Provides power from the power supply (PWR-BGA12V108W0WW) to the 5-Slot Charge Only Cradle.
DC Line Cord	CBL-DC-388A1-01	Provides power from the power supply (PWR-BGA12V50W0WW) to the 1-Slot Ethernet Cradle.
2-Way DC Line Cord	CBL-DC-377A1-01	Use to charge two 5-Slot Charge only Cradles with one power supply.
2-Way DC Line Cord	CBL-DC-379A1-01	Use to charge one 1-Slot Ethernet Cradle and one 5-Slot Charge Only Cradle with one power supply.
4-Way DC Line Cord	CBL-DC-380A1-01	Use to charge four 1-Slot Ethernet Cradles with one power supply.
US AC Line Cord	23844-00-00R	7.5 feet long, grounded, three wire for power supply.
USB-C Cable	CBL-MPM-USB1-01	The USB cable used to connect PC to single slot USB cradle.

## 1-Slot Base Charge Only Cradle

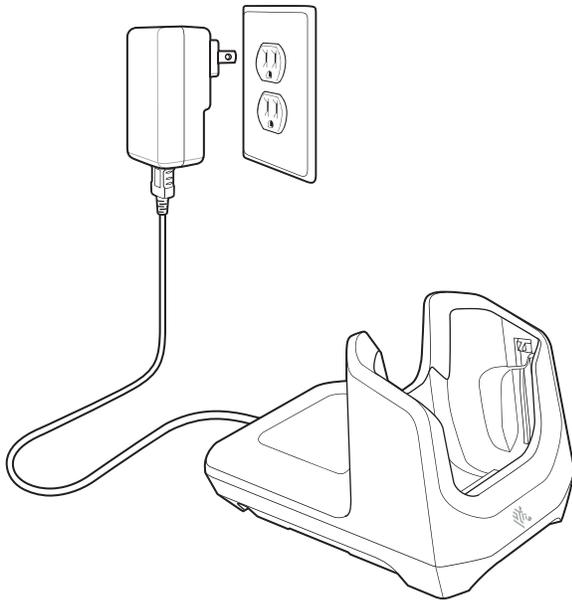
The 1-Slot Base Charge Only Cradle provide 5 VDC for charging:

- TC20 battery
- Extended Power Pack
- TC20 and Extended Power Pack
- TC20 with Trigger Handle.



**IMPORTANT** Use only the Zebra USB-C Cable for charging.

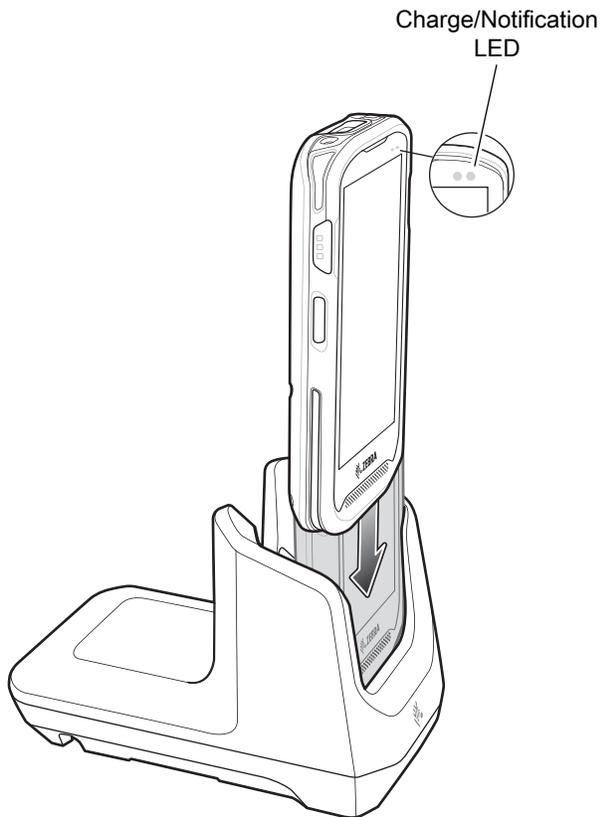
**Figure 83** 1-Slot Base Charge Only Cradle



### Charging the Device

To charge a device:

1. Insert the device into the slot to begin charging.

**Figure 84** TC20 Charging

2. Ensure the device is seated properly.

## Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device. See [Table 5 on page 20](#) for device charging status. The internal battery charges from fully depleted to 90% in approximately four hours and from fully depleted to 100% in approximately five hours.



**NOTE** In many cases the 90% charge provides plenty of charge for daily use. A full 100% charge lasts for approximately 10 hours of use.

To achieve the best fast charging results use only Zebra charging accessories and batteries. Charge batteries at room temperature with the TC20 in sleep mode.

## Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The device or cradle always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the device or cradle may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The device and cradle indicates when charging is disabled due to abnormal temperatures via its LED.

## 1-Slot Ethernet Cradle

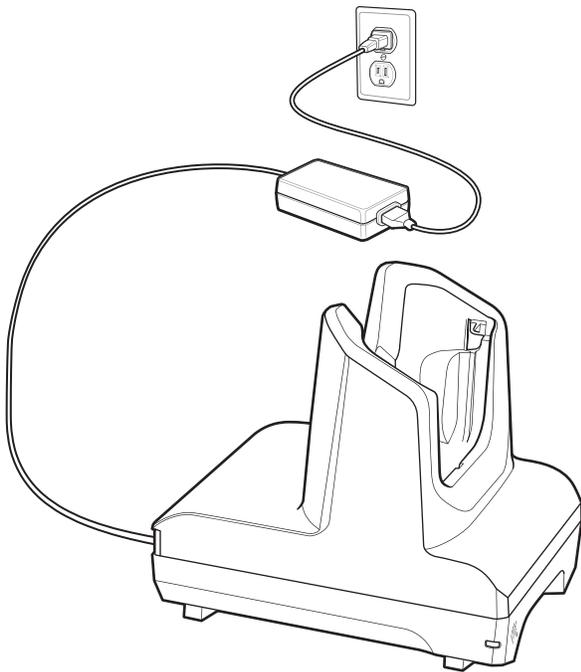
The 1-Slot Ethernet Cradle:

- Provides 5 VDC for charging:
  - TC20 battery
  - Extended Power Pack
  - TC20 and Extended Power Pack
  - TC20 with Trigger Handle.
- Provides USB communication.
- Provides Ethernet and USB communication using the USB/Ethernet Adapter.



**IMPORTANT** When the TC20 with attached Extended Power Pack is in the cradle, USB or Ethernet communication is disabled.

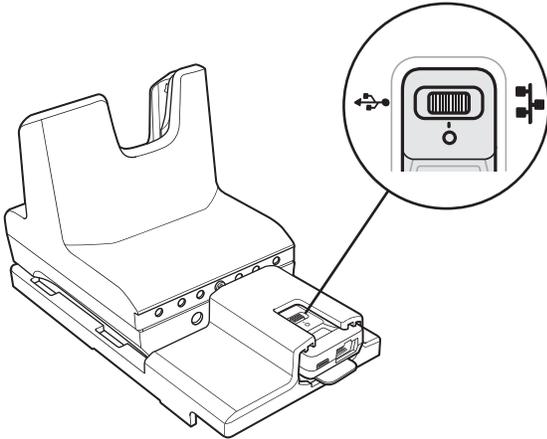
**Figure 85** 1-Slot Ethernet Cradle



## USB/Ethernet Communication

The 1-Slot Ethernet Cradle with an Ethernet Bracket and USB/Ethernet Module provides both Ethernet communication with a network and USB communication with a host computer. Prior to using the cradle for Ethernet or USB communication, ensure that the switch on the USB/Ethernet module is set properly. See the TC20 Touch Computer Integrator Guide for Android Version 7.1.2 for information on setting up the Ethernet Bracket and USB/Ethernet Module.

**Figure 86** 1-Slot Ethernet Cradle Module Switch



For Ethernet communication, slide the switch to the  position.

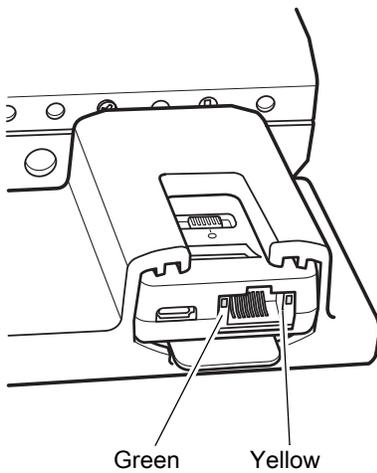
For USB communication, slide the switch to the  position.

Place the switch in the center position  to disable communications.

### Ethernet LED Indicators

There are two LEDs on the USB/Ethernet Module RJ-45 connector. The green LED lights to indicate that the transfer rate is 100 Mbps. When the LED is not lit the transfer rate is 10 Mbps. The yellow LED blinks to indicate activity, or stays lit to indicate that a link is established. When it is not lit it indicates that there is no link.

