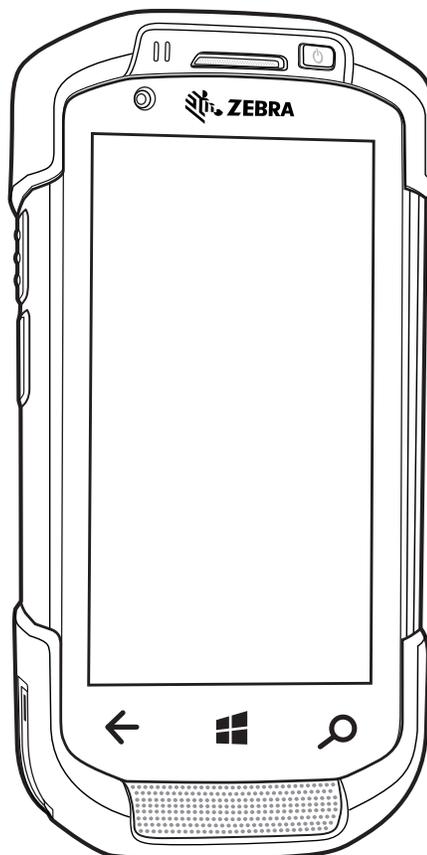




TC70x



Touch Computer

Integrator Guide for Windows 10 IoT Mobile Enterprise



TC70X
INTEGRATOR GUIDE WITH WINDOWS 10
IOT MOBILE ENTERPRISE

MN-002885-02

Rev. A

January 2017

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Revision History

Changes to the original manual are listed below:

Change	Date	Description
01 Rev A	10/2016	Initial release.
02 Rev A	1/2017	Add support for Zebra Profile application.

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ABOUT THIS GUIDE

Introduction

This guide provides information about using the TC70x touch computer and accessories.

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

Documentation Set

The documentation set for the TC70x provides information for specific user needs, and includes:

- *TC70x* Quick Start Guide with Windows 10 IOT Mobile Enterprise - describes how to get the TC70x up and running.
- *TC70x* User Guide with Windows 10 IOT Mobile Enterprise - describes how to use the TC70x.
- *TC70x* Integrator Guide with Windows 10 IOT Mobile Enterprise - describes how to set up the TC70x and accessories.

Configurations

This guide covers the following configurations:

Configuration	Radios	Display	Memory	Data Capture Options	Operating System
TC700J	WLAN: 802.11 a/b/g/n/d/h/i/w/ac WPAN: Bluetooth v4.0 Low Energy	4.7" High Definition (1280 x 720) LCD	2 GB RAM / 16 GB Flash (SLC High Reliability Flash)	2D imager and integrated NFC	Windows 10 IoT Mobile Enterprise

Software Versions

To determine the current software versions:

1. Swipe down from the top of the screen, and touch  **All settings** >  **System** > **About**.
2. Touch **More Info** button.
 - **Model** - Displays the model number.
 - **Software** - Displays the operating system type.
 - **Version** - Displays the software version number.
 - **Microsoft OS build** - Displays the software build number.

Chapter Descriptions

Topics covered in this guide are as follows:

- [Chapter 1, Getting Started](#) provides information on getting the TC70x up and running for the first time.
- [Chapter 2, Accessories](#) describes the available accessories and how to use them with the TC70x.
- [Chapter 3, WLAN Configuration](#) provides information for configuring WLAN network.
- [Chapter 4, USB Communication](#) describes how to connect the TC70x to a host computer using USB.
- [Chapter 5, Settings](#) provides the settings for configuring the TC70x.
- [Chapter 6, Scanner Profiles](#) provides instructions for create scanning profile using the Zebra Scanning Profile application.
- [Chapter 7, Administrator Utilities](#) provides information for using the suite of administrative tools for configuring the TC70x.
- [Chapter 8, Security](#) provides information about how to secure the device.
- [Chapter 9, Provisioning](#) provides information for provision a device.
- [Chapter 10, Application Deployment](#) provides information for developing and managing applications.
- [Chapter 11, Field Medic](#) provide information on using the Field Medic application.
- [Chapter 12, Maintenance and Troubleshooting](#) includes instructions on cleaning and storing the TC70x, and provides troubleshooting solutions for potential problems during TC70x operation.
- [Appendix A, Technical Specifications](#) provides the technical specifications for the TC70x.
- [Appendix B, Application Development](#) provides information on developing applications for the device.

Notational Conventions

The following conventions are used in this document:

- *Italics* are used to highlight the following:
 - Chapters and sections in this and related documents
 - Icons on a screen.
- **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
 - Button names on a screen.
- Bullets (•) indicate:
 - Action items
 - Lists of alternatives
 - Lists of required steps that are not necessarily sequential
- Sequential lists (for example, lists that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set. These icons and their associated meanings are described below.



NOTE NOTE contains information more important than the surrounding text, such as exceptions or preconditions. They also refer the reader elsewhere for additional information, remind the reader how to complete an action (when it is not part of the current procedure, for instance), or tell the reader where something is located on the screen. There is no warning level associated with a note.



CAUTION The word CAUTION with the associated safety icon implies information that, if disregarded, may result in minor or moderate injury, or serious product damage.



WARNING! The word WARNING with the associated safety icon implies information that, if disregarded, could result in death or serious injury, or serious product damage.

Related Documents

- *TC70x Quick Start Guide with Windows 10 IoT Mobile Enterprise*, p/n MN-002827-xx.
- *TC70x Regulatory Guide with Windows 10 IoT Mobile Enterprise*, p/n MN-002884-xx.
- *TC70x User Guide with Windows 10 IoT Mobile Enterprise*, p/n MN-002668-xx.

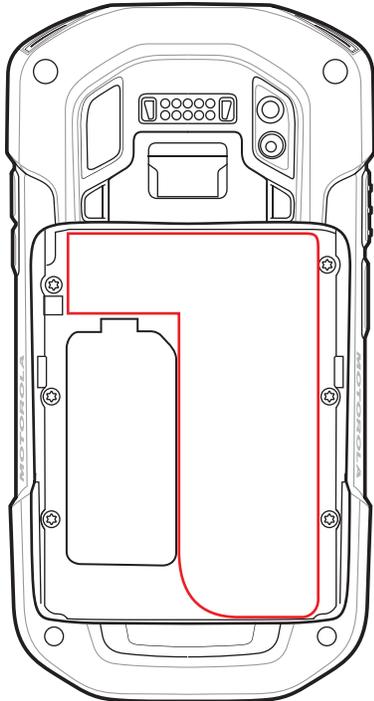
For the latest version of this guide and all guides, go to: <http://www.zebra.com/support>.

Service Information

If you have a problem with the equipment, contact Customer Support in the region. Contact information is available at: <http://www.zebra.com/support>.

When contacting support, please have the following information available:

- Serial number of the unit (found on manufacturing label)
- Model number or product name (found on manufacturing label)
- Software type and version number
- IMEI number



Customer Support responds to calls by email or telephone within the time limits set forth in support agreements.

If the problem cannot be solved by Customer Support, the user may need to return the equipment for servicing and will be given specific directions. We are 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. Remove the SIM card and/or microSD card from the device before shipping for service.

If the device was purchased from a business partner, contact that business partner for support.

CHAPTER 1 GETTING STARTED

Introduction

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

Setup

Perform this procedure to start using the TC70x for the first time.

1. Install a micro secure digital (SD) card (optional).
2. Install hand strap (optional).
3. Install the battery.
4. Charge the TC70x.
5. Power on the TC70x.

Installing a microSD Card

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



CAUTION For proper electrostatic discharge (ESD) precautions to avoid damaging the SIM card. Proper ESD precautions include, but not limited to, working on an ESD mat and ensuring that the user is properly grounded.

1. Remove the hand strap, if installed.
2. Lift the access door.

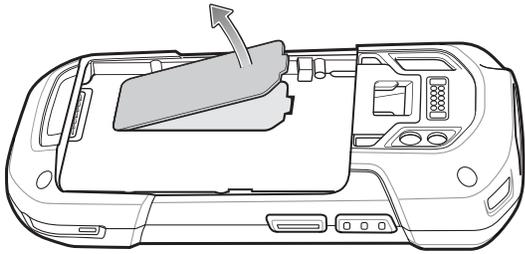


Figure 1-1 *Lift Access Door*

3. Insert the microSD card into the card holder door ensuring that the card slides into the holding tabs on each side of the door.

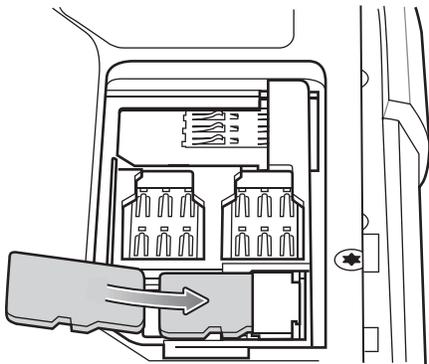


Figure 1-2 *Insert microSD Card in Holder*

4. Re-install the access door.

Installing the Hand Strap and Battery

To install the hand strap and battery:

✓ **NOTE** Installation of the hand strap is optional. Skip this section if not installing the hand strap.

1. Remove the hand strap filler from the hand strap slot. Store the hand strap filler in a safe place for future replacement.

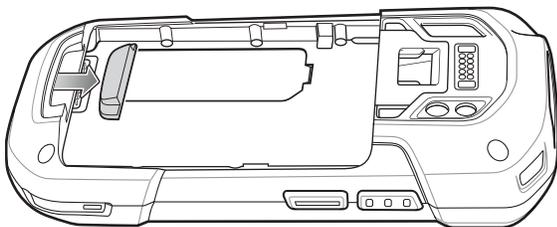


Figure 1-3 *Remove Filler*

2. Insert the hand strap plate into the hand strap slot.

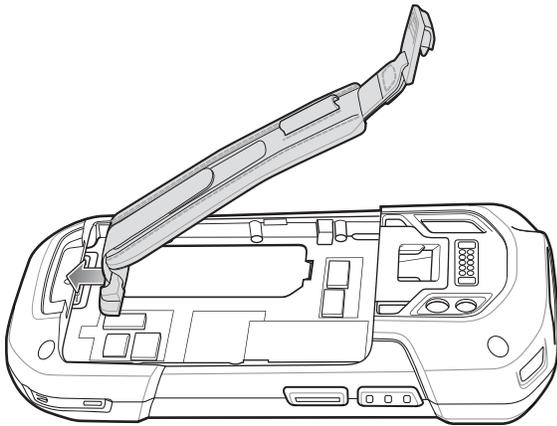


Figure 1-4 *Insert Hand Strap*

3. Insert the battery, bottom first, into the battery compartment in the back of the TC70x.

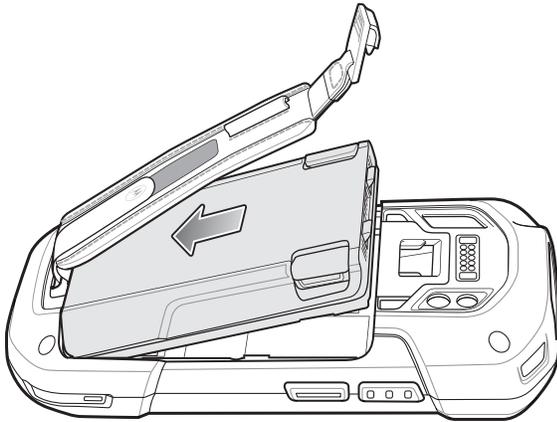


Figure 1-5 *Insert Bottom of Battery into Battery Compartment*

4. Rotate the top of the battery into the battery compartment.
5. Press the battery down into the battery compartment until the battery release latches snap into place.

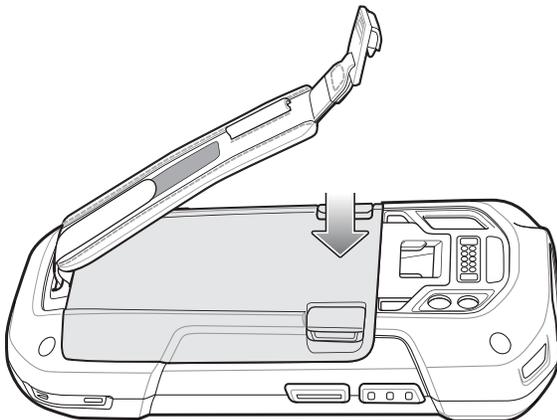


Figure 1-6 *Press Down on Battery*

6. Place hand strap clip into hand strap mounting slot and pull down until it snaps into place.

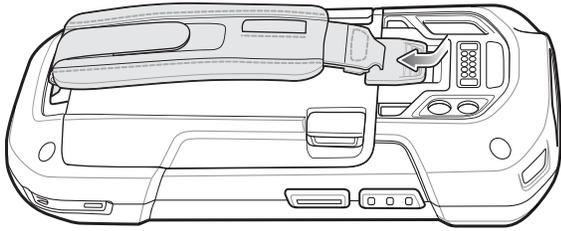


Figure 1-7 *Secure Hand Strap Clip*

Installing the Battery

To install the battery:

1. Insert the battery, bottom first, into the battery compartment in the back of the TC70x.

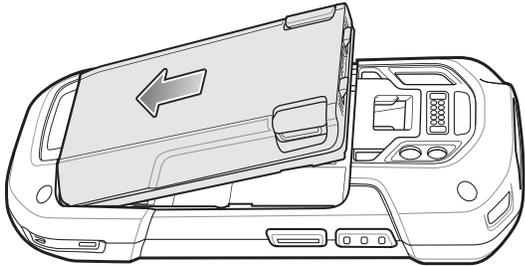


Figure 1-8 *Insert Bottom of Battery into Battery Compartment*

2. Rotate the top of the battery into the battery compartment.
3. Press the battery down into the battery compartment until the battery release latches snap into place.

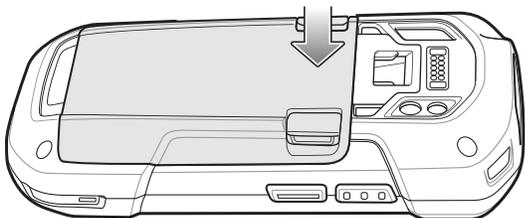


Figure 1-9 *Press Down on Battery*

Charging the Battery

Before using the TC70x for the first time, charge the main battery until the green Charging/Notification light emitting diode (LED) remains lit. To charge the TC70x, use a cable or a cradle with the appropriate power supply. For information about the accessories available for the TC70x, see [Chapter 2, Accessories](#) for more information.

- Snap-On USB Cable
- Charging Cable Cup
- 2-Slot Charge Only Cradle
- 2-Slot USB/Ethernet Cradle
- 5-Slot Charge Only Cradle
- 5-Slot Ethernet Cradle

- Charge Only Vehicle Cradle
- Auto Charging Cable Cup.
- Serial Cable Cup

The 4,620 mAh battery fully charges in approximately six hours at room temperature.

Charge batteries in temperatures from 0°C to 40°C (32°F to 104°F). The TC70x or accessory always performs battery charging in a safe and intelligent manner. At higher temperatures (e.g. approximately +37°C (+98°F)) the TC70x or accessory may for small periods of time alternately enable and disable battery charging to keep the battery at acceptable temperatures. The TC70x or accessory indicates when charging is disabled due to abnormal temperatures via its LED.

1. To charge the main battery, connect the charging accessory to the appropriate power source.
2. Insert the TC70x into a cradle or attach to a cable. The TC70x turns on and begins charging. The Charging/Notification LED blinks amber while charging, then turns solid green when fully charged.