**Figure 87** LED Indicators



**Table 17** USB/Ethernet Module LED Data Rate Indicators

Data Rate	Yellow LED	Green LED
100 Mbps	On/Blink	On
10 Mbps	On/Blink	Off

## Establishing Ethernet Connection



**NOTE** Refer to the TC20 Integrator Guide for Android Version 7.1.2 for information on configuring the Ethernet settings.

1. Swipe down with two fingers from the status bar to open the quick access panel and then touch .
2. Touch **Ethernet**.
3. Slide the Ethernet switch to the **ON** position.
4. Insert the device into a slot.

The  icon appears in the Status bar.

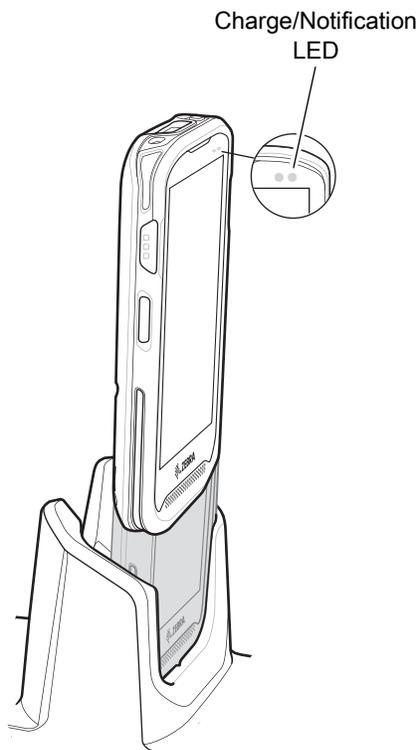
5. Touch **Eth0** to view Ethernet connection details.

## Charging the Device

To charge a device:

1. Insert the device into the slot to begin charging.

**Figure 88** Battery Charging



2. Ensure the device is seated properly.

## Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device. See [Table 5 on page 20](#) for device charging status. The internal battery charges from fully depleted to 90% in approximately four hours and from fully depleted to 100% in approximately five hours.



**NOTE** In many cases the 90% charge provides plenty of charge for daily use. A full 100% charge lasts for approximately 10 hours of use.

To achieve the best fast charging results use only Zebra charging accessories and batteries. Charge batteries at room temperature with the TC20 in sleep mode.

### Charging Temperature

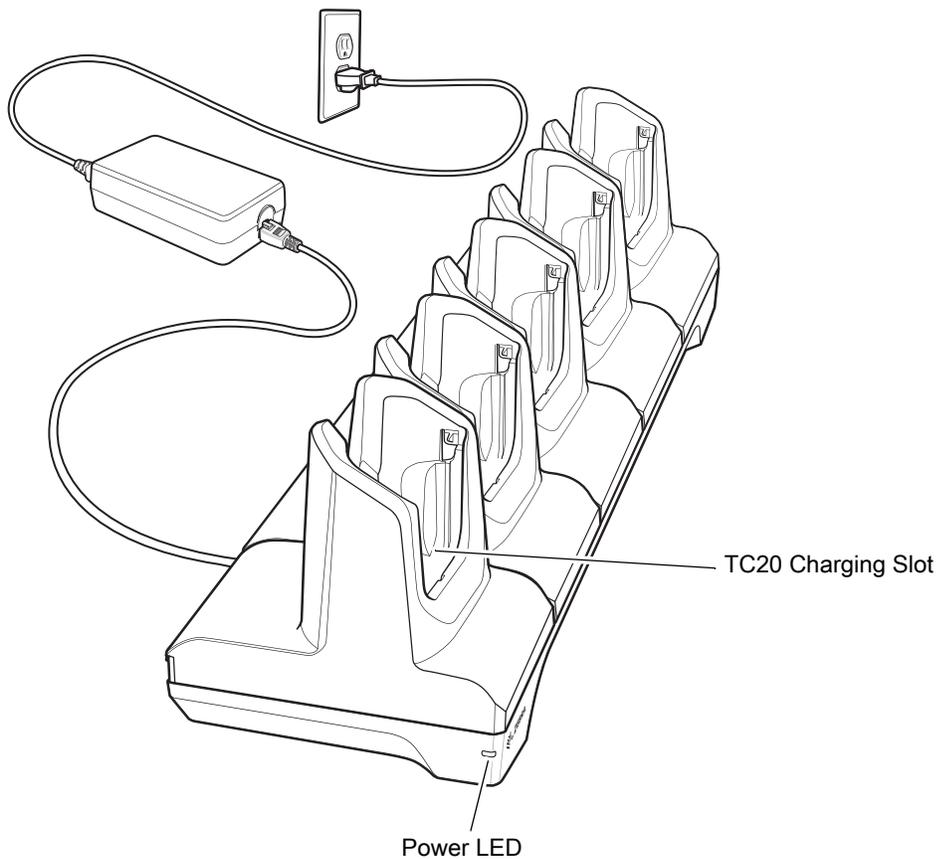
Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The device or cradle always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the device or cradle may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The device and cradle indicates when charging is disabled due to abnormal temperatures via its LED.

## 5-Slot Charge Only Cradle

The 5-Slot Charge Only Cradle provides 5 VDC for charging:

- TC20 battery
- Power Pack
- TC20 and Power Pack
- TC20 with Trigger Handle.

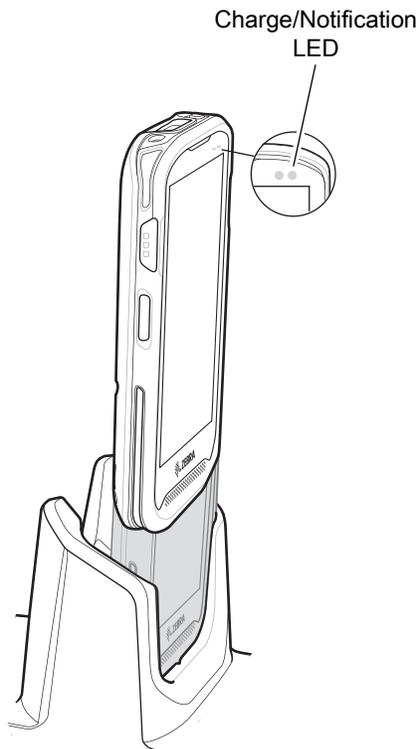
**Figure 89** 5-Slot Charge Only Cradle



### Charging the TC20

To charge a device:

1. Insert the TC20 into a slot to begin charging.

**Figure 90** TC20 Charging

2. Ensure the TC20 is seated properly.

## Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device. See [Table 5 on page 20](#) for device charging status. The internal battery charges from fully depleted to 90% in approximately four hours and from fully depleted to 100% in approximately five hours.



**NOTE** In many cases the 90% charge provides plenty of charge for daily use. A full 100% charge lasts for approximately 10 hours of use.

To achieve the best fast charging results use only Zebra charging accessories and batteries. Charge batteries at room temperature with the TC20 in sleep mode.

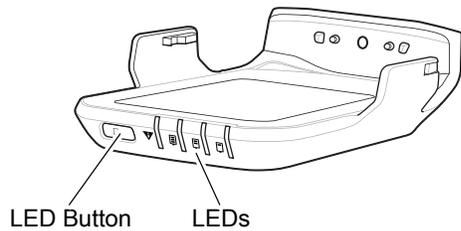
## Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The device or cradle always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the device or cradle may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The device and cradle indicates when charging is disabled due to abnormal temperatures via its LED.

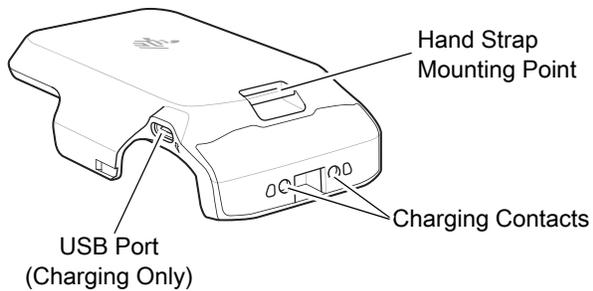
## Extended Power Pack

The Extended Power Pack provides additional power for charging the TC20 battery.

**Figure 91** Extended Power Pack Front View



**Figure 92** Extended Power Pack Back View

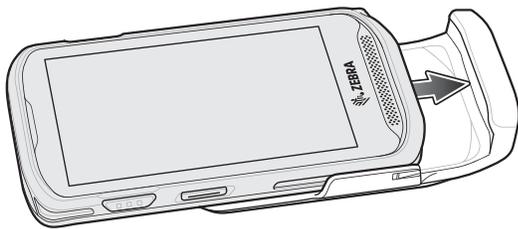


## Installation

To install the Power Pack:

1. Align the Power Pack with the TC20.

**Figure 93** Align Power Pack with TC20



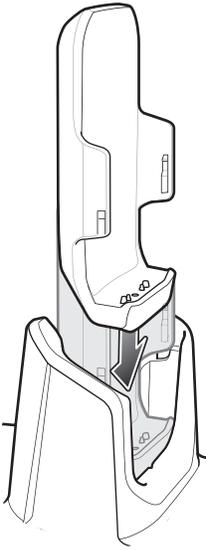
2. Slide the power pack up onto the TC20 until it snaps into place.

## Charging

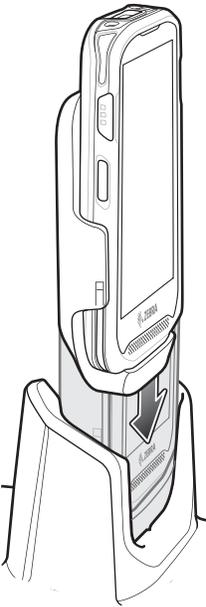
Charge the Extended Power Pack:

- In a cradle
- In a cradle attached to the TC20
- using a USB cable.

**Figure 94** Charging Power Pack in Cradle

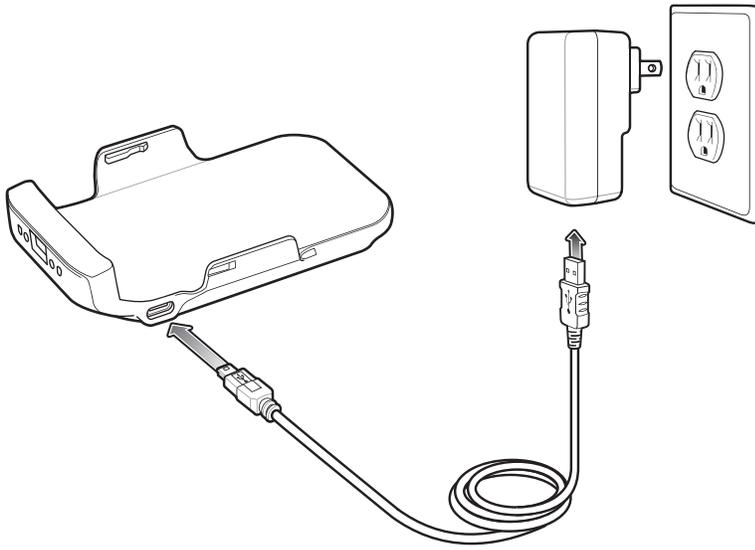


**Figure 95** Charging TC20 and Power Pack in Cradle



**IMPORTANT** Use only the Zebra USB-C Cable for charging.

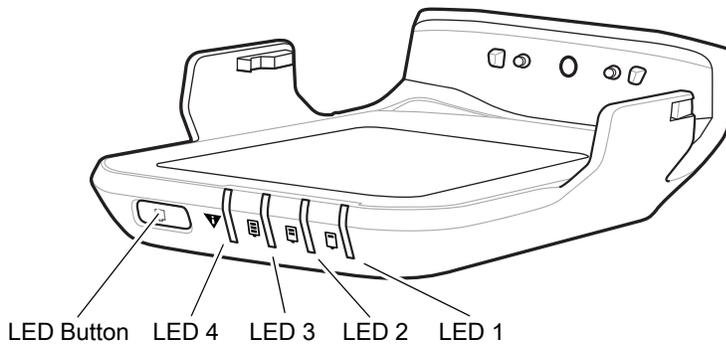
**Figure 96** Charging with USB Cable



## Power Pack Charging

The Power Pack Charging LEDs indicate the status of charging. See [Table 18 on page 110](#) for charging status. The power pack charges from fully depleted to 90% in approximately four hours and from fully depleted to 100% in approximately five hours.

**Figure 97** Power Pack LEDs



**Table 18** LED Charging Indicators

LED State				Indication
LED 1	LED 2	LED 3	LED 4	
				Not charging.
				Charge level is between 0% and 33%.
				Charge level is between 33% and 66%.

**Table 18** LED Charging Indicators (Continued)

LED State				Indication
LED 1	LED 2	LED 3	LED 4	
 Solid	 Solid	 Flashing		Change level is between 66% and 95%.
 Solid	 Solid	 Solid		Fully charged (95-100%).
 	 	 	 Flashing	Charging error, e.g.: <ul style="list-style-type: none"> <li>• Temperature is too low or too high.</li> <li>• Charging has gone on too long without completion (typically 10 hours).</li> </ul>

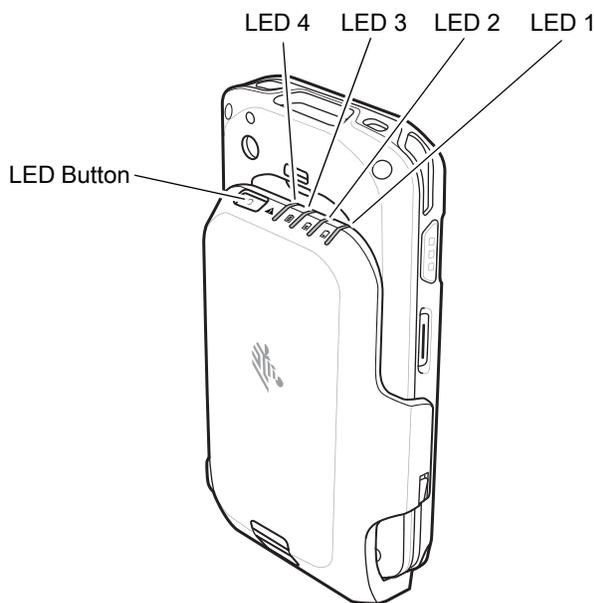
### Charging Temperature

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The device or cradle always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the device or cradle may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The power pack indicates when charging is disabled due to abnormal temperatures via its LED.

### Check Power Level

To check the power level of the power pack, press the LED button. The LEDs light indicating the charge level. After five seconds the LEDs turn off.

**Figure 98** Check Power Level



**Table 19** LED Charge State Indicators

LED State				Indication
LED 1	LED 2	LED 3	LED 4	
				No charge.
 Flashing				Charge level is between 0% and 33%.
 Solid	 Flashing			Charge level is between 33% and 66%.
 Solid	 Solid	 Flashing		Charge level is between 66% and 95%.
 Solid	 Solid	 Solid		Fully charged (95-100%).

## Resetting the Extended Power Pack

If the user thinks that the pack is not operating properly, reset the pack:

Press and hold the button for 10 seconds. All four LEDs flash three times.

## 3.5 mm Audio Adapter

The 3.5 mm Audio Adapter plugs into the TC20 and connects to a wired headset with a 3.5 mm plug.

To attach a 3.5 mm headset:

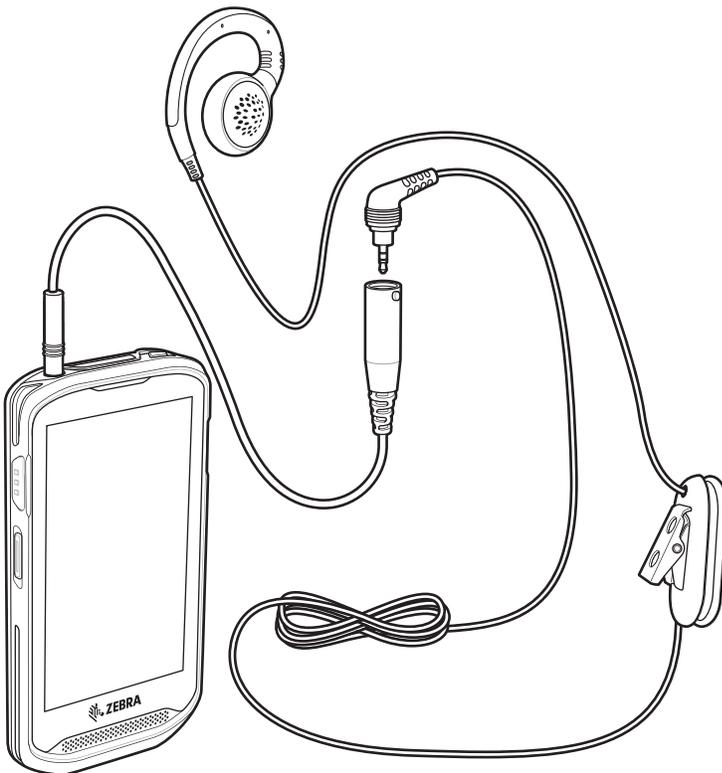
1. Insert the 3.5 mm Audio Adapter plug into the headset jack.