Charging Indicators

Table 1-1 *Charging/Notification LED Charging Indicators*

State	Indication
Off	TC70x is not charging. TC70x is not inserted correctly in the cradle or connected to a power source. Charger/cradle is not powered.
Slow Blinking Amber (1 blink every 2 seconds)	TC70x is charging.
Solid Green	Charging complete.
Fast Blinking Amber (2 blinks/second)	Charging error, e.g.: Temperature is too low or too high. Charging has gone on too long without completion (typically eight hours).
Slow Blinking Red (1 blink every 2 seconds)	TC70x is charging but the battery is at end of useful life.
Solid Red	Charging complete but the battery is at end of useful life.
Fast Blinking Red (2 blinks/second)	Charging error but the battery is at end of useful life., e.g.: Temperature is too low or too high. Charging has gone on too long without completion (typically eight hours).

Replacing the Battery



CAUTION Do not add or remove SIM, SAM or microSD card during battery replacement.

1. Remove any accessory attached to the device.
2. Press the Power button until the menu appears.
3. Touch **Battery Swap**.
4. Follow the on-screen instructions.

5. Wait for the LED to turn off.
6. If hand strap is attached, slide the hand strap clip up toward the top of the TC70x and then lift.

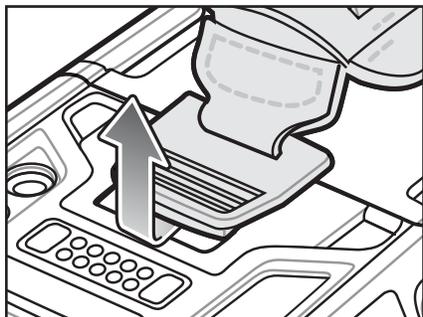


Figure 1-10 *Remove Hand Strap Clip*

7. Press the two battery latches in.

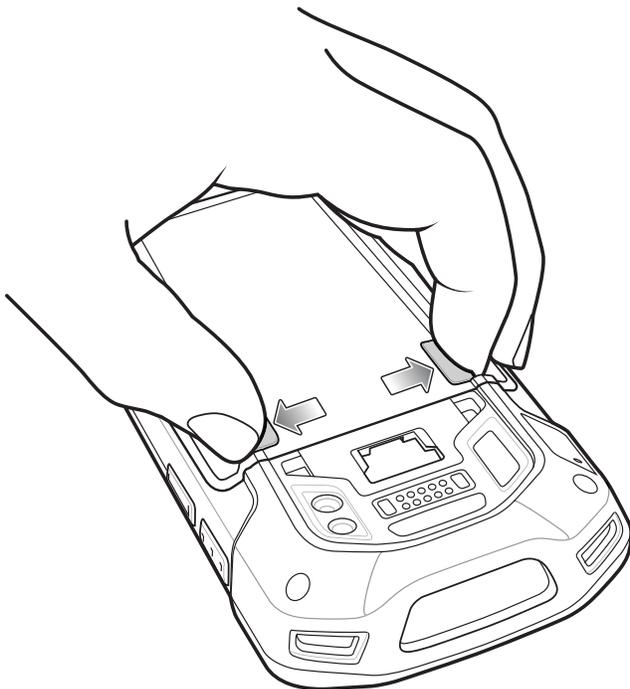


Figure 1-11 *Press Battery Latches*

8. Lift the battery from the TC70x.

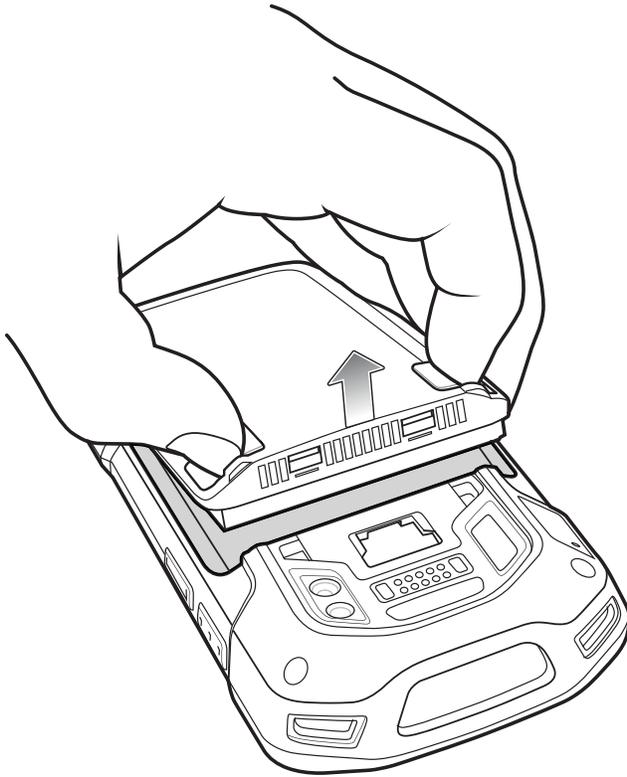


Figure 1-12 *Lift the Battery*



CAUTION Replace the battery within two minutes. After two minutes the device reboots and data may be lost.

9. Insert the replacement battery, bottom first, into the battery compartment in the back of the TC70x.
10. Press the battery down until the battery release latch snaps into place.
11. Replace the hand strap, if required.
12. Press and hold the Power button to turn on the TC70x.

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, slide the hand strap clip up toward the top of the TC70x and then lift.

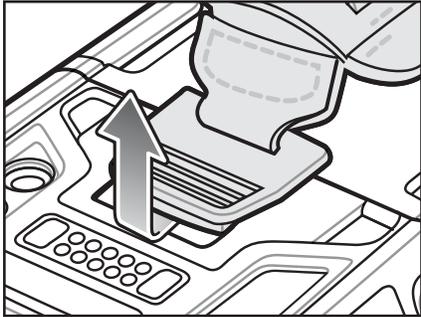


Figure 1-13 *Remove Hand Strap Clip*

5. Press the two battery latches in.
6. Lift the battery from the TC70x.
7. Lift the access door.

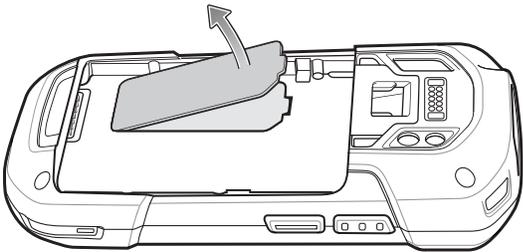


Figure 1-14 *Remove Access Door*

8. Remove microSD card from holder.
9. Press the access door down and ensure that it is properly seated.
10. Insert the replacement microSD card.
11. Replace the access door.

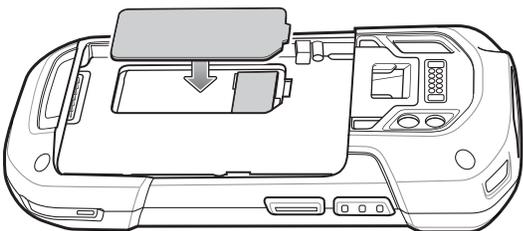


Figure 1-15 *Replace Access Door*

12. Insert the battery, bottom first, into the battery compartment in the back of the TC70x.
13. Press the battery down until the battery release latch snaps into place.
14. Replace the hand strap, if required.
15. Press and hold the Power button to turn on the TC70x.

Resetting the TC70x

The TC70x can be reset to factory settings. This will remove all data on the device.

To reset the TC70x:

1. Swipe down from the top of the screen, and touch  **All settings** >  **Settings** > **About**.
2. Touch **Reset your phone**.

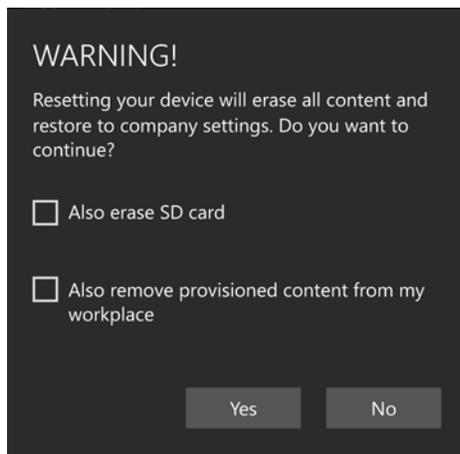


Figure 1-16 *Warning Dialog Box*

3. In the **Warning!** dialog box, select **Also erase SD card** to erase all data on an install microSD card or select **Also remove provisioned content from my workspace** to remove any previously install provisioning packages.
4. Touch **Yes**. The device resets and then returns to factory settings.

CHAPTER 2 ACCESSORIES

Introduction

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

Accessories

This table lists the accessories available for the TC70x.

Table 2-1 *Accessories*

Accessory	Part Number	Description
Cradles		
2-Slot Charge Only Cradle	CRD-TC7X-SEC2U1-01	Provides device and spare battery charging. Use with power supply, p/n PWRS-14000-148R.
2-Slot USB/Ethernet Cradle	CRD-TC7X-SE2EU1-01	Provides device and spare battery charging and USB communication with a host computer and Ethernet communication with a network. Use with power supply, p/n PWRS-14000-148R.
5-Slot Charge Only Cradle	CRD-TC7X-SE5C1-01	Charges up to five devices. Use with power supply, p/n PWRS-14000-241R and DC line cord, p/n 50-16002-029R. Can accommodate one 4-Slot Battery Charger using the Battery Adapter Cup.
5-Slot Ethernet Cradle	CRD-TC7X-SE5EU1-01	Provides device charging and provides Ethernet communication for up to five devices. Use with power supply, p/n PWRS-14000-241R and DC line cord, p/n 50-16002-029R. Can accommodate one 4-Slot Battery Charger using the Battery Adapter Cup.
Cradle Mount	KT-UNIVLBRKT-01R	Mounts the 5-Slot Charge Only Cradle, 5-Slot Ethernet Cradle, and 4-Slot Battery Charger to a wall or rack.

Table 2-1 Accessories (Continued)

Accessory	Part Number	Description
Batteries and Chargers		
4,620 mAh PowerPrecision Battery	BTRY-TC7X-46MA2-01	Replacement battery (single pack).
	BTRY-TC7X-46MA2-10	Replacement battery (10-pack).
4-Slot Spare Battery Charger	SAC-TC7X-4BTYC1-01	Charges up to four battery packs. Use with power supply, p/n PWRS-14000-148R.
Battery Charger Adapter Cup	CUP-SE-BTYADP1-01	Allows for one 4-Slot Battery Charger to be charged and docked on the left most slot of the 5-Slot cradles (maximum one per cradle).
Vehicle Solutions		
Charging Cable Cup	CHG-TC7X-CLA1-01	Provides power to the device from a cigarette lighter socket.
Charge Only Vehicle Cradle	CRD-TC7X-CVCD1-01	Charges and securely holds the device. Requires power cable CHG-AUTO-CLA1-01 or CHG-AUTOHWIRE1-01, sold separately.
Cigarette Light Adapter Auto Charge Cable	CHG-AUTO-CLA1-01	Provides power to the Vehicle Cradle from a cigarette lighter socket.
Hard-wire Auto Charge Cable	CHG-AUTO-HWIRE1-01	Provides power to the Vehicle Cradle from the vehicle's power panel.
RAM Mount	RAM-B-166U	Provides window mounting option for the Vehicle Cradle. RAM Twist Lock Suction Cup with Double Socket Arm and Diamond Base Adapter. Overall Length: 6.75".
RAM Mount Base	RAM-B-238U	RAM 2.43" x 1.31" Diamond Ball base with 1" ball.
Charge and Communication Cables		
Charging Cable Cup	CHG-TC7X-CBL1-01	Provides power to the device. Use with power supply, p/n PWRS-14000-249R, sold separately.
Snap-On USB Cable	CBL-TC7X-CBL1-01	Provides power to the device and USB communication with a host computer. Use with power supply, p/n PWRS-14000-249R, sold separately.
Snap-On Serial Cable	CBL-TC7X-SERL1-01	Provides power and serial communication with a host computer. Use with power supply, p/n PWRS-14000-249R, sold separately.
Snap-On DEX Cable	CBL-TC7X-DEX1-01	Provides electronic data exchange with devices such as vending machines.
Audio Accessories		
2.5 mm Audio Adapter	ADP-TC7X-AUDIO1-01	Snaps onto the device and provides audio to a wired headset with 2.5 mm plug.
2.5 mm Headset	HDST-25MM-PTVP-01	Use for PTT and VoIP calls

Table 2-1 Accessories (Continued)

Accessory	Part Number	Description
Premium Headset	RCH51	Premium Rugged headset.
2.5 mm Quick Disconnect Adapter Cable	25-124387-02R	Provides connection to the RCH50/RCH51 headset.
3.5 mm Audio Adapter	ADP-TC7X-AUD35-01	Snaps onto the device and provides audio to a wired headset with 3.5 mm plug.
3.5 mm Headset	HDST-35MM-PTVP-01	Use for PTT and VoIP calls.
3.5 mm Quick Disconnect Adapter Cable	ADP-35M-QDCBL1-01	Provides connection to the 3.5 mm Headset.
Scanning		
Trigger Handle	TRG-TC7X-SNP1-01	Adds gun-style handle with a scanner trigger for comfortable and productive scanning.
Carrying Solutions		
Soft Holster	SG-TC7X-HLSTR1-01	TC7X soft holster.
Rigid Holster	SG-TC7X-RHLSTR1-01	TC7X rigid holster.
Hand Strap	SG-TC7X-HSTRP1-03	Replacement hand strap with hand strap mounting clip (3-pack).
Stylus and Coiled Tether	SG-TC7X-STYLUS-03	TC7X stylus with coiled tether (3-pack).
Power Supplies		
Power Supply	PWRS-14000-249R	Provides power to the device using the Snap-On USB Cable, Snap-on Serial Cable or Charging Cable Cup. Requires AC line cord.
Power Supply	PWRS-14000-148R	Provides power to the 2-Slot cradles and 4-Slot Spare Battery Charger. Requires AC line cord.
Power Supply	PWRS-14000-241R	Provides power to the 5-Slot Charge Only cradle and the 5-Slot Ethernet Cradle. Requires DC Line Cord, p/n 50-16002-029R and country specific three wire grounded AC line cord sold separately.
DC Line Cord	50-16002-029R	Provides power from the power supply to the 5-Slot Charge Only Cradle and 5-Slot Ethernet Cradle.

2-Slot Charge Only Cradle

The 2-Slot Charge Only Cradle:

- Provides 5 VDC power for operating the device.
- Charges the device's battery.
- Charges a spare battery.

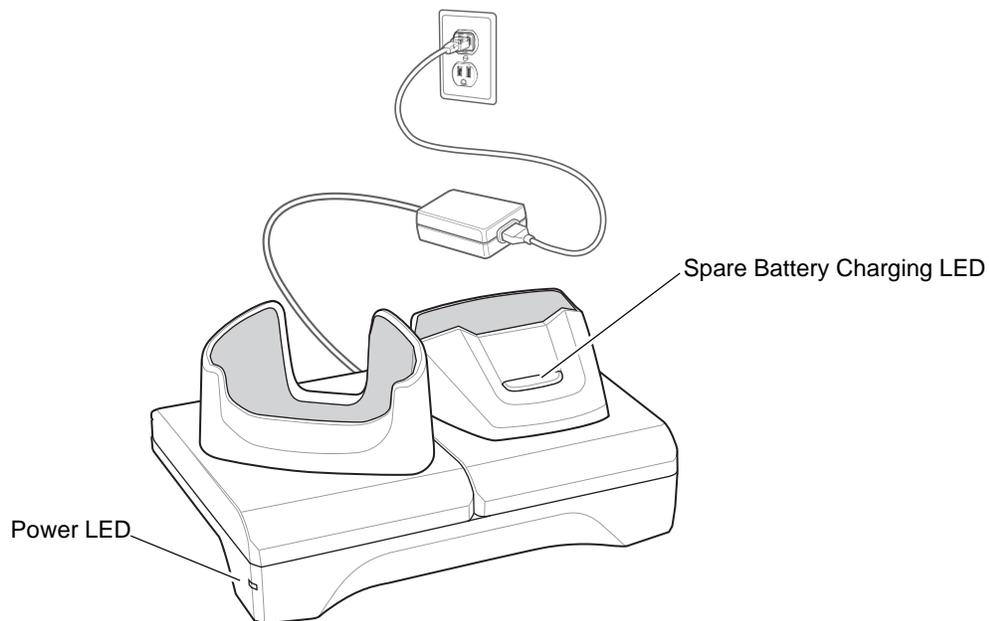


Figure 2-1 2-Slot Charge Only Cradle

Setup

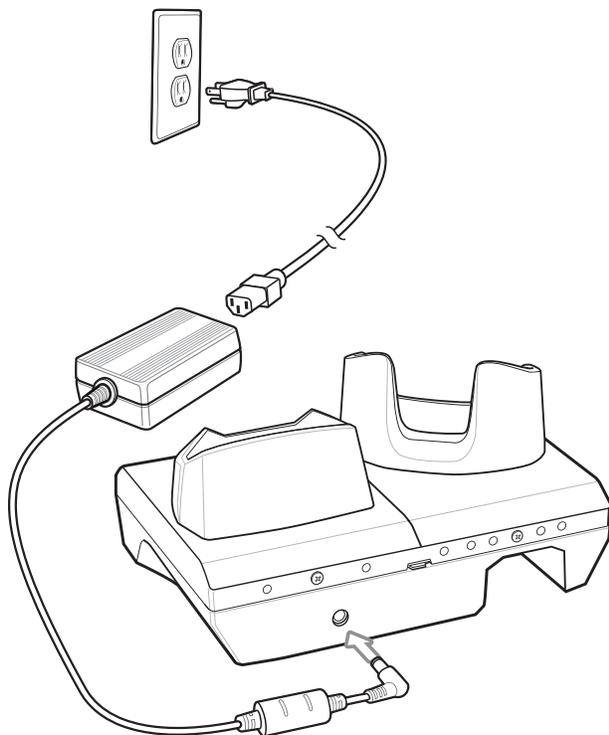


Figure 2-2 2-Slot Charge Only Cradle

Charging the Device

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

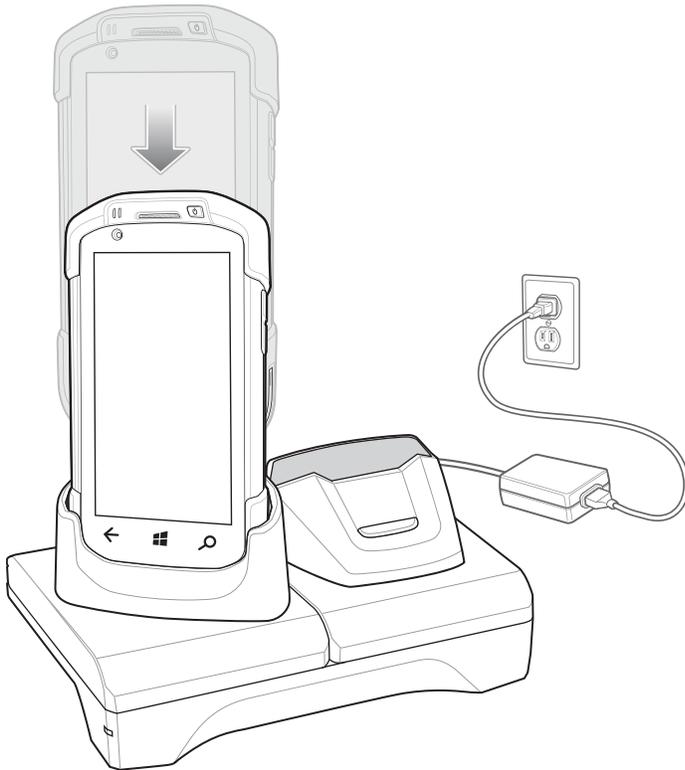


Figure 2-3 *Battery Charging*

2. Ensure the device is seated properly.

Charging the Spare Battery

1. Insert the battery into the right slot to begin charging.

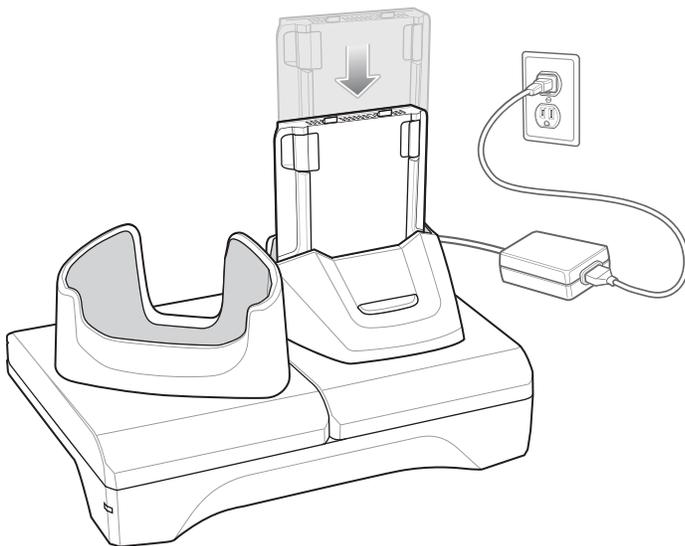


Figure 2-4 *Spare Battery Charging*

2. Ensure the battery is seated properly.

Battery Charging

Main Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Spare Battery Charging

The Spare battery Charging LED on the cup indicates the status of the spare battery charging.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Table 2-2 Spare Battery Charging LED Indicators

LED	Indication
Slow Blinking Amber	Spare battery is charging.
Solid Green	Charging complete.
Fast Blinking Amber	Error in charging; check placement of spare battery.
Slow Blinking Red	Spare battery is charging and battery is at the end of useful life.
Solid Red	Charging complete and battery is at the end of useful life.
Fast Blinking Red	Error in charging; check placement of spare battery and battery is at the end of useful life.
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.

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.

2-Slot USB/Ethernet Cradle

The 2-Slot USB/Ethernet Cradle:

- Provides 5.0 VDC power for operating the device.
- Charges the device's battery.
- Charges a spare battery.
- Connects the device to an Ethernet network.
- Provides communication to a host computer using a USB cable.

✓ **NOTE** Remove all attachments on the device, except the hand strap, before place onto the cradle.

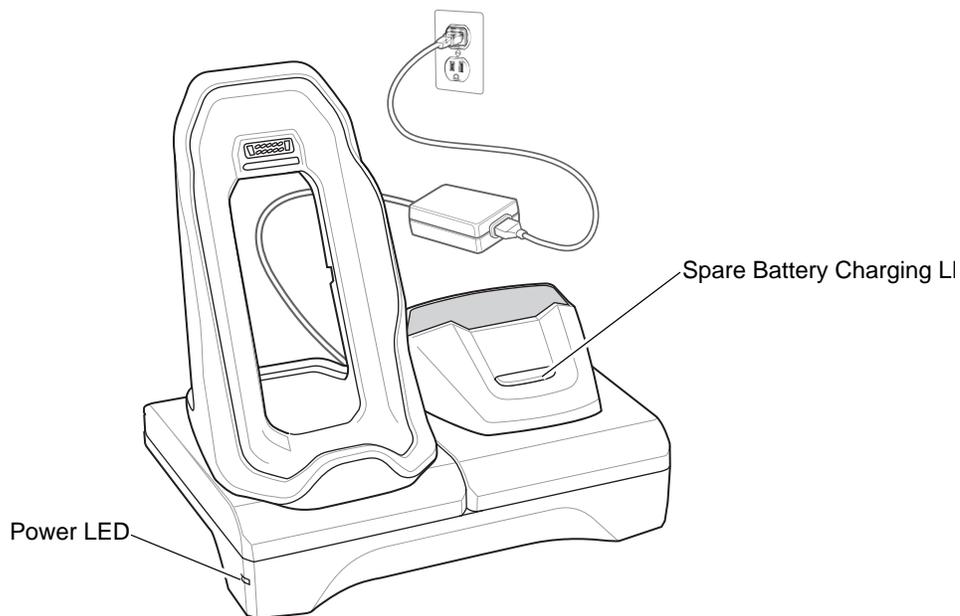


Figure 2-5 2-Slot USB/Ethernet Cradle

Setup

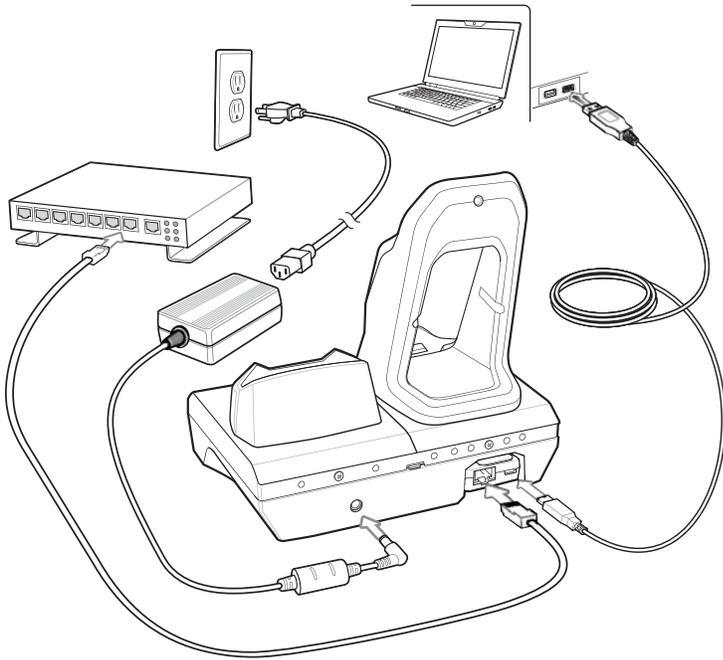


Figure 2-6 2-Slot USB/Ethernet Cradle

Charging the Device

1. Place the bottom of the device into the base.

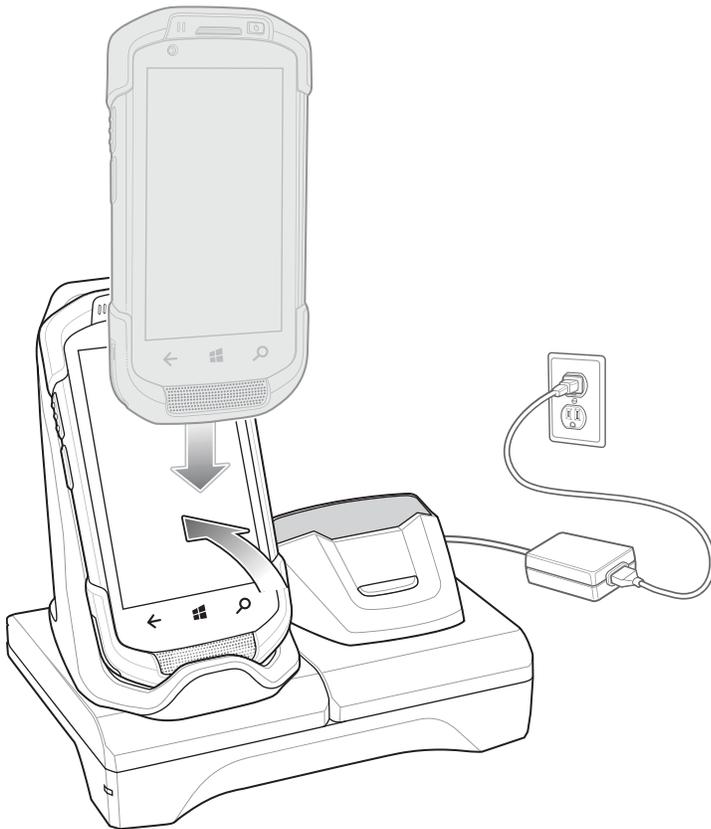


Figure 2-7 *Battery Charging*

2. Rotate the top of the device until the connector on the back of the device mates with the connector on the cradle.
3. Ensure the device is connected properly. The charging Charging/Notification LED on the device begins blinking amber indicating that the device is charging.

Charging the Spare Battery

1. Insert the battery into the right slot to begin charging.

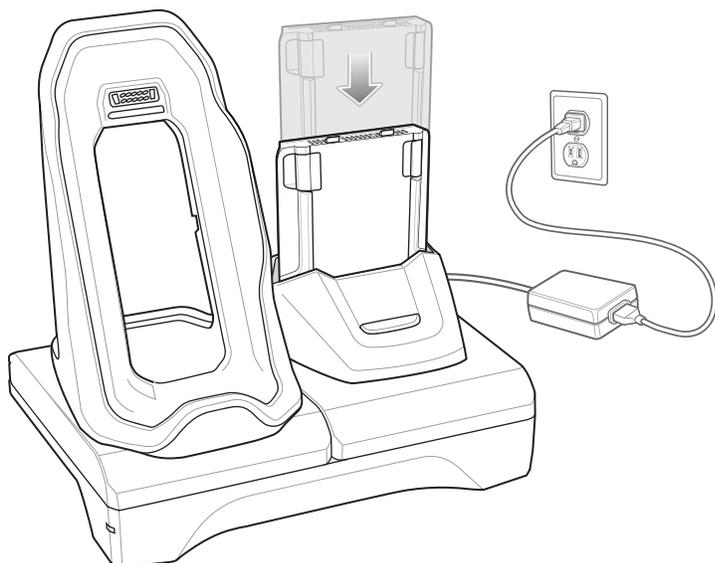


Figure 2-8 Spare Battery Charging

2. Ensure the battery is seated properly.

Battery Charging

Main Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Spare Battery Charging

The Spare battery Charging LED on the cup indicates the status of the spare battery charging.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Table 2-3 Spare Battery Charging LED Indicators

LED	Indication
Slow Blinking Amber	Spare battery is charging.
Solid Green	Charging complete.
Fast Blinking Amber	Error in charging; check placement of spare battery.
Slow Blinking Red	Spare battery is charging and battery is at the end of useful life.
Solid Red	Charging complete and battery is at the end of useful life.

Table 2-3 Spare Battery Charging LED Indicators (Continued)

LED	Indication
Fast Blinking Red	Error in charging; check placement of spare battery and battery is at the end of useful life.
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.

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.

USB/Ethernet Communication

The 2-Slot USB/Ethernet Cradle 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.

Turn the cradle over to view the module.

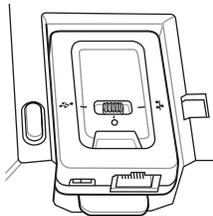


Figure 2-9 2-Slot USB/Ethernet Cradle Module Switch

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.

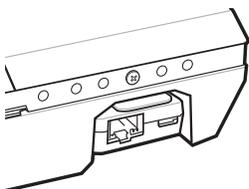


Figure 2-10 LED Indicators

Table 2-4 *USB/Ethernet Module LED Data Rate Indicators*

Data Rate	(1) Yellow LED	(2) Green LED
100 Mbps	On/Blink	On
10 Mbps	On/Blink	Off

5-Slot Charge Only Cradle

The 5-Slot Charge Only Cradle:

- Provides 5 VDC power for operating the TC70x.
- Simultaneously charges up to five TC70xs and up to four TC70xs and on 4-Slot Battery Charger using the Battery Charger Adapter. See the *TC70x Integrator Guide* for information on installing the 4-Slot Battery Charger onto the cradle.
- Consists of a cradle base and cups that can be configured for various charging requirements.