**Figure 99** Audio Adapter Installation



2. Connect the 3.5 mm connector plug of the headset into the 3.5 mm Audio Adapter.

**Figure 100** Connect Headset to 3.5 mm Adapter Cable



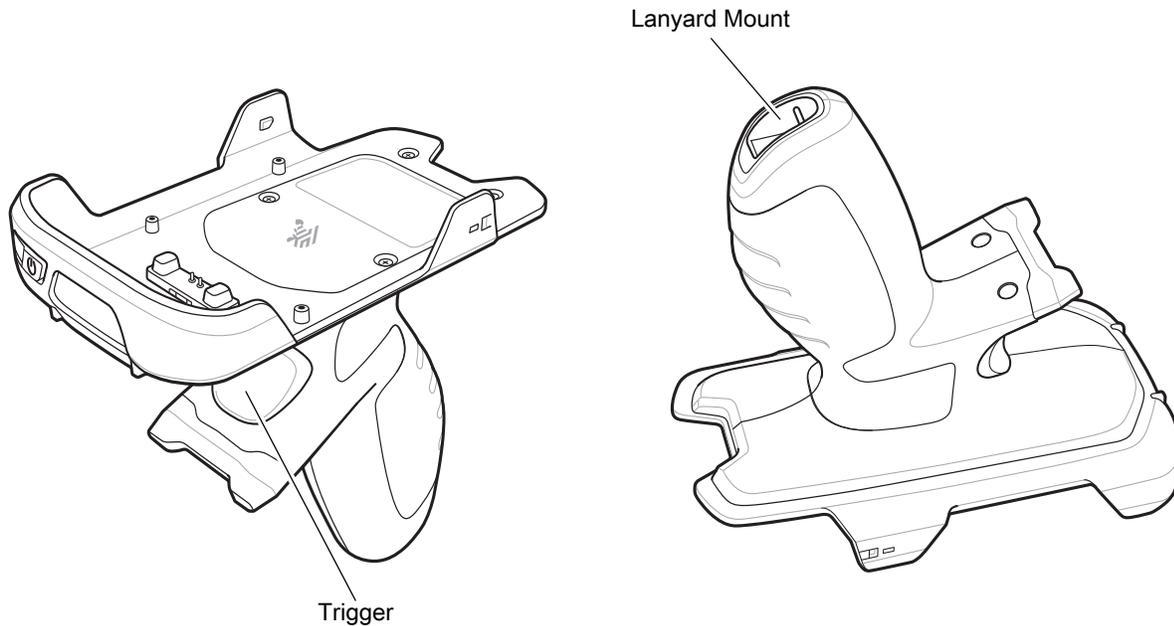
## Trigger Handle



**IMPORTANT** Trigger Handle can only be used on TC20 devices with SE4710 imager and 2-Pin Access Door.

The Trigger Handle adds a gun-style handle with a scanning trigger to the device. It increases comfort when using the device in scan-intensive applications for extended periods of time.

**Figure 101** Trigger Handle



### Installing the Optional Lanyard

To install the lanyard onto the Trigger Handle:

1. Insert the loop end of the tether into the slot on the bottom of the handle.
2. Feed the lanyard through the loop.

**Figure 102** Install Attachment Plate to Handle



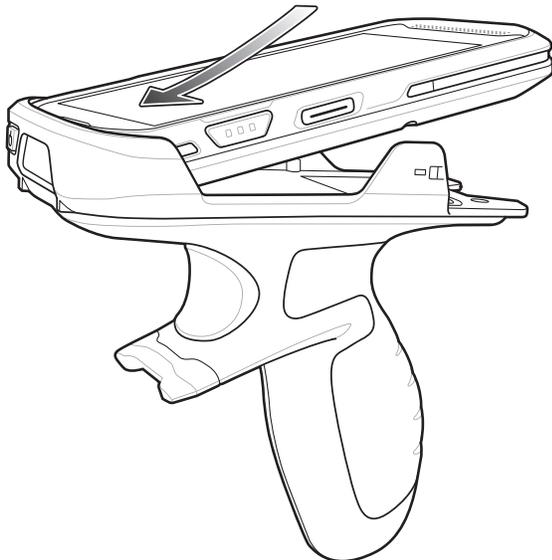
3. Pull the lanyard until the loop tightens.

### Inserting the Device into the Trigger Handle

To install the device onto the Trigger handle:

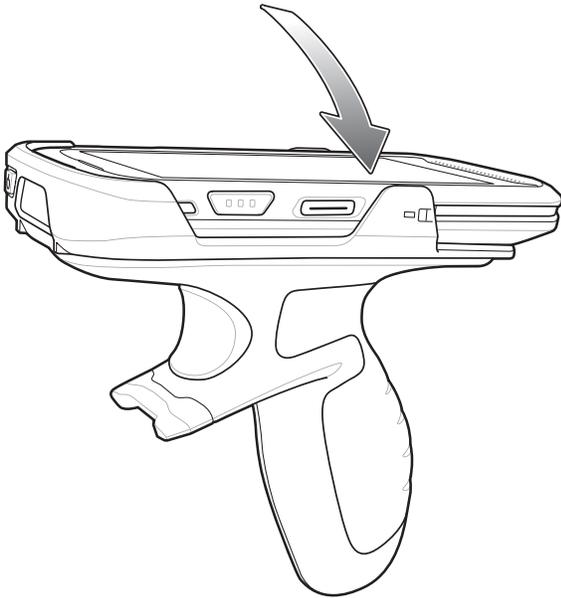
1. Align and insert the top of the TC20 into the front of the Trigger Handle.

**Figure 103** Insert Device into Trigger Handle



2. Rotate the device down and press down until it snaps into place.

**Figure 104** Rotate Device onto Trigger Handle



## Removing the Device from the Trigger Handle

To remove the device from the Trigger Handle:

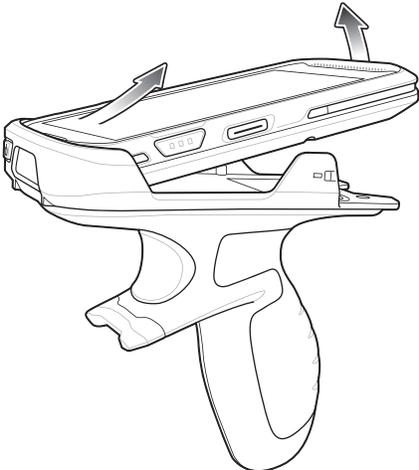
1. Using thumb, push the TC20 up.

**Figure 105** Push Device Up



2. Slide the device away from the front of the Trigger Handle.

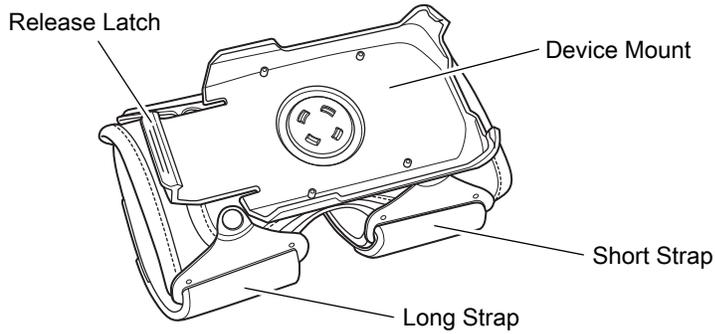
**Figure 106** Remove Device from Trigger Handle



## Wrist/Arm Mount

The Wrist/Arm Mount allows the user to mount the TC20 onto the forearm for hands-free applications. Install the mount on either arm with the short strap installed closest to the wrist. The user might have to remove and re-install the straps for proper installation. See [Strap Installation on page 122](#) for instructions for installing straps.

**Figure 107** Wrist/Arm Mount

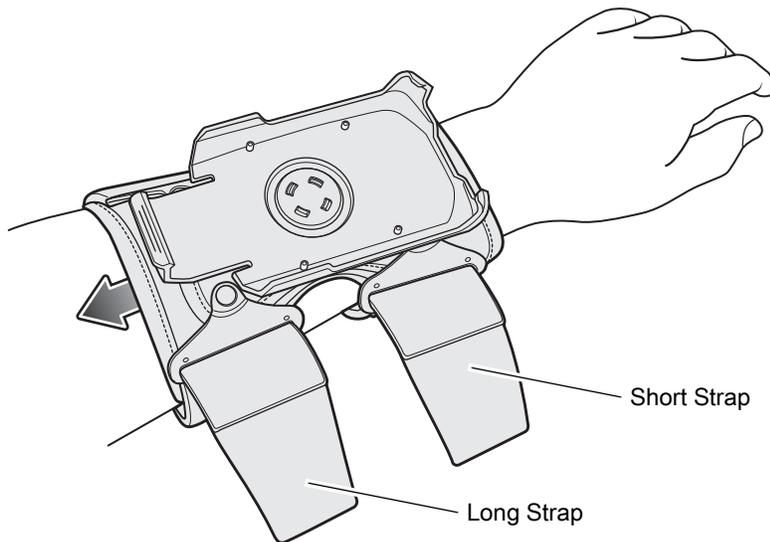


## Wrist/Arm Mount Installation

To install the Wrist/Arm Mount:

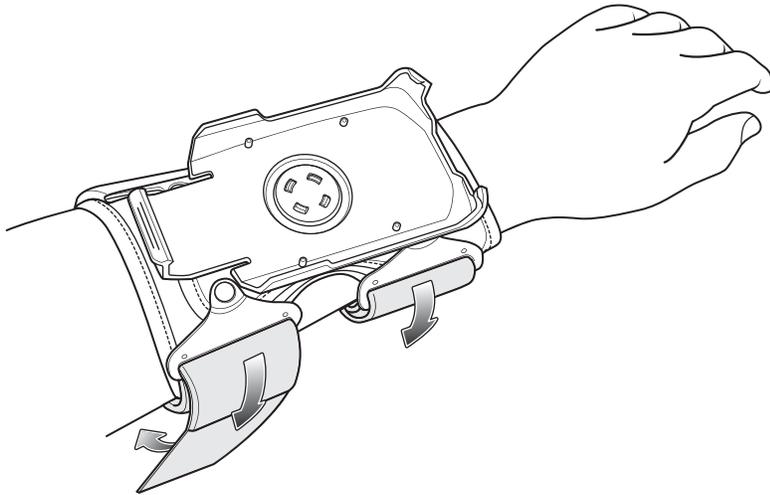
1. Loosen both straps.
2. Slide the Wrist/Arm Mount onto arm with the short strap closest to the wrist.

**Figure 108** Slide onto Forearm



3. Tighten both straps on forearm and press hook and loop material together.

**Figure 109** Tighten Straps

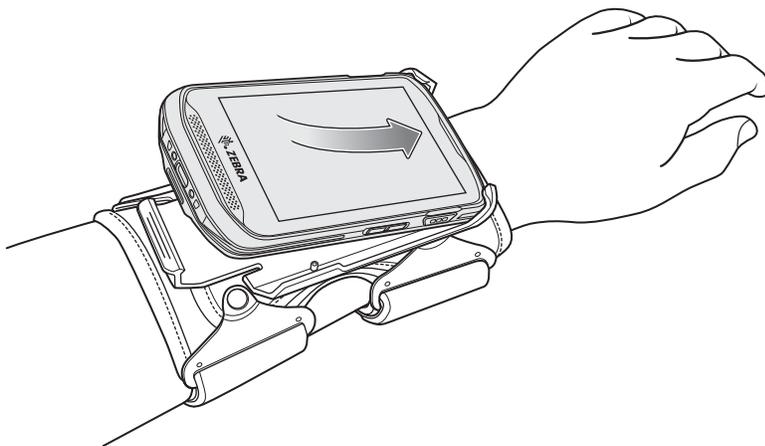


## Device Installation

To install the TC20 onto the mount:

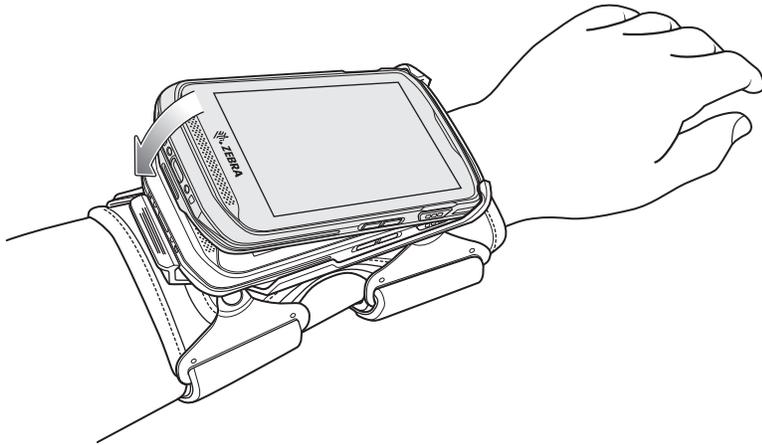
1. Insert the top of the TC20 into the end of the mount.

**Figure 110** Insert TC20 in Holder



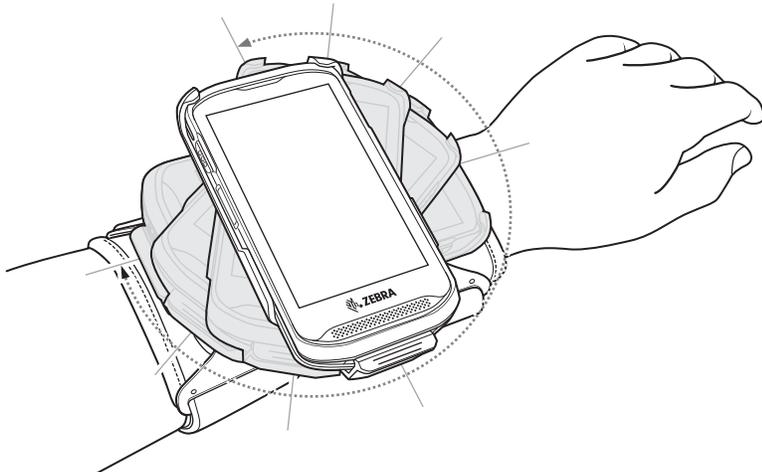
2. Rotate the bottom of the TC20 into the mount and snap into place.

**Figure 111** Secure Device



3. Rotate the TC20 for best viewing.

**Figure 112** Device Rotation

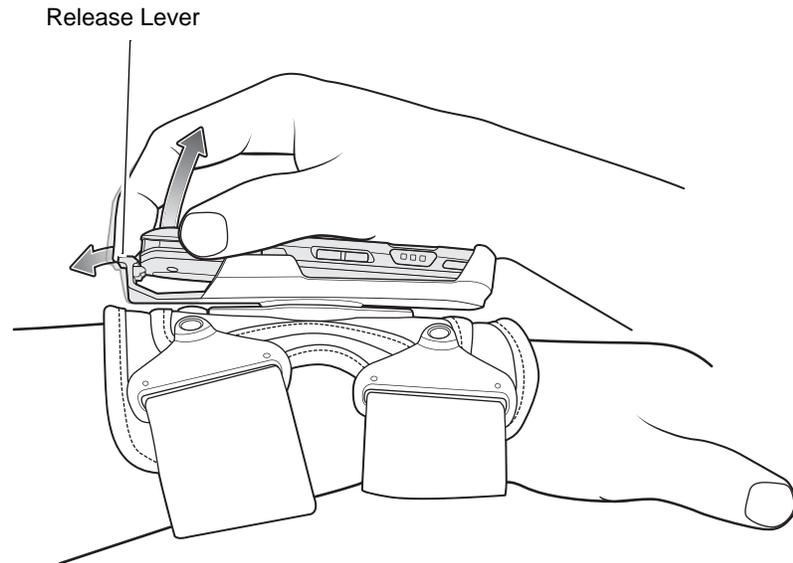


## Device Removal

To remove the TC20 from the Wrist/Arm Mount:

1. Press down on the release lever.
2. Slide the TC20 out of the mount.

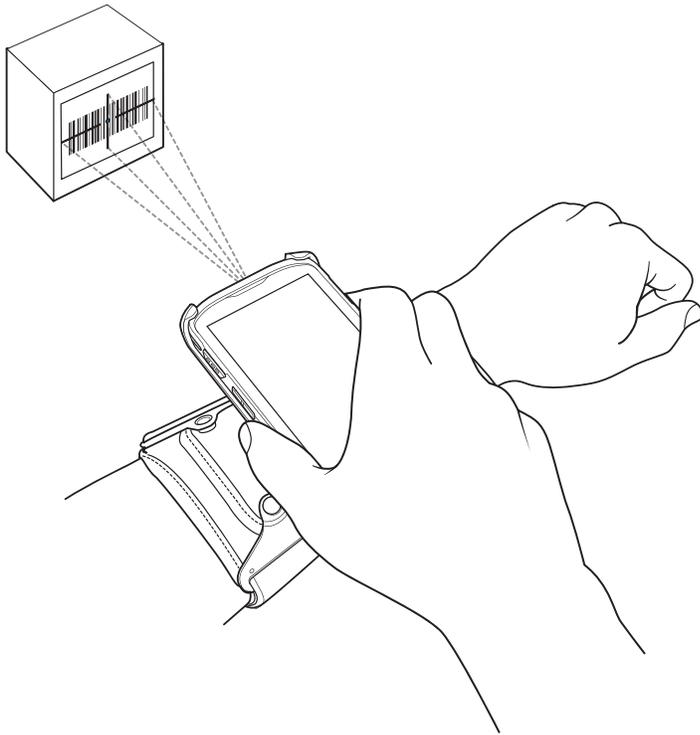
**Figure 113** TC20 Removal



## Scanning

To scan with TC20 in the wrist mount, rotate the device as shown below.

**Figure 114** Scanning with Wrist Mount

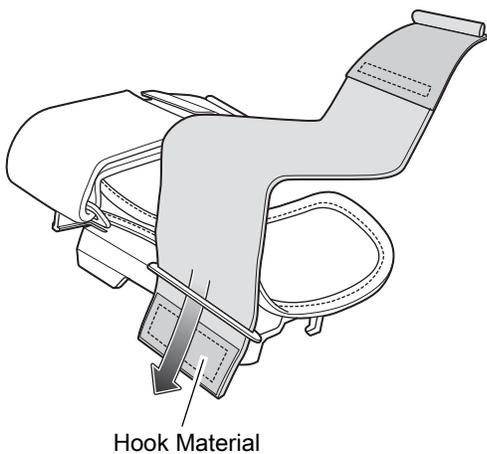


## Strap Installation

The user can remove strap for replacement or clean and then re-install new straps.

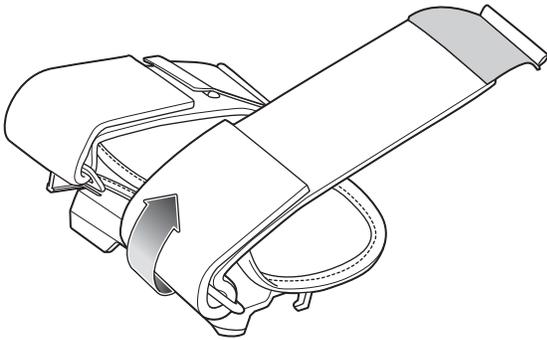
1. Remove existing straps.
2. Feed the soft end of the strap through the slot on the rear holder with hook material positioned as shown below.