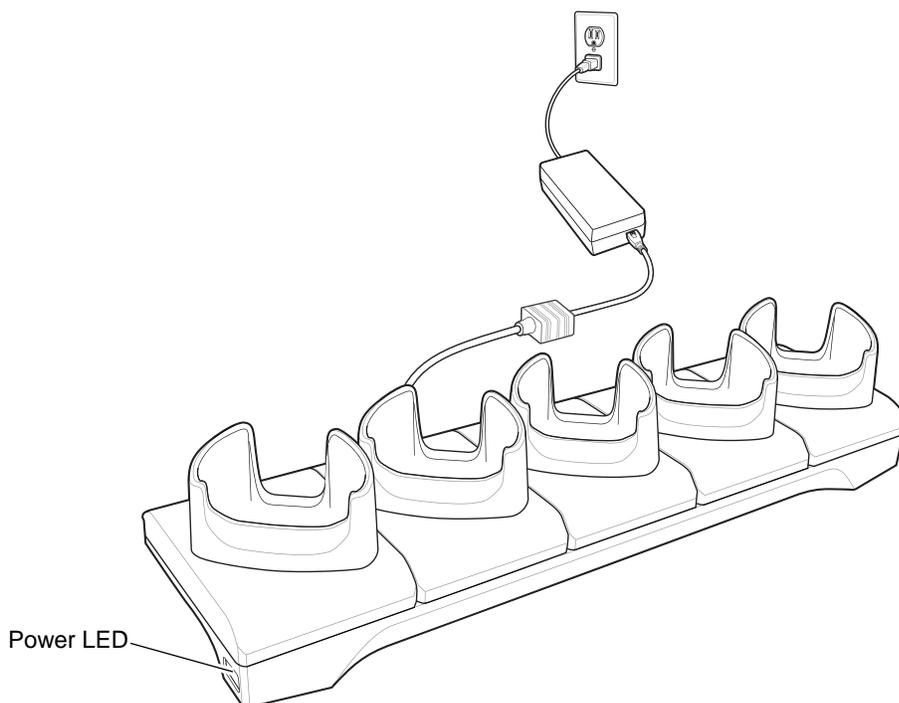


Figure 2-11 5-Slot Charge Only Cradle

Setup

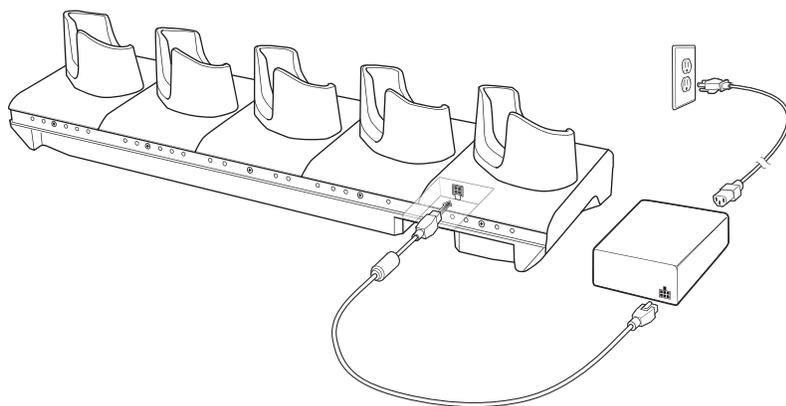


Figure 2-12 5-Slot Charge Only Cradle

Charging the TC70x

1. Insert the TC70x into a slot to begin charging.

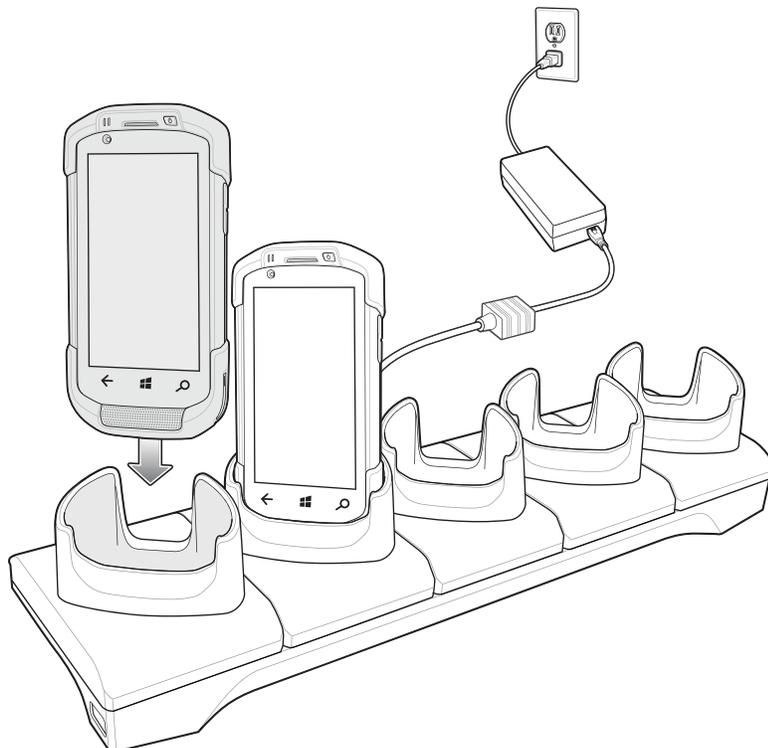


Figure 2-13 *TC70x Battery Charging*

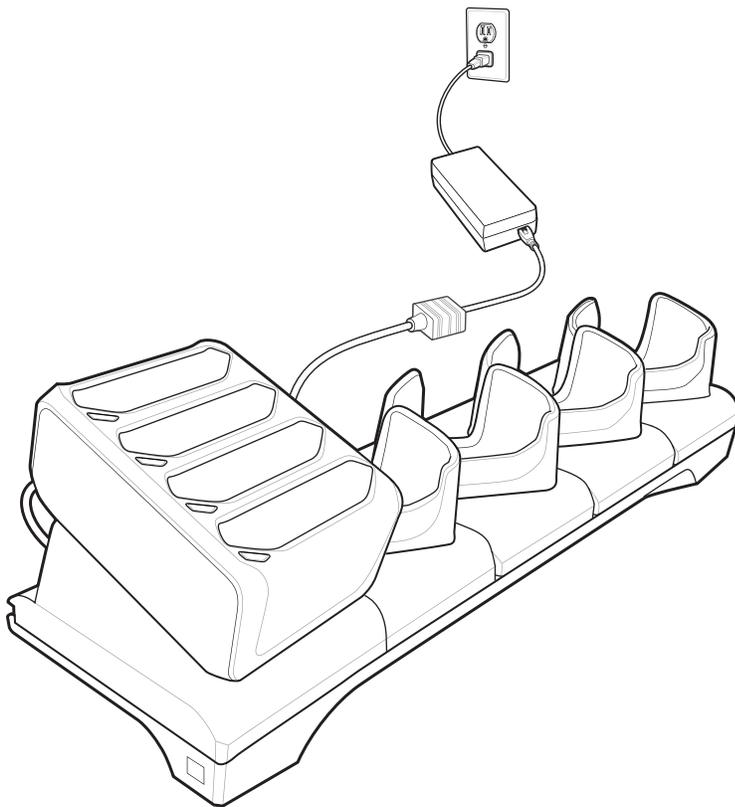


Figure 2-14 5-Slot Charge Only Cradle with Four Slot Battery Charger

2. Ensure the TC70x is seated properly.

Battery Charging

Main Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Charging Temperature

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

Installing the Four Slot Battery Charger

✓ **NOTE** The Battery Charger must be installed in the first slot only.

1. Remove power from the cradle.

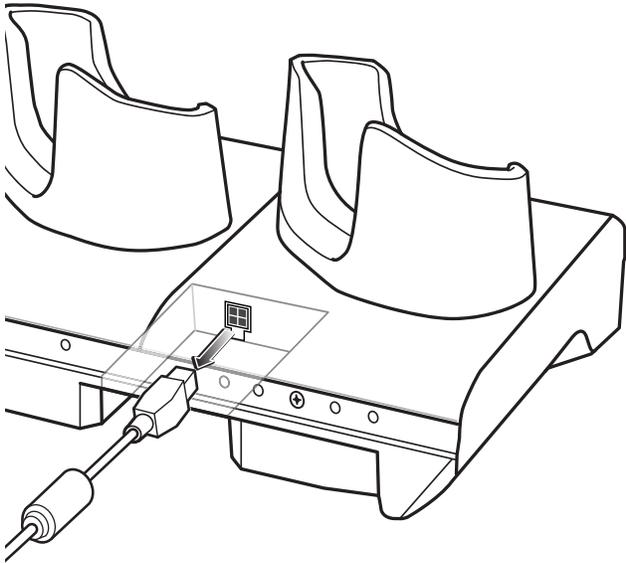


Figure 2-15 Remove Power from Cradle

2. Using a Phillips screwdriver, remove the screw securing the cup to the cradle base.

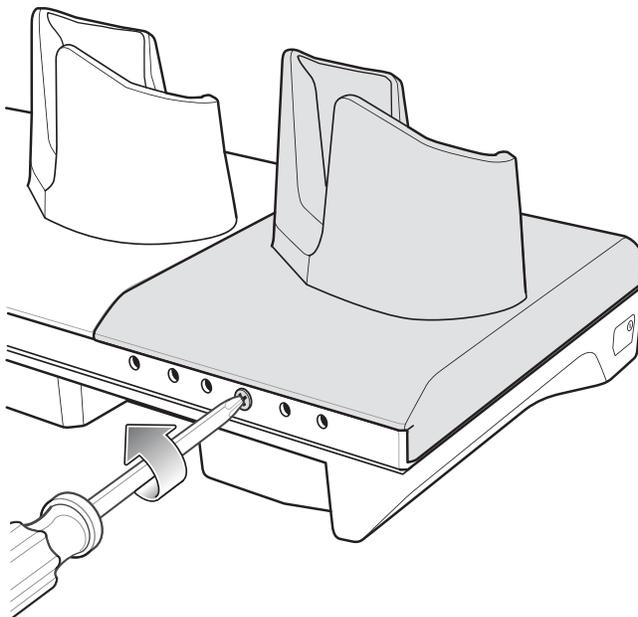


Figure 2-16 Remove Screw

3. Slide the cup to the front of the cradle.

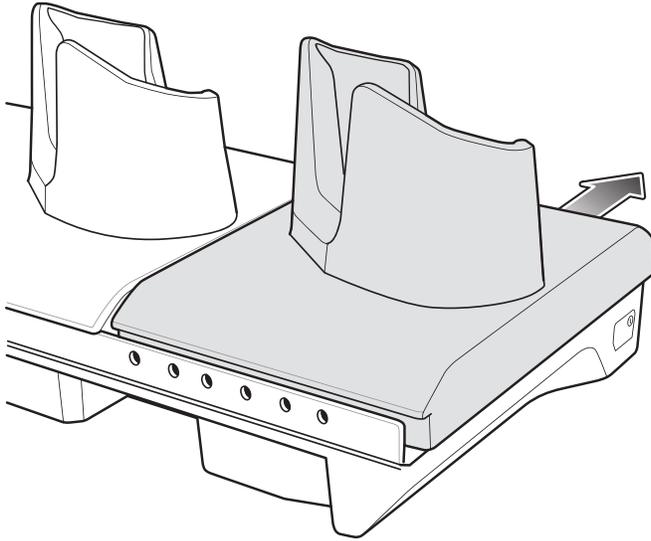


Figure 2-17 *Remove Cup*

4. Carefully lift the cup up to expose the cup power cable.
5. Disconnect the cup power cable.

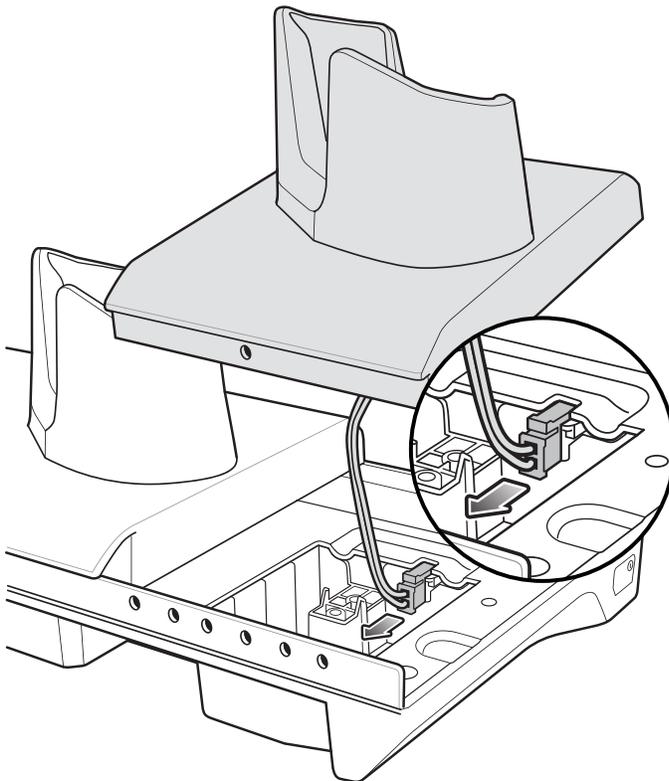


Figure 2-18 *Disconnect Cup Power Cable*

✓ **NOTE** Place power cable into adapter to avoid pinching cable.

6. Connect the Battery Adapter power cable to the connector on the cradle.

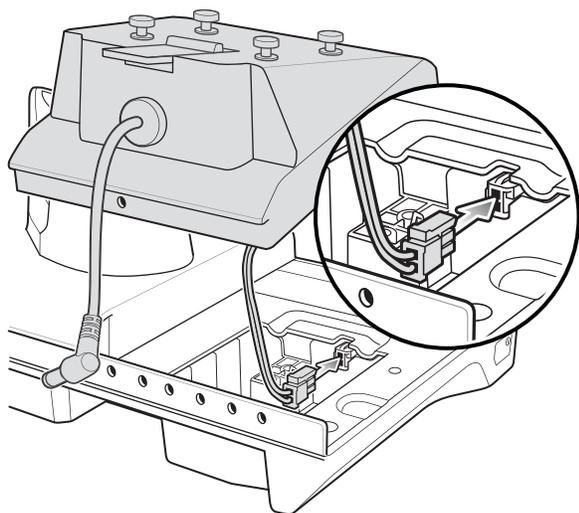


Figure 2-19 *Connect Adapter Power Cable*

7. Place adapter onto cradle base and slide toward rear of cradle.

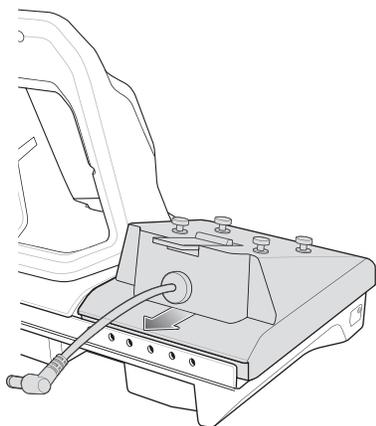


Figure 2-20 *Install Adapter*

8. Using a Phillips screwdriver, secure adapter to cradle base with screw.

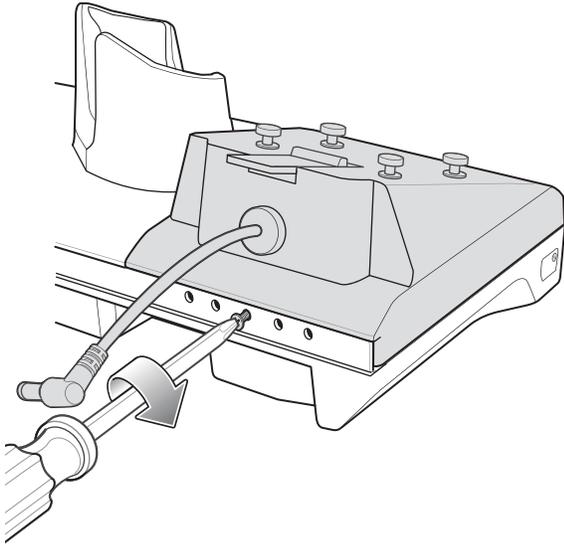


Figure 2-21 *Secure adapter to Cradle*

9. Align mounting holes on the bottom of the Four Slot Battery Charger with the stubs on the Battery Adapter.

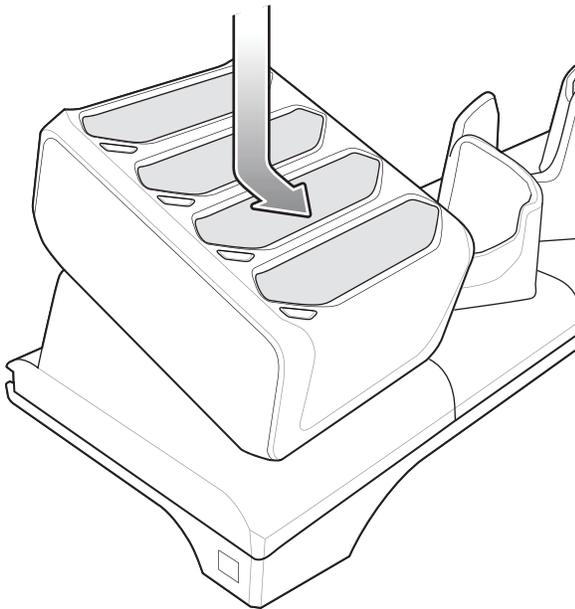


Figure 2-22 *Install Four Slot Battery Charger*

10. Slide the Four Slot battery Charger down toward the front of the cradle.
11. Connect the output power plug into the power port on the Four Slot Battery Charger.