**Figure 115** Feed Strap through Rear Slots



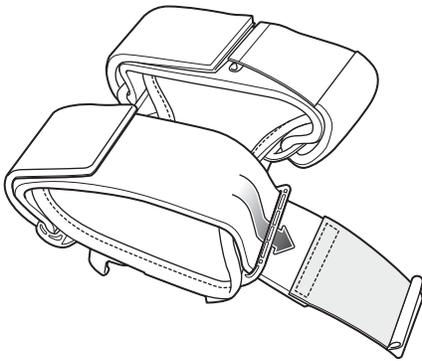
3. Fold end over and press hook and loop material together.

**Figure 116** Fold End and Secure



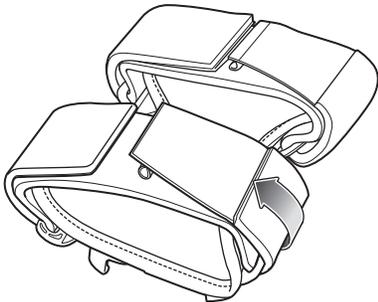
4. Feed the hard end through the slot in the front holder.

**Figure 117** Feed End Through Front Slot



5. Fold over and press the hook and loop material together.

**Figure 118** Fold End and Secure



## Hand Strap



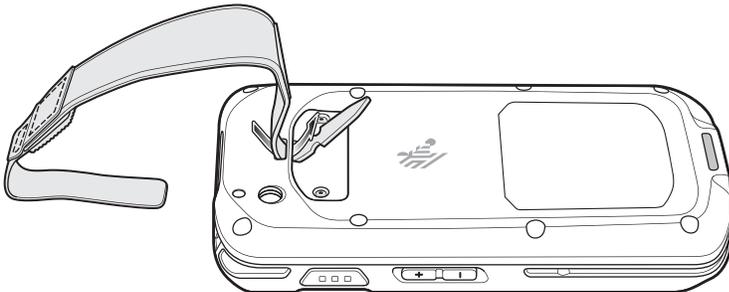
**NOTE** There are two different hand straps for the TC20 and the TC20K. The TC20K hand strap is longer. TC20 hand strap installation is shown below. TC20K hand strap installation is the same.

The hand strap provides securing when holding the device.

To install the hand strap on the TC20:

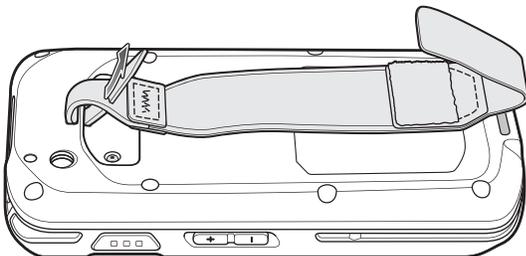
1. Feed the top end of the hand strap through the slot at the top of the TC20.

**Figure 119** Insert Hand Strap Through Top Mounting Point



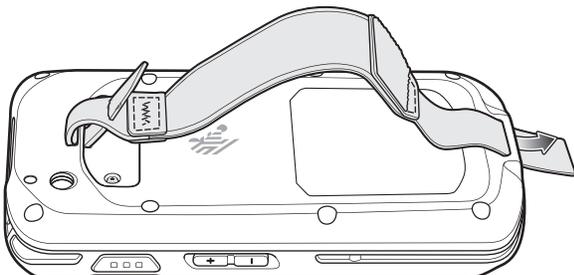
2. Pull the end through the slot.

**Figure 120** Feed End Through Slot



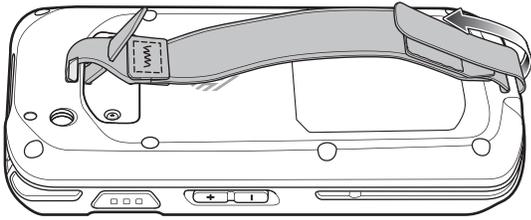
3. Insert the end of the hand strap into the slot on the hand strap.
4. Pull the end until the notch sits into the slot.
5. Feed the other end of the hand strap through the slot at the bottom of the TC20.

**Figure 121** Insert Hand Strap Through Bottom Mounting Point



6. Pull the end through the slot.
7. Press the hook material against the loop material.

**Figure 122** Adjust and Close Hand Strap End

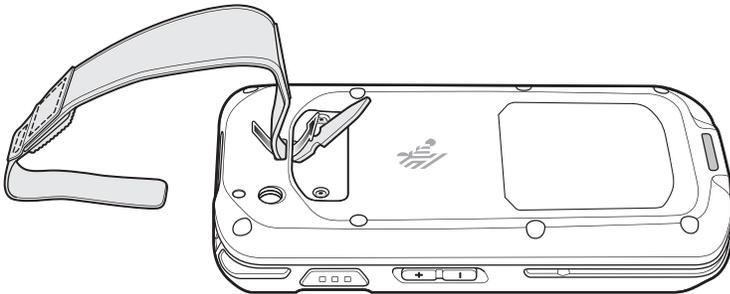


8. Place hand between device and hand strap and adjust hand strap as necessary.

To install the hand strap on the TC20 with an Extended Power Pack:

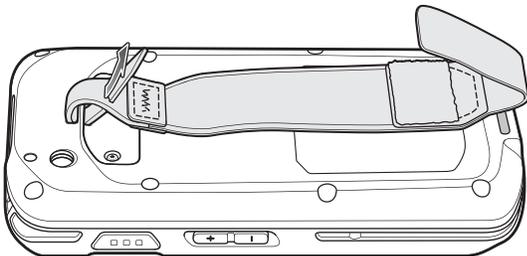
1. Feed the top end of the hand strap through the slot at the top of the TC20.

**Figure 123** Insert Hand Strap Through Top Mounting Point



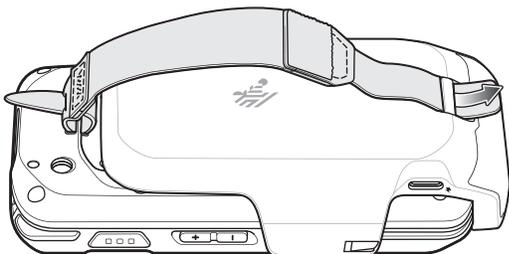
2. Pull the end through the slot.
3. Insert the end of the hand strap into the slot on the hand strap.
4. Pull the end until the notch sits into the slot.

**Figure 124** Feed End Through Slot



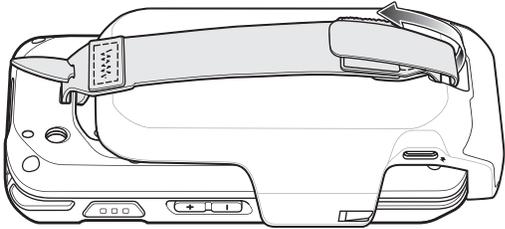
5. Feed the other end of the hand strap through the slot at the bottom of the TC20.
6. Slide the TC20 into the Extended Power Pack.

**Figure 125** Insert Hand Strap Through Power Pack Bottom Mounting Point



7. Pull the end through the slot.
8. Press the hook material against the loop material.

**Figure 126** Adjust and Close



9. Place hand between device and hand strap and adjust hand strap as necessary.

---

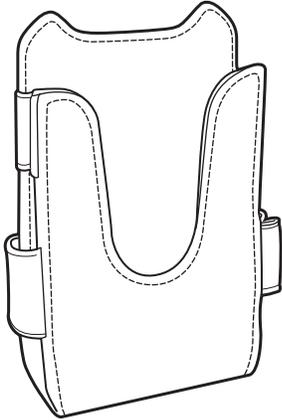
## Soft Holster



**NOTE** There are two different soft holsters for the TC20 and the TC20K. The TC20K soft holster is longer. TC20 soft holster installation is shown below. TC20K soft holster installation is the same.

Use the soft holster to securely hold the device on a belt for easy access. The holster has an adjustable belt for securing the device or Trigger Handle.

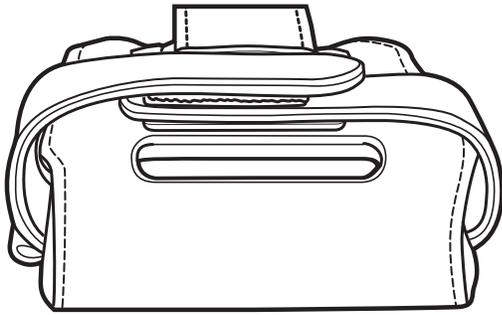
**Figure 127** Soft Holster



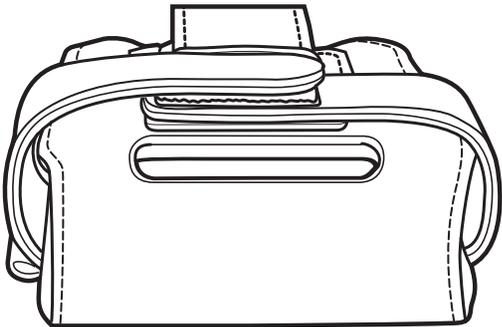
### Adjusting the Holster

The holster has an adjustable belts that securely holds the device or Trigger Handle.

**Figure 128** Adjust Belts



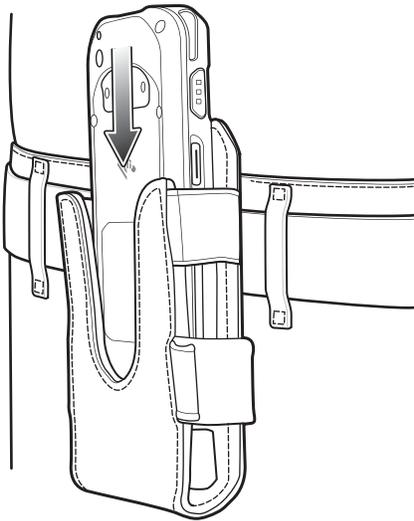
Pull Belts Tight for Device



Leave Belts Loose for Trigger Handle and Extended Power Pack

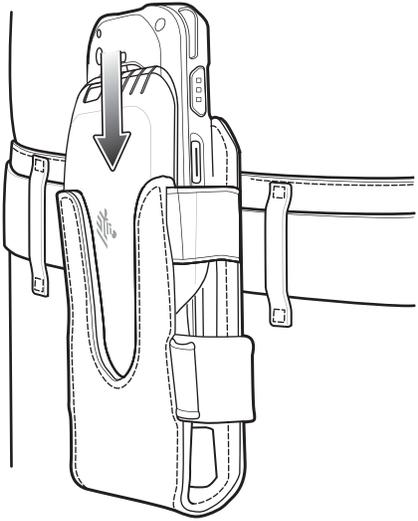
Insert the device into the holster with the device exit window facing up and the display against the body.

**Figure 129** Device in Holster



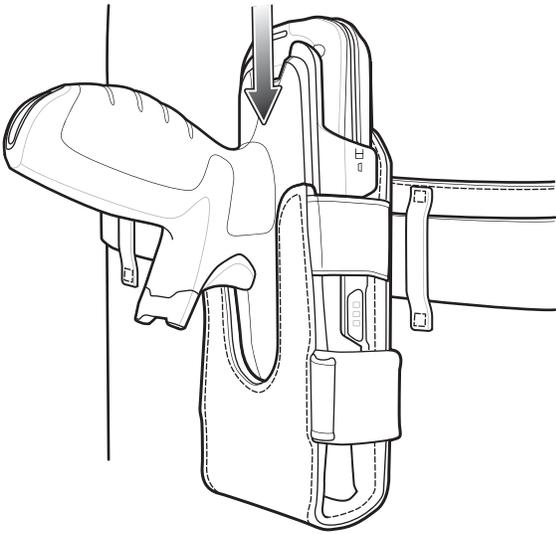
Insert the device and Extended Power Pack into the holster with the device exit window facing up and the display against the body.

**Figure 130** Device with Extended power Pack in Holster



Insert the Trigger Handle into the holster with the device exit window facing down.

**Figure 131** Trigger Handle in Holster



# Maintenance and Troubleshooting

This chapter includes instructions on cleaning and storing the device, and provides troubleshooting solutions for potential problems during operation.

---

## Maintaining the TC20

For trouble-free service, observe the following tips when using the TC20:

- Do not scratch the screen of the TC20. When working with the TC20 use an approved stylus or plastic-tipped pens intended for use with a touch-sensitive screen. Never use an actual pen or pencil or other sharp object on the surface of the TC20 screen.
- The touch-sensitive screen of the TC20 is glass. Do not drop the TC20 or subject it to strong impact.
- Protect the TC20 from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.
- Do not store or use the TC20 in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the TC20. If the surface of the TC20 screen becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.

---

## Display Best Practices

### Image Retention

Image retention may occur when a static image continuously displays for extended periods of time. A user may see a faint remnant of the image even after a new image displays. To prevent image retention:

- set the display to turn off after a few minutes of idle time.
- rotate background images on a periodic basis.
- turn off the display when the device is not in use.
- use a screen saver with the following characteristics:
  - background color set to black
  - use a small moving image (approximately 2% of the display size).
  - move the image randomly across the screen
  - screen saver should be active as long as the static image is used.

---

## Long-Term Storage

When storing the device for long periods of time, ensure that the battery has at least 50% charge and is stored at (temperature).

---

## Cleaning Instructions



**CAUTION** Always wear eye protection.

Read warning label on compressed air and alcohol product before using.

If you have to use any other solution for medical reasons please contact the Global Customer Support Center for more information.



**WARNING!** Avoid exposing this product to contact with hot oil or other flammable liquids. If such exposure occurs, unplug the device and clean the product immediately in accordance with these guidelines.

### Approved Cleanser Active Ingredients

100% of the active ingredients in any cleaner must consist of one or some combination of the following: isopropyl alcohol, bleach/sodium hypochlorite, hydrogen peroxide or mild dish soap.

### Harmful Ingredients

The following chemicals are known to damage the plastics on the device and should not come in contact with the device: ammonia solutions, compounds of amines or ammonia; acetone; ketones; ethers; aromatic and chlorinated hydrocarbons; aqueous or alcoholic alkaline solutions; ethanolamine; toluene; trichloroethylene; benzene; carbolic acid and TB-lysoform.

### Cleaning Instructions

Do not apply liquid directly to the device. Dampen a soft cloth or use pre-moistened wipes. Do not wrap the device in the cloth or wipe, but gently wipe the unit. Be careful not to let liquid pool around the display window or other places. Allow the unit to air dry before use.

### Special Cleaning Notes

Many vinyl gloves contain phthalate additives, which are often not recommended for medical use and are known to be harmful to the housing of the device. The device should not be handled while wearing vinyl gloves containing phthalates, or before hands are washed to remove contaminant residue after gloves are removed. If products containing any of the harmful ingredients listed above are used prior to handling the device, such as hand sanitizer that contain ethanolamine, hands must be completely dry before handling the device to prevent damage to the plastics.

### Cleaning Materials Required

- Alcohol wipes
- Lens tissue
- Cotton-tipped applicators
- Isopropyl alcohol
- Can of compressed air with a tube.

### Cleaning Frequency

The cleaning frequency is up to the customer's discretion due to the varied environments in which the mobile devices are used. They may be cleaned as frequently as required, but it is advisable to clean the camera window periodically when used in dirty environments to ensure optimum performance.

---

## Cleaning the TC20

### Housing

Using the alcohol wipes, wipe the housing including buttons.

### Display

The display can be wiped down with the alcohol wipes, but care should be taken not to allow any pooling of liquid around the edges of the display. Immediately dry the display with a soft, non-abrasive cloth to prevent streaking.

### Camera and Exit Window

Wipe the camera and exit window periodically with a lens tissue or other material suitable for cleaning optical material such as eyeglasses.

---

## Connector Cleaning

To clean the connectors:

1. Power off the device
2. Dip the cotton portion of the cotton-tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton-tipped applicator back-and-forth across the connector. Do not leave any cotton residue on the connector.
4. Repeat at least three times.
5. Use the cotton-tipped applicator dipped in alcohol to remove any grease and dirt near the connector area.
6. Use a dry cotton-tipped applicator and repeat steps 4 through 6.



**CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is away from your face.

7. Spray compressed air on the connector area by pointing the tube/nozzle about ½ inch away from the surface.
8. Inspect the area for any grease or dirt, repeat if required.

---

## Cleaning Cradle Connectors

To clean the connectors on a cradle:

1. Remove the DC power cable from the cradle.
2. Dip the cotton portion of the cotton-tipped applicator in isopropyl alcohol.
3. Rub the cotton portion of the cotton-tipped applicator along the pins of the connector. Slowly move the applicator back-and-forth from one side of the connector to the other. Do not leave any cotton residue on the connector.
4. All sides of the connector should also be rubbed with the cotton-tipped applicator.



**CAUTION** Do not point nozzle at yourself and others, ensure the nozzle or tube is pointed away from your face.

5. Spray compressed air in the connector area by pointing the tube/nozzle about ½ inch away from the surface.
6. Remove any lint left by the cotton-tipped applicator.
7. If grease and other dirt can be found on other areas of the cradle, use a lint-free cloth and alcohol to remove.
8. Allow at least 10 to 30 minutes (depending on ambient temperature and humidity) for the alcohol to air dry before applying power to cradle.

If the temperature is low and humidity is high, longer drying time is required. Warm temperature and dry humidity requires less drying time.

## Troubleshooting

The following tables provides typical problems that might arise and the solution for correcting the problem.