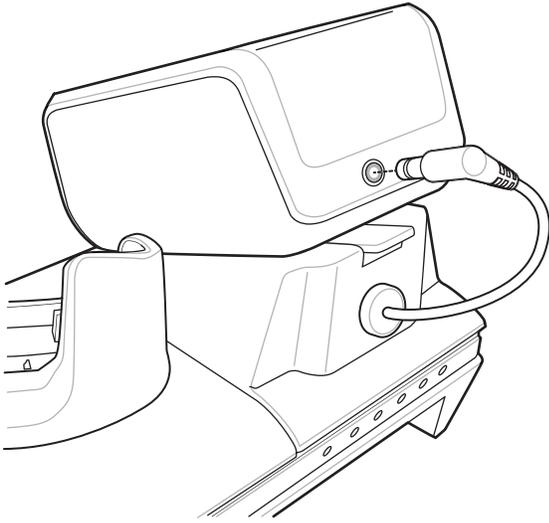


Figure 2-23 *Connect Adapter Power Cable*

Removing the 4-Slot Battery Charger

1. Disconnect the output power plug from the 4-Slot Battery Charger.
2. At the back of the cup, press down on the release latch.

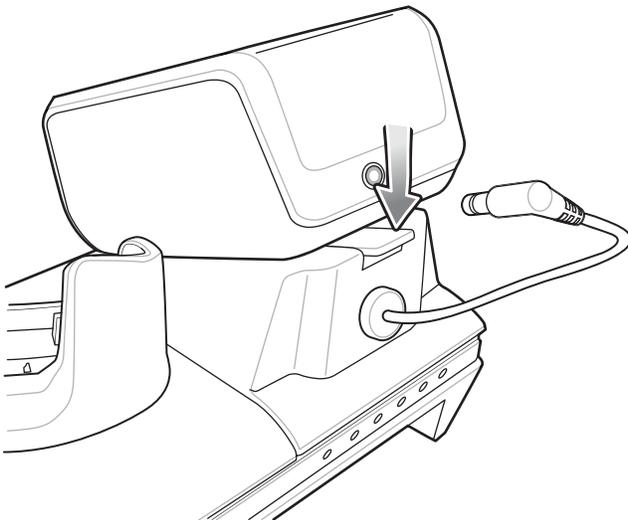


Figure 2-24 *Press Release Latch*

3. Slide the 4-Slot Battery Charger toward the front of the cradle.
4. Lift the 4-Slot off the cradle cup.

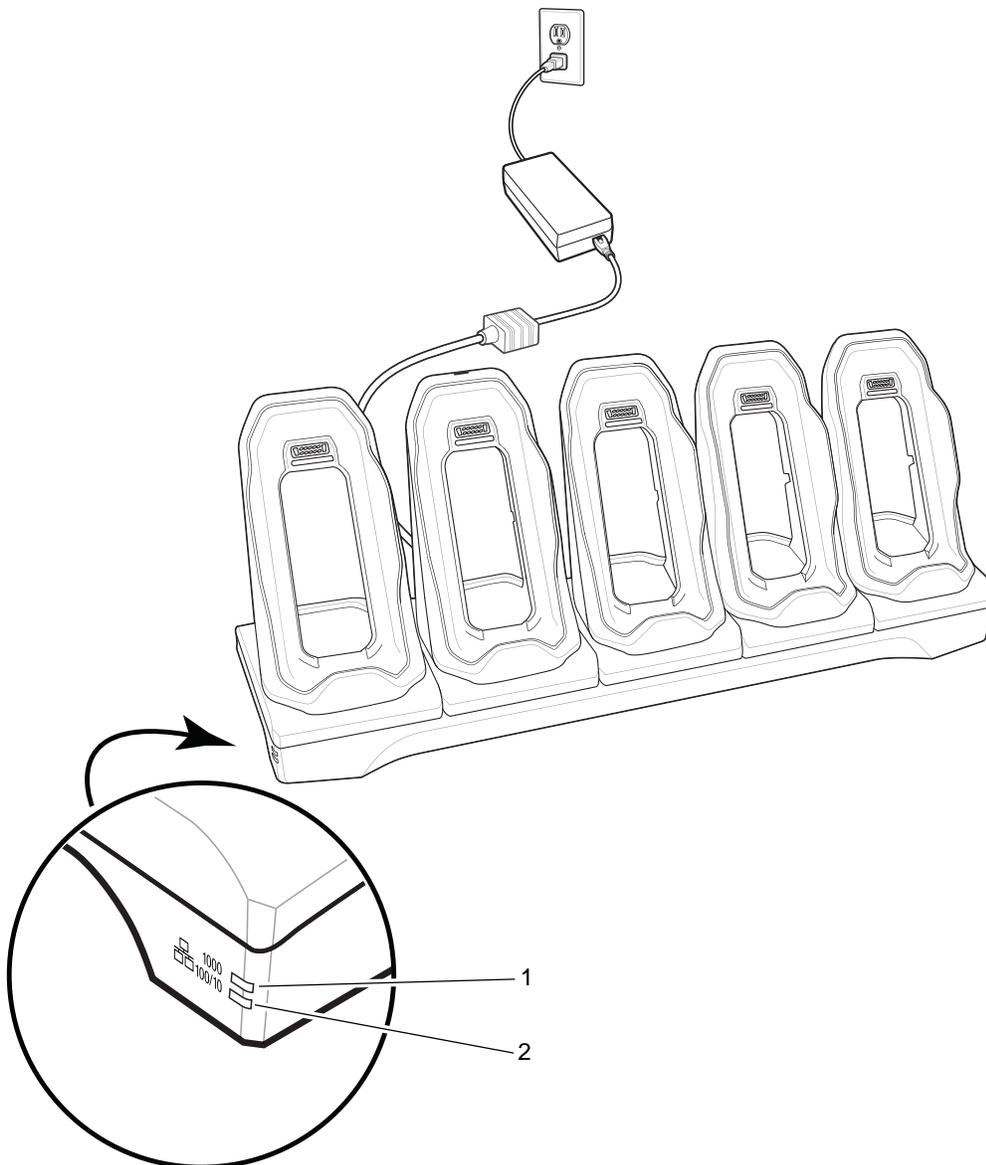
5-Slot Ethernet Cradle



CAUTION Ensure that you follow the guidelines for battery safety described in [Battery Safety Guidelines on page 12-1](#).

The 5-Slot Ethernet Cradle:

- Provides 5.0 VDC power for operating the device.
- Connects the device (up to five) to an Ethernet network.
- Simultaneously charges up to five TC70xs or up to four TC70xs and one 4-Slot Battery Charger using the Battery Charger Adapter.



1 1000 LED – Indicates 1 Gbps data rate.

- 2 100/10 LED – Indicates 100 Mbps or 10 Mbps data rate.

Setup

Connect the 5-Slot Ethernet cradle to a power source.

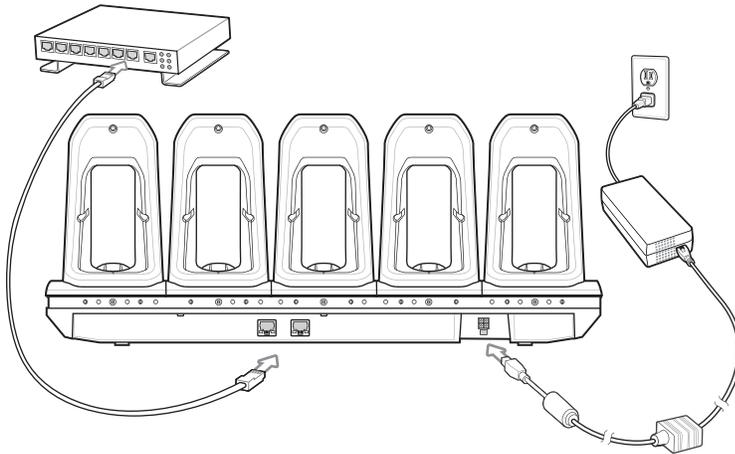


Figure 2-25 5-Slot Ethernet Cradle Setup

Daisy-chaining Ethernet Cradles

Daisy-chain up to ten 5-Slot Ethernet cradles to connect several cradles to an Ethernet network. Use either a straight or crossover cable. Daisy-chaining should not be attempted when the main Ethernet connection to the first cradle is 10 Mbps as throughput issues will almost certainly result.

To daisy-chain 5-Slot Ethernet cradles:

1. Connect power to each 5-Slot Ethernet cradle.
2. Connect an Ethernet cable to the one of the ports on the back of the first cradle and to the Ethernet switch.
3. Connect the other end of the Ethernet cable to one of the ports of the back of the second 5-Slot Ethernet cradle.

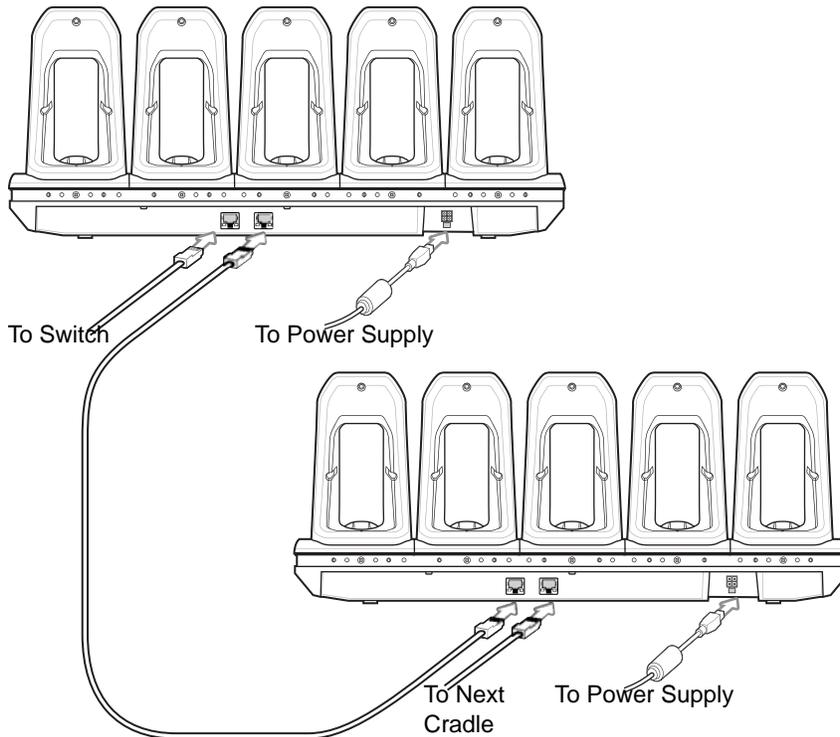


Figure 2-26 *Daisy-chaining 5-Slot Ethernet Cradles*

4. Connect additional cradles as described in step 2 and 3.

LED Indicators

There are two green LEDs on the side of the cradle. These green LEDs light and blink to indicate the data transfer rate.

Table 2-5 *LED Data Rate Indicators*

Data Rate	1000 LED	100/10 LED
1 Gbps	On/Blink	Off
100 Mbps	Off	On/Blink
10 Mbps	Off	On/Blink

Charging the TC70x

1. Insert the TC70x into a slot to begin charging.

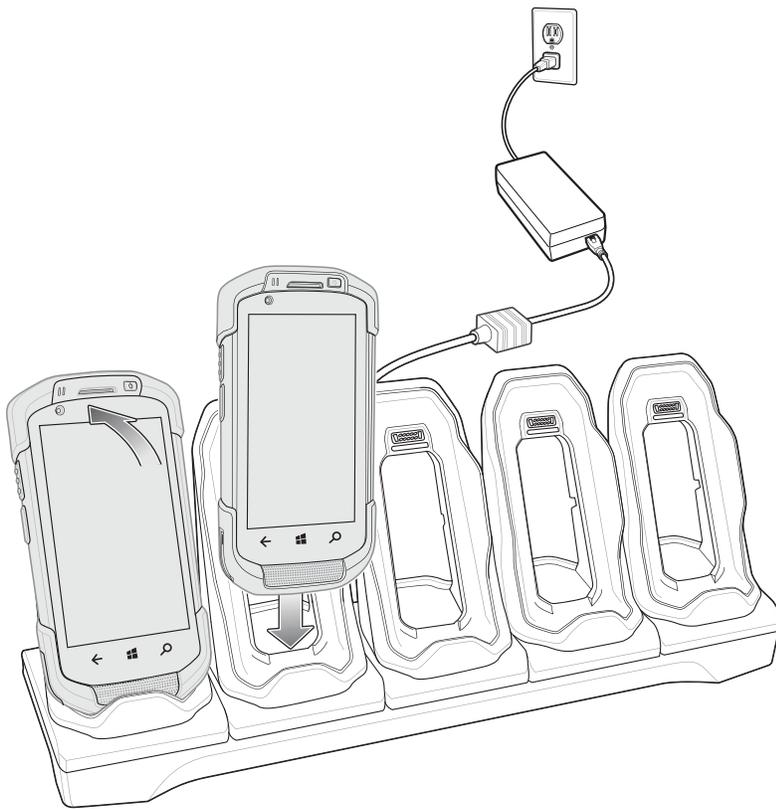


Figure 2-27 *TC70x Battery Charging*

2. Ensure the TC70x is seated properly.

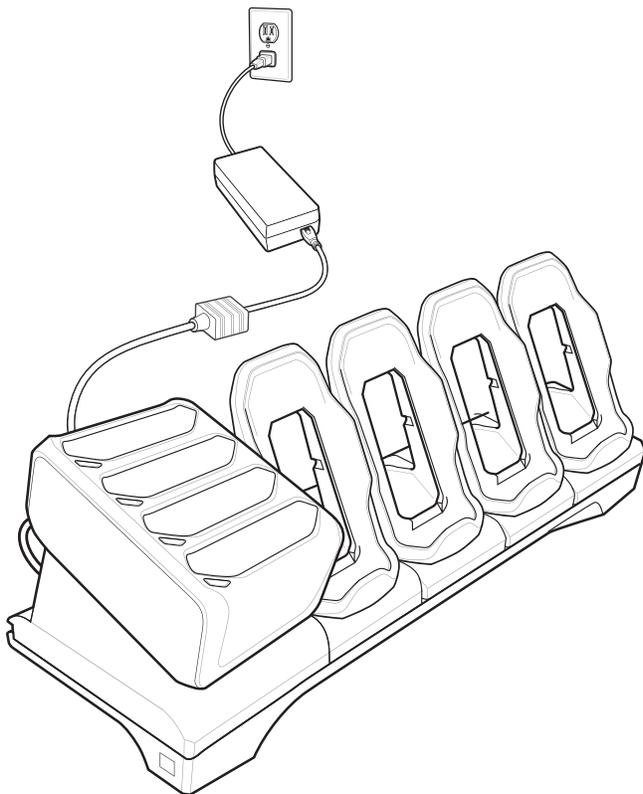


Figure 2-28 5-Slot Ethernet Cradle with 4-Slot Battery Charger

Battery Charging

Main Battery Charging

The device's Charging/Notification LED indicates the status of the battery charging in the device.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Spare Battery Charging

The Spare battery Charging LED on the cup indicates the status of the spare battery charging.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Table 2-6 Spare Battery Charging LED Indicators

LED	Indication
Slow Blinking Amber	Spare battery is charging.
Solid Green	Charging complete.
Fast Blinking Amber	Error in charging; check placement of spare battery.
Slow Blinking Red	Spare battery is charging and battery is at the end of useful life.