### TC20

**Table 20** Troubleshooting the TC20

Problem	Cause	Solution
When pressing the power button the TC20 does not turn on.	Battery not charged.	Charge the battery in the TC20.
	System crash.	Perform a reset.
When pressing the power button the TC20 does not turn on but two LEDs blink.	Battery charge is at a level where data is maintained but battery should be re-charged.	Charge the battery in the TC20.
Battery did not charge.	Battery failed.	Contact system administrator.
	TC20 removed from cradle while battery was charging.	Insert TC20 in cradle. See <a href="#">Charging the Battery on page 18</a> .
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 40°C (104°F).
Cannot see characters on display.	TC20 not powered on.	Press the <b>Power</b> button.
During data communication with a host computer, no data transmitted, or transmitted data was incomplete.	TC20 removed from cradle or disconnected from host computer during communication.	Replace the TC20 in the cradle, or reattach the communication cable and re-transmit.
	Incorrect cable configuration.	See the system administrator.
	Communication software was incorrectly installed or configured.	Perform setup.
During data communication over Wi-Fi, no data transmitted, or transmitted data was incomplete.	Wi-Fi radio is not on.	Turn on the Wi-Fi radio.
	You moved out of range of an access point.	Move closer to an access point.

**Table 20** Troubleshooting the TC20 (Continued)

Problem	Cause	Solution
During data communication over Bluetooth, no data transmitted, or transmitted data was incomplete.	Bluetooth radio is not on.	Turn on the Bluetooth radio.
	You moved out of range of another Bluetooth device.	Move within 10 meters (32.8 feet) of the other device.
No sound.	Volume setting is low or turned off.	Adjust the volume.
TC20 shuts off.	TC20 is inactive.	The display turns off after a period of inactivity. Set this period to 15 seconds, 30 seconds, 1, 2, 5, 10 or 30 minutes.
	Battery is depleted.	Charge the battery.
Tapping the window buttons or icons does not activate the corresponding feature.	The device is not responding.	Reset the device.
A message appears stating that the TC20 memory is full.	Too many files stored on the TC20.	Delete unused memos and records. If necessary, save these records on the host computer (or use an SD card for additional memory).
	Too many applications installed on the TC20.	Remove user-installed applications on the TC20 to recover memory. Select  >  <b>Apps</b> . Select the unused program and tap <b>Uninstall</b> .
The TC20 does not decode with reading barcode.	Scanning application is not loaded.	Load a scanning application on the TC20 or enable DataWedge. See the system administrator.
	Unreadable barcode.	Ensure the symbol is not defaced.
	Distance between exit window and barcode is incorrect.	Place the TC20 within proper scanning range.
	TC20 is not programmed for the barcode.	Program the TC20 to accept the type of barcode being scanned. Refer to the EMDK or DataWedge application.
	TC20 is not programmed to generate a beep.	If the TC20 does not beep on a good decode, set the application to generate a beep on good decode.
	Battery is low.	If the scanner stops emitting a laser beam upon a trigger press, check the battery level. When the battery is low, the scanner shuts off before the TC20 low battery condition notification. Note: If the scanner is still not reading symbols, contact the distributor or the Global Customer Support Center.

**Table 20** Troubleshooting the TC20 (Continued)

Problem	Cause	Solution
TC20 cannot find any Bluetooth devices nearby.	Too far from other Bluetooth devices.	Move closer to the other Bluetooth device(s), within a range of 10 meters (32.8 feet).
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s) to find.
	The Bluetooth device(s) are not in discoverable mode.	Set the Bluetooth device(s) to discoverable mode. If needed, refer to the device's user documentation for help.
Cannot unlock TC20.	User enters incorrect password.	<p>If the user enters an incorrect password eight times, the user is requested to enter a code before trying again.</p> <p>If the user forgot the password, contact system administrator.</p>

# Technical Specifications

The following sections provide technical specification for the device.

## TC20

**Table 21** TC20 Technical Specifications

Item	Description
<b>Physical Characteristics</b>	
Dimensions	TC200J-10: Length: 13.4 cm (5.3 in.) Width: 7.2 cm (2.8 in.) Depth: 1.6 cm (0.6 in.) TC200J-1K: Height: 16.4 cm (6.5 in.) Width: 7.2 cm (2.8 in.) Depth: 1.6 cm (0.6 in.)
Weight	TC200J-10: 195 g (6.8 oz) TC200J-1K: 215 g (7.6 oz)
Display	4.3 in. High Definition (800 x 480) WVGA
Touch Panel	Capacitive Touch Panel; multi-touch
Backlight	Light Emitting Diode (LED) backlight
Internal Battery	Rechargeable 3,000 mAh (typical) / 2,900 mAh (minimum) Li-Ion.
Expansion Slot	User accessible microSD up to 128 GB SDHC formatted in FAT32.
Connection Interface	One USB OTG (host/client) type C connector
Notification	Audible tone; multi-color LEDs, vibration
Voice and Audio	PTT Pro and PTT Express support. Voice support (internal speaker/microphone). Two microphones; speaker; and audio jack.

## Specifications

**Table 21** TC20 Technical Specifications (Continued)

Item	Description
<b>Performance Characteristics</b>	
CPU	QCOM MSM8937 64-bit, 8-core, ARM Cortex A53 1.4 GHz, 512 kB L2 cache, power-optimization
Operating System	Android 7.1.2 Nougat
Memory	2 GB RAM/16 GB Flash
Output Power	USB - 5 VDC @ 500 mA max
<b>User Environment</b>	
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Charging Temperature	0° C to 40° C (32°F to 104°F)
Relative Humidity	Operating: 5 to 95% non-condensing
Drop Specification	Multiple 1.2 m (4 ft.) to tile over concrete per MIL-STD at room temperature.
Tumble	300 0.5 m (1.6 ft.) tumbles
Sealing	IP54
Electrostatic Discharge (ESD)	± 20 kVDC air discharge, ± 10 kVDC direct discharge, ± 10 kVDC indirect discharge
Vibration	4 g's peak, 5 Hz to 2 kHz, 1 hour duration per axis
Thermal Shock	-40°C to 70°C (-40°F to 158°F) rapid transition. 10 cycles: (1 cycle = 1.25 hours at -40°C and 1.25 hours at 70°C.
<b>Interactive Sensor Technology (IST)</b>	
Motion Sensor	3-axis accelerometer
Light Sensor	Ambient light sensor to auto adjust display backlight brightness
Proximity Sensor	Automatically detects when the user places the handset against head during a phone call to disable display output and touch input.
<b>Wireless LAN Data and Voice Communications</b>	
Radio	IEEE 802.11 a/b/g/n/ac/d/r/k/w/v/h/i IPv4, IPv6
Data Rates Supported	2.4GHz: 802.11b/g/n - up to 150 Mbps 5GHz: 802.11a/n/ac - up to 433.3 Mbps
Operating Channels	2.4 GHz: Chan 1 - 13; 1 - 11 (US) 5GHz: Chan 36-48, 52-64, 100-140, 149-151, 161-165 Channel Bandwidth: 20, 40, 80 MHz Actual operating channels/frequencies and bandwidth depend on regulatory rules and certification agency.

## Specifications

**Table 21** TC20 Technical Specifications (Continued)

Item	Description
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
Certifications	802.11 a/b/g/n/ac; WPA; WPA2
Fast Roam	802.11
<b>Wireless PAN Data and Voice Communications</b>	
Bluetooth	Bluetooth v4.2 Low Energy (LE)
<b>Data Capture Specifications</b>	
2D Imager	SE2100 imager (1D and 2D) with LED aimer. SE4710 imager (1D and 2D) with LED aimer.
Camera	Rear - 8 MP autofocus; f/2.4 aperture; rear camera flash LED generates balanced white light; supports Torch mode. (Available only on TC20 with WSE4710 scan engine).
<b>2D Imager Engine (SE2100) Specifications</b>	
Field of View	Horizontal - 41.5° Vertical - 31.7°
Image Resolution	640 horizontal X 480 vertical pixels
Roll	360°
Pitch Angle	± 60° from normal
Skew Tolerance	± 60° from normal
Ambient Light	Sunlight: 10,000 ft. candles (107,639 lux)
Focal Distance	From front of engine: 10.7 cm (4.2 in.)
Illumination System	LED: Ultra white Pattern Angle: 80° at 505 intensity
<b>2D Imager Engine (SE4710) Specifications</b>	
Field of View	Horizontal - 48.0° Vertical - 36.7°
Image Resolution	1280 horizontal X 960 vertical pixels
Roll	360°
Pitch Angle	± 60° from normal
Skew Tolerance	± 60° from normal
Ambient Light	Sunlight: 10,000 ft. candles (107,639 lux)
Focal Distance	From front of engine: 17.7 cm (7.0 in.)

## Specifications

**Table 21** TC20 Technical Specifications (Continued)

Item	Description
Laser Aiming Element	Visible Laser Diode (VLD): 655 nm ± 10 nm Central Dot Optical Power: 0.6 mW (typical) Pattern Angle: 48.0° horizontal, 38.0° vertical
Illumination System	LEDs: Warm white LED Pattern Angle: 80° at 505 intensity

**Table 22** Data Capture Supported Symbologies

Item	Description
1D barcodes	Code 39, Code 128, Code 93, Codabar, MSI, UPC/EAN, Interleaved 2 of 5, RSS
2D barcodes	PDF-417, Micro PDF-417, Composite, TLC-39, Datamatrix, QR Code, Micro QRCode, Maxicode, Postal codes, Aztec Code, Han Xin

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