Table 2-6 Spare Battery Charging LED Indicators (Continued)

LED	Indication
Solid Red	Charging complete and battery is at the end of useful life.
Fast Blinking Red	Error in charging; check placement of spare battery and battery is at the end of useful life.
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.

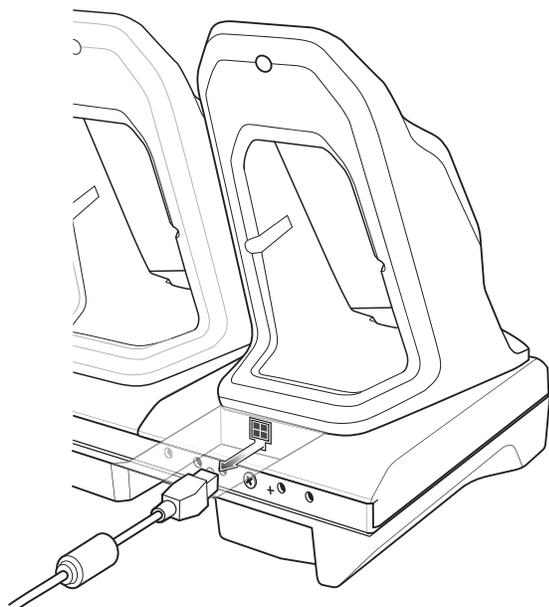
Charging Temperature

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.

Installing the 4-Slot Battery Charger

✓ **NOTE** The Battery Charger must be installed in the first slot only.

1. Remove power from the cradle.

**Figure 2-29** Remove Power from Cradle

2. Using a Phillips screwdriver, remove the screw securing the cup to the cradle base.

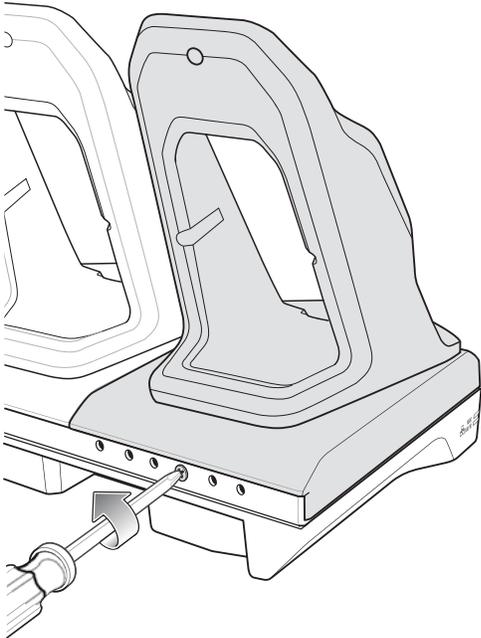


Figure 2-30 *Remove Screw*

3. Slide the cup to the front of the cradle.

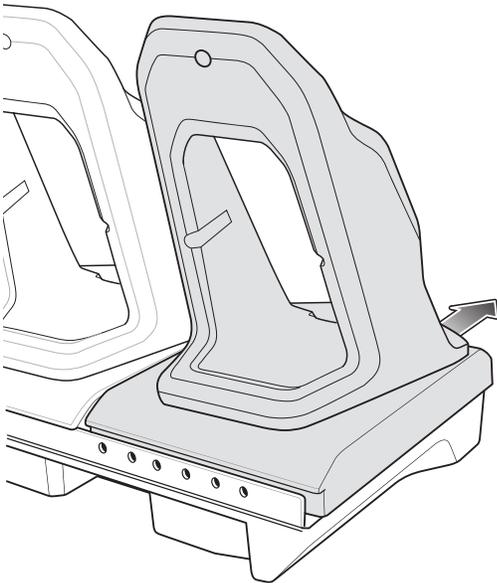


Figure 2-31 *Remove Cup*

4. Carefully lift the cup up to expose the cup power cable.
5. Disconnect the cup power cable and USB cable.

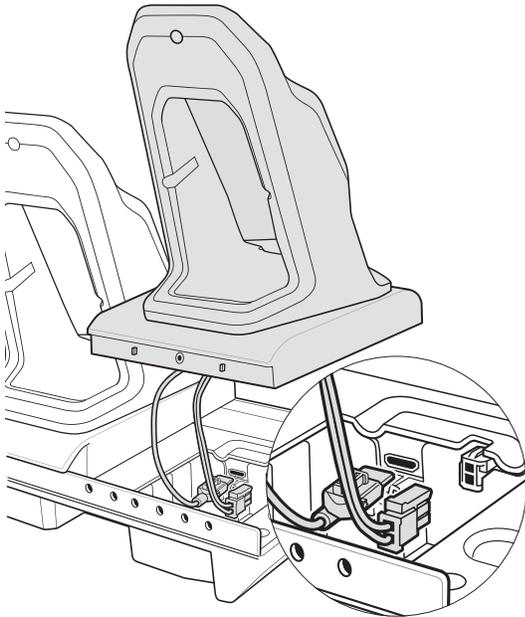


Figure 2-32 *Disconnect Cup Cables*

✓ **NOTE** Place power cable into adapter to avoid pinching cable.

6. Connect the Battery Adapter power cable to the connector on the cradle.

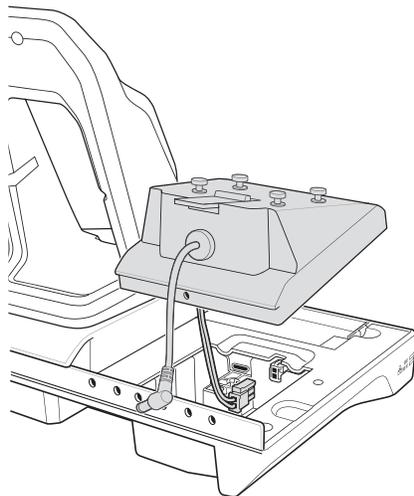


Figure 2-33 *Connect Adapter Power Cable*

7. Place adapter onto cradle base and slide toward rear of cradle.

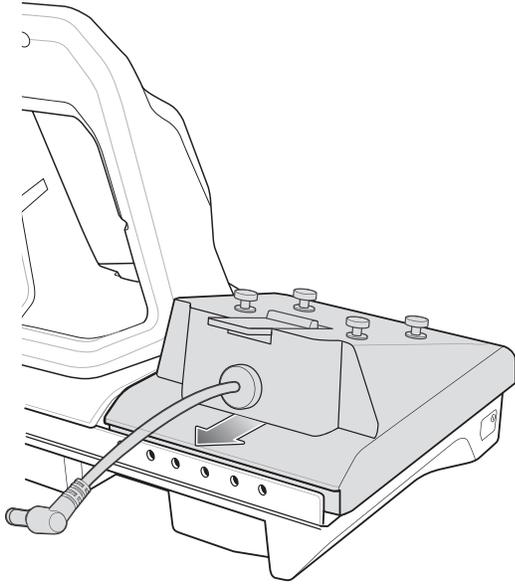


Figure 2-34 *Install Adapter*

8. Using a Phillips screwdriver, secure adapter to cradle base with screw.

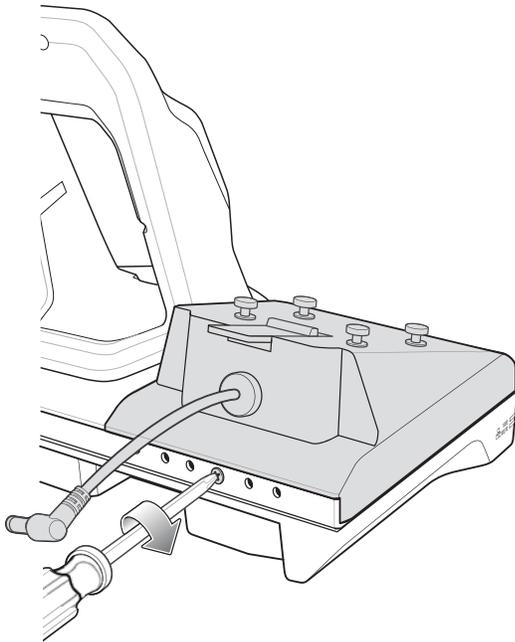


Figure 2-35 *Secure adapter to Cradle*

9. Align mounting holes on the bottom of the 4-Slot Battery Charger with the stubs on the Battery Adapter.

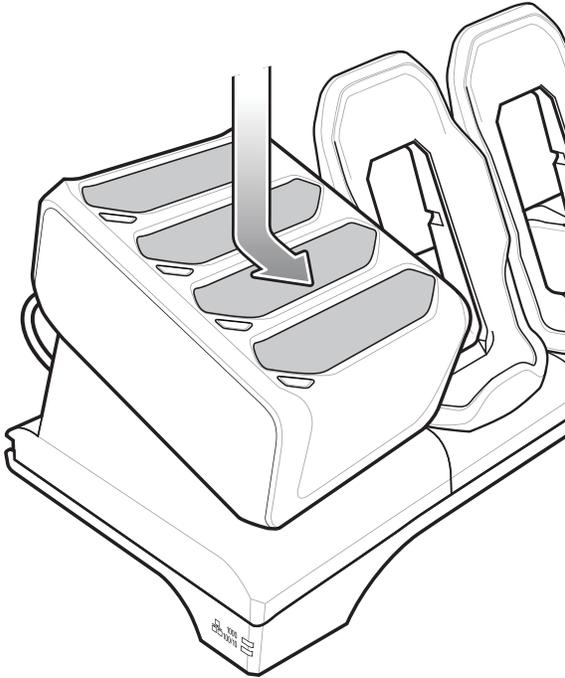


Figure 2-36 *Install 4-Slot Battery Charger*

10. Slide the 4-Slot battery Charger down toward the front of the cradle.
11. Connect the output power plug into the power port on the 4-Slot Battery Charger.

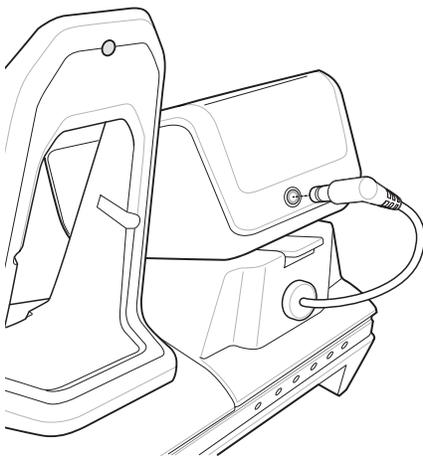


Figure 2-37 *Connect Adapter Power Cable*

Removing the 4-Slot Battery Charger

1. Disconnect the output power plug from the 4-Slot Battery Charger.

2. At the back of the cup, press down on the release latch.

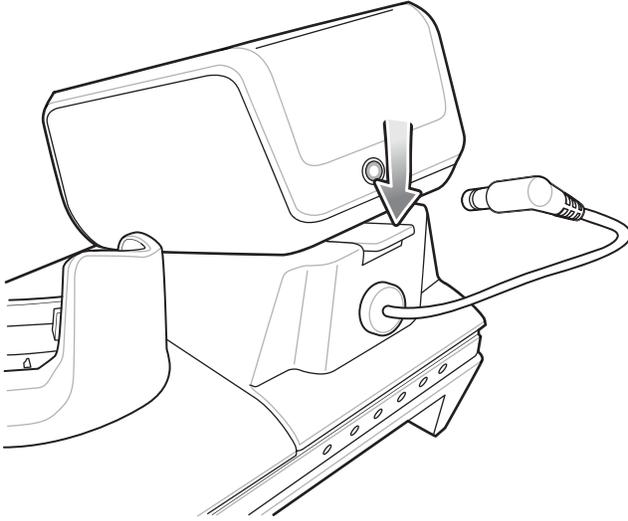


Figure 2-38 *Press Release Latch*

3. Slide the 4-Slot Battery Charger toward the front of the cradle.
4. Lift the 4-Slot off the cradle cup.

4-Slot Battery Charger

This section describes how to use the 4-Slot Battery Charger to charge up to four TC70x batteries.

Setup

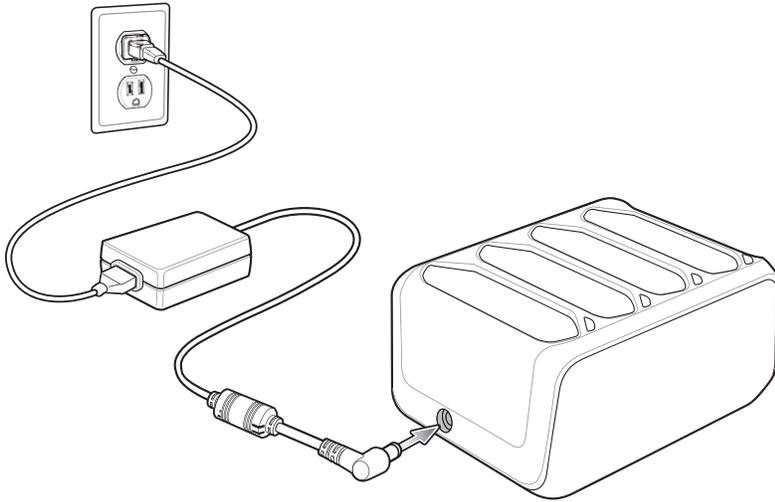


Figure 2-39 *Four Slot Battery Charger Power Setup*

Charging Spare Batteries

1. Connect the charger to a power source.
2. Insert the battery into a battery charging well and gently press down on the battery to ensure proper contact.

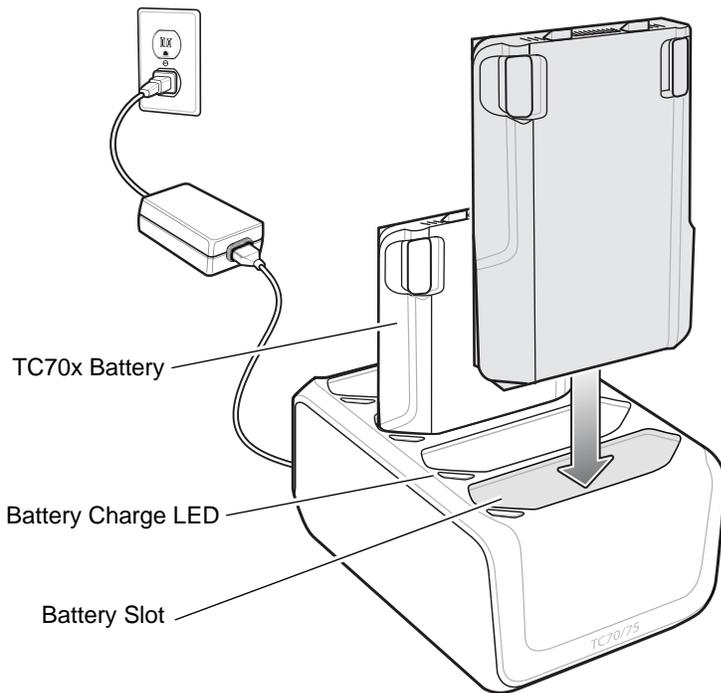


Figure 2-40 *Four Slot Battery Charger*

Battery Charging

Spare Battery Charging

Each Battery Charging LED indicates the status of the battery charging in each slot. The table below describes the Battery Charging LED status.

The 4,620 mAh battery fully charges in less than six hours at room temperature.

Table 2-7 *Battery LED Charging Indicators*

LED	Indication
Slow Blinking Amber	Spare battery is charging.
Solid Green	Charging complete.
Fast Blinking Amber	Error in charging; check placement of spare battery.
Slow Blinking Red	Spare battery is charging and battery is at the end of useful life.
Solid Red	Charging complete and battery is at the end of useful life.
Fast Blinking Red	Error in charging; check placement of spare battery and battery is at the end of useful life.
Off	No spare battery in slot; spare battery not placed correctly; cradle is not powered.

Charging Temperature

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

Trigger Handle

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.

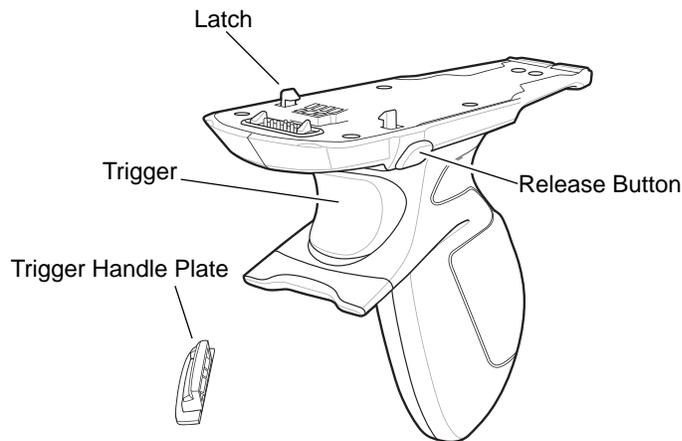


Figure 2-41 *Trigger Handle*

Installing the Trigger Handle Plate

1. Press and hold the **Power** button until the menu appears.
2. Touch **Power off**.
3. Touch **OK**.
4. Press in the two battery latches.
5. Lift the battery from the device.
6. Remove the hand strap filler plate from the hand strap slot. Store the hand strap filler plate in a safe place for future replacement.

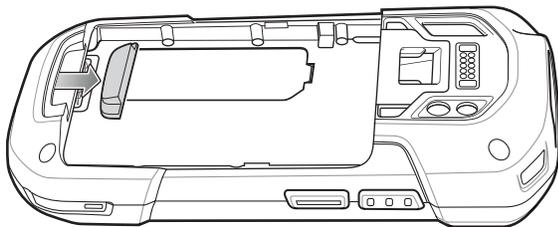


Figure 2-42 *Remove Hand Strap Plate*

7. Insert the replacement hand strap plate into the hand strap slot.

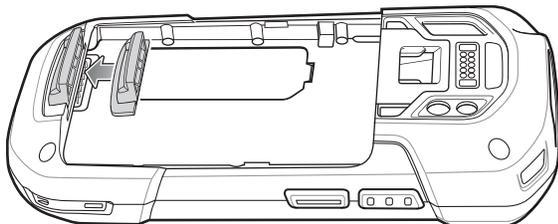


Figure 2-43 *Insert Trigger Handle Plate*

8. Insert the battery, bottom first, into the battery compartment in the back of the device.
9. Rotate the top of the battery into the battery compartment.
10. Press the battery down into the battery compartment until the battery release latches snap into place.

Inserting the Device into the Trigger Handle

1. Align the back of the Trigger handle with the Trigger Mounting Plate.

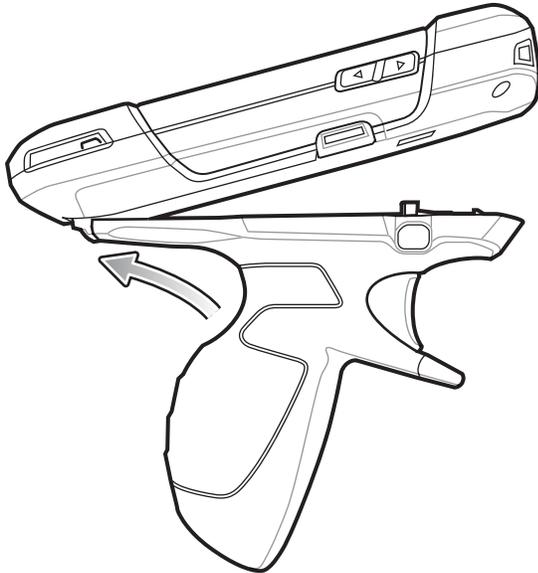


Figure 2-44 *Connect Device to Trigger Handle*

2. Press the two release latches.
3. Rotate the device down and press down until it snaps into place.

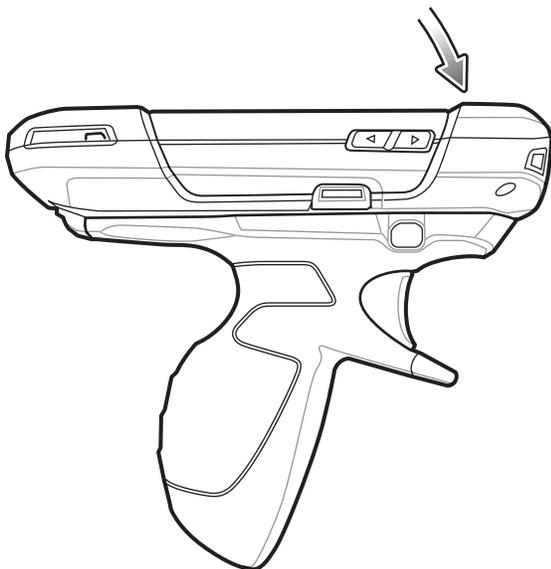


Figure 2-45 *Rotate Device onto Trigger Handle*

Removing the Device from the Trigger Handle

1. Press both Trigger Handle release latches.

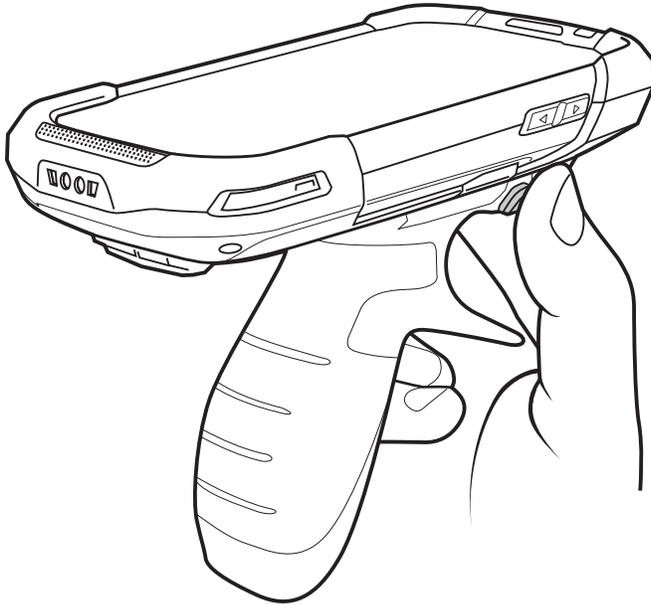


Figure 2-46 *Press Release Latches*

2. Rotate the device up and remove from the Trigger handle.
3. Rotate the device down and press down until it snaps into place.

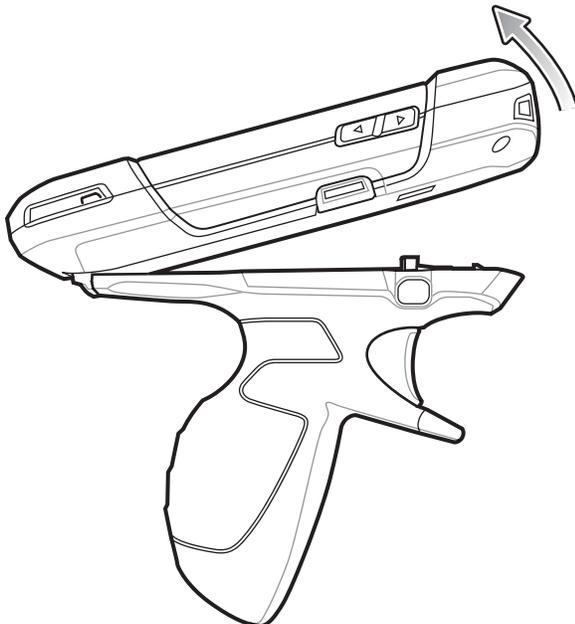


Figure 2-47 *Rotate Device onto Trigger Handle*

Hand Strap Replacement



CAUTION Close all running applications prior to replacing the hand strap.

1. Press and hold the **Power** button until the menu appears.
2. Touch **Power Off**.
3. Touch **OK**.
4. Remove the hand strap clip from the hand strap mounting slot.

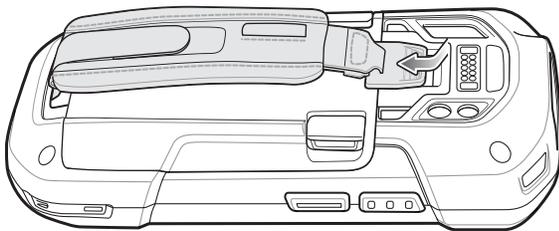


Figure 2-48 *Remove Hand Strap Clip*

5. Press the two battery latches in.

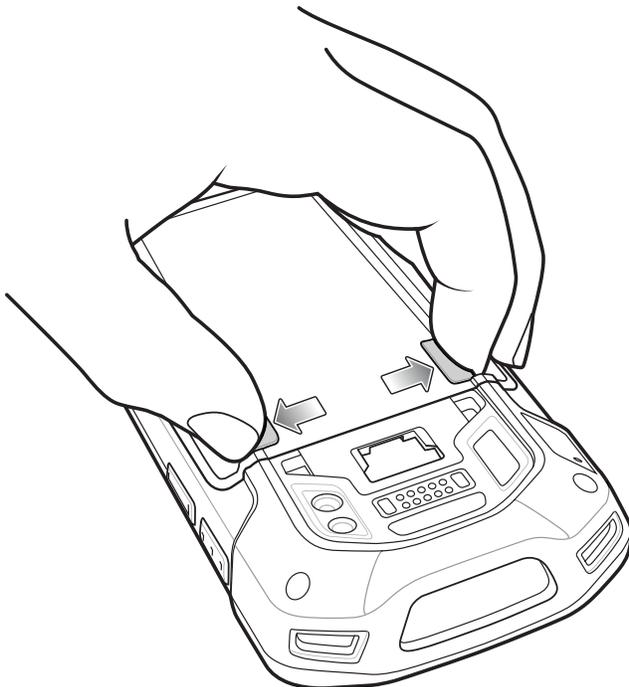


Figure 2-49 *Press Battery Latches*

6. Lift the battery from the TC70x.

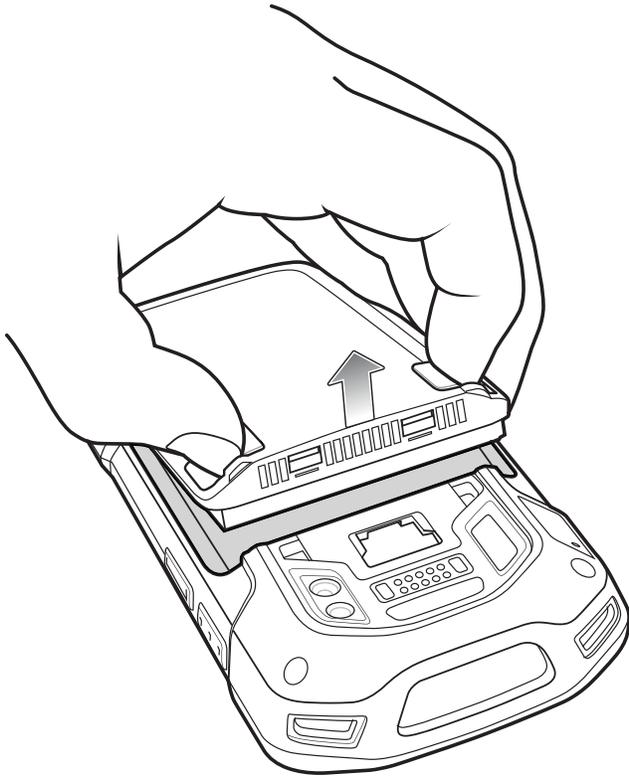


Figure 2-50 *Lift the Battery*

7. Remove the battery.
8. Remove the hand strap plate from the hand strap slot.
9. Insert the replacement hand strap plate into the hand strap slot.

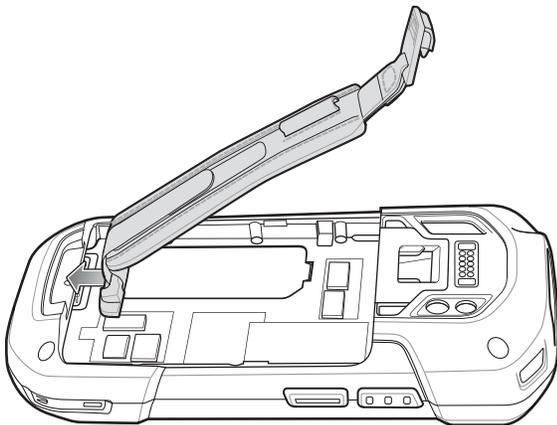


Figure 2-51 *Insert Hand Strap*

10. Insert the battery, bottom first, into the battery compartment.

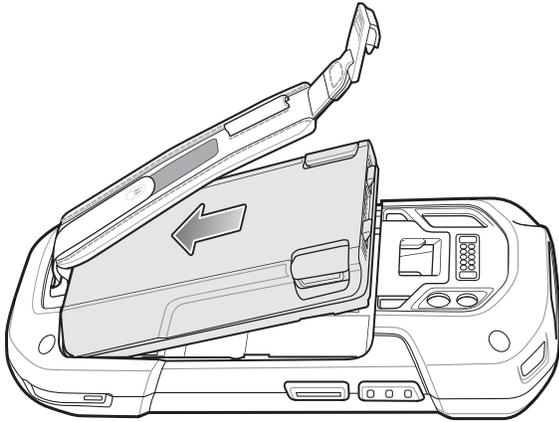


Figure 2-52 *Insert Bottom of Battery into Battery Compartment*

11. Rotate the top of the battery into the battery compartment.
12. Press the battery down into the battery compartment until the battery release latches snap into place.

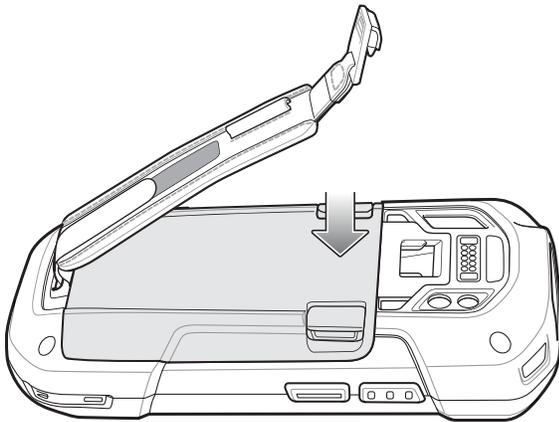


Figure 2-53 *Press Down on Battery*

13. Place hand strap clip into hand strap mounting slot and pull down until it snaps into place.

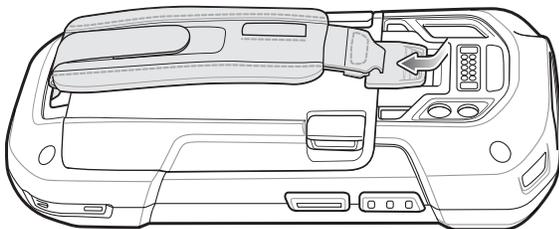


Figure 2-54 *Secure Hand Strap Clip*

TC7X Vehicle Communication Charging Cradle

Install the cradle into a vehicle. Once installed, the cradle:

- holds the TC75 securely in place
- provides power for operating the TC75 when connected to the optional USB I/O Hub.

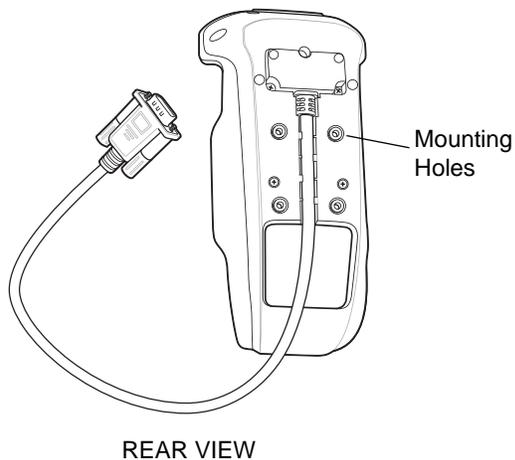
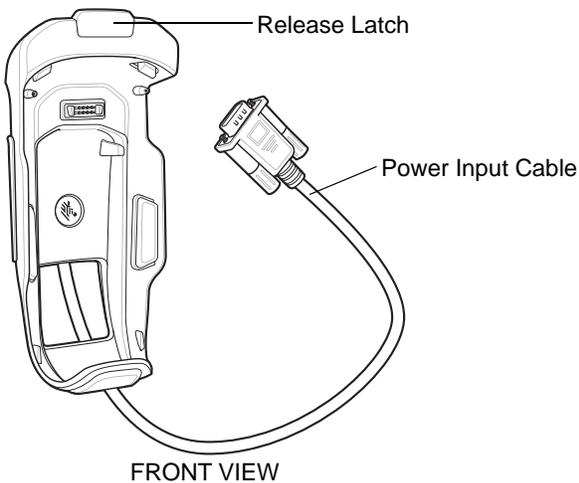


Figure 2-55 *Features*

Requirements

For mounting on a flat surface:

- four M3 screws (included)
- four wall anchors (not included).

For mounting onto a RAM Mount®:

- RAM Mount (sold separately)
- Four M4 screws, lock washers and flat washers (included).



CAUTION ROAD SAFETY - Do not use the TC75 while driving. Park the vehicle first. Always ensure the TC75 is fully inserted into the cradle. Do not place it on the seat or where it can break loose in a collision or sudden stop. Lack of proper insertion may result in property damage or personal injury. Zebra is not responsible for any loss resulting from the use of the products while driving. Remember: Safety comes first.

Mounting the Cradle to a Flat Surface



CAUTION Only mount the Vehicle Cradle in a vertical position. Never mount the vehicle cradle on the side or upside down or on a wall that can be subject to impact or collision of greater than 10Gs, in accordance with SAE J1455 Section 4.10.3.5.

1. Select a mounting location for the cradle. It should be flat, and must provide adequate support for the cradle.
2. Prepare the mounting surface, using the mounting template below, with wall anchors that support the weight of the cradle and device. The anchors should accept four M3 screws.

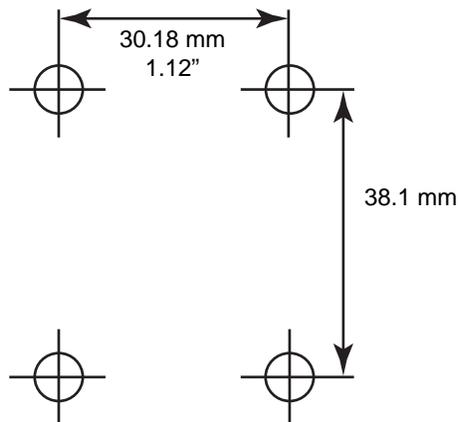


Figure 2-56 *Mounting Template*

3. Align the mounting holes on the mounting plate with the holes on the vehicle cradle.

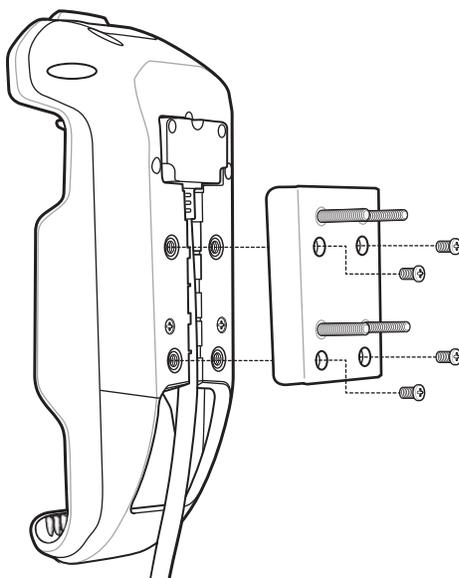


Figure 2-57 *Align Mounting Plate*

4. Fasten the mounting plate using four M3 screws (provided).



CAUTION Do not install a Vehicle Cradle on or near an air bag cover plate or within an aerobic zone. Also, do not install it in a location that affects vehicle safety or driveability.

5. Align the mounting plate screws with the screw holes in the surface.

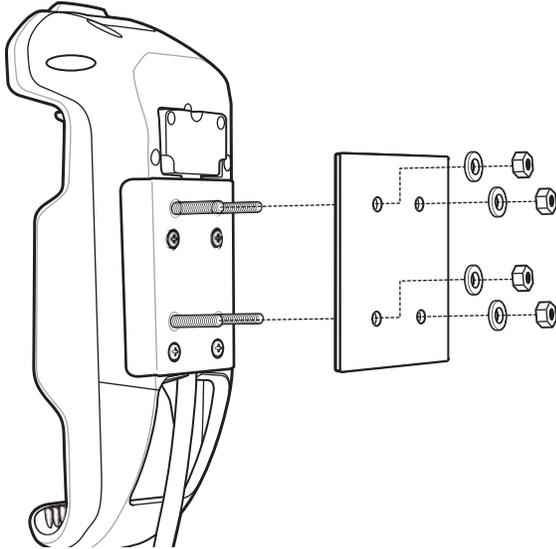


Figure 2-58 *Align Screws with Holes in Surface*

6. Tighten the screw to secure the cradle to the mounting plate.

Mounting the Cradle to a RAM Mount

To mount the cradle onto a RAM Mount:



CAUTION Only mount the Vehicle Cradle in a vertical position. Never mount the vehicle cradle on the side or upside down or on a wall that can be subject to impact or collision of greater than 10Gs, in accordance with SAE J1455 Section 4.10.3.5.

1. Follow the instructions that are provided with the RAM Mount for RAM Mount mounting instructions.
2. Align the vehicle cradle with the RAM Mount ball base.
3. Secure the vehicle cradle to the ball base using M4 screws, lock washers and flat washers (provided).



CAUTION Do not install a Vehicle Cradle on or near an air bag cover plate or within an aerobic zone. Also, do not install it in a location that affects vehicle safety or driveability.

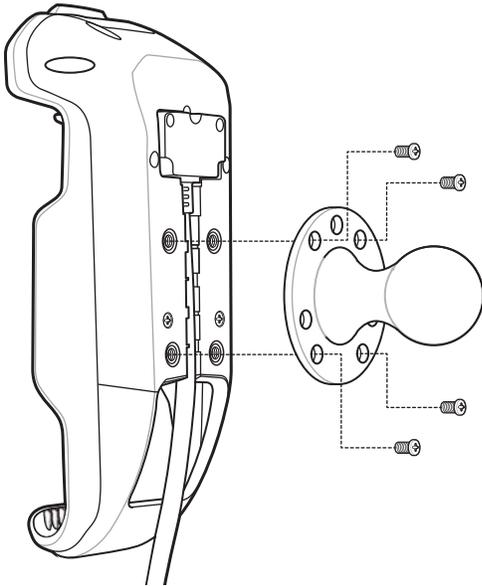


Figure 2-59 *Align with RAM Mount*

4. Secure the RAM Mount to the vehicle depending upon the type of RAM Mount. See instructions provided with RAM Mount.
5. Tighten the screw to secure the cradle to the mounting plate.
6. Adjust RAM Mount according to RAM Mount instructions.

USB I/O Hub Power

To connect the USB I/O Hub to the vehicle cradle:

1. Connect the Power Input Connector to the USB I/O Hub Power Output connector.
2. Tighten thumb screws.

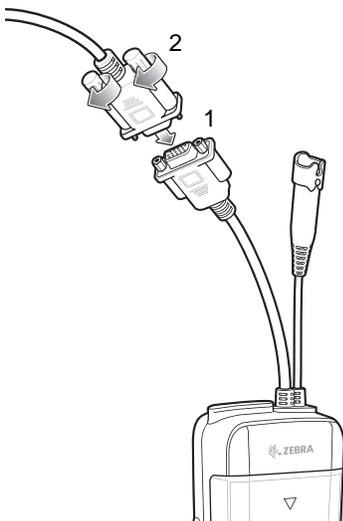


Figure 2-60 *USB I/O Hub Connection*

USB I/O Hub

Install the USB I/O Hub into a vehicle. Once installed, the USB I/O Hub:

- provides power to a vehicle cradle
- provides USB hub for three USB devices (such as printers)
- provides a powered USB port for charging another device.

The USB I/O Hub is powered by the vehicle's 12V or 24V electrical system. The operating voltage range is 9V to 32V and supplies a maximum current of 3A to the vehicle cradle and 1.5 A to the four USB ports simultaneously.

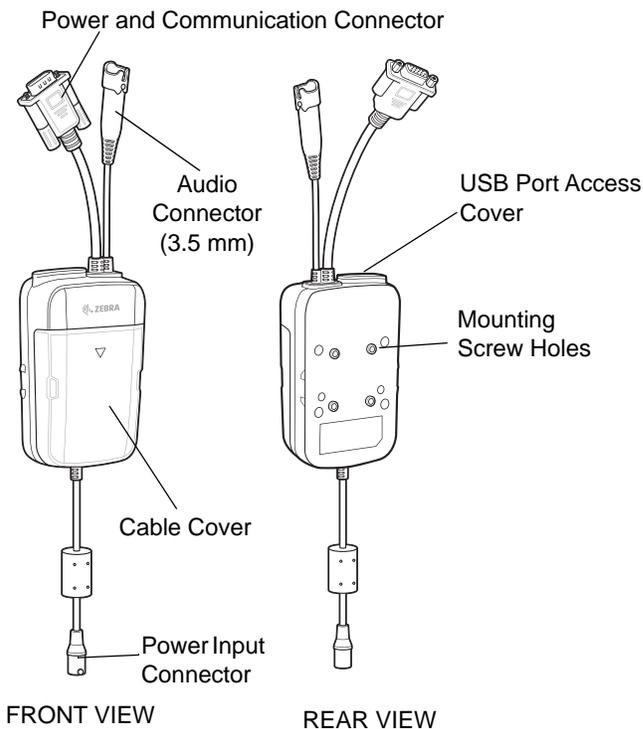


Figure 2-61 Features

Requirements

For mounting on a flat surface:

- four M3 screws (included)
- four wall anchors (not included).

For mounting onto a RAM Mount®:

- RAM Mount (sold separately)
- Four M4 screws, lock washers and flat washers (included).

For CLA power connection:

- CLA (not included), p/n CHG-AUTO-CLA1-01

For hard-wired power connection:

- power input cable (included), p/n CHG-AUTO-HWIRE1-01
- UL Listed in-line fuse rated 250V, 5A (included), must be used if not connecting to vehicle's fuse panel
- in-line fuse holder (included), must be used if not connecting to vehicle's fuse panel.



CAUTION ROAD SAFETY - Do not use the device while driving. Park the vehicle first. Always ensure the device is fully inserted into the cradle. Do not place it on the seat or where it can break loose in a collision or sudden stop. Lack of proper insertion may result in property damage or personal injury. Zebra is not responsible for any loss resulting from the use of the products while driving. Remember: Safety comes first.

Mounting the USB I/O Hub to a Flat Surface



CAUTION Only mount the USB I/O Hub in a vertical position. Never mount the USB I/O Hub on the side or upside down or on a wall that can be subject to impact or collision of greater than 10Gs, in accordance with SAE J1455 Section 4.10.3.5.

1. Select a mounting location for the cradle. It should be flat, and must provide adequate support for the USB I/O Hub.
2. Prepare the mounting surface, using the mounting template below, with wall anchors that support the weight of the USB I/O Hub. The anchors should accept four M3 screws.

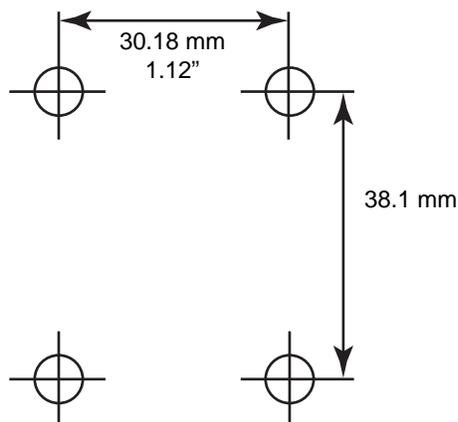


Figure 2-62 *Mounting Templates*

3. Position the mounting plate on the mounting surface.

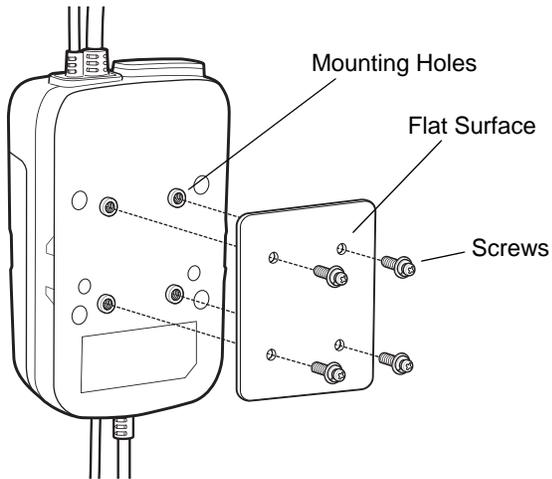


Figure 2-63 *Align Screws with Holes in Surface*

4. Fasten the mounting plate using four M3 screws (provided).



CAUTION Do not install the USB I/O Hub on or near an air bag cover plate or within an aerobic zone. Also, do not install it in a location that affects vehicle safety or driveability.

Mounting the Cradle to a RAM Mount

To mount the USB I/O Hub onto a RAM Mount:



CAUTION Only mount the USB I/O Hub in a vertical position. Never mount the USB I/O Hub on the side or upside down or on a wall that can be subject to impact or collision of greater than 10Gs, in accordance with SAE J1455 Section 4.10.3.5.

1. Follow the instructions that are provided with the RAM Mount for RAM Mount mounting instructions.
2. Align the mounting plate with the RAM Mount ball base.
3. Secure the mounting plate to the ball base using M4 screws, lock washers and flat washers (provided).



CAUTION Do not install the USB I/O Hub on or near an air bag cover plate or within an aerobic zone. Also, do not install it in a location that affects vehicle safety or driveability.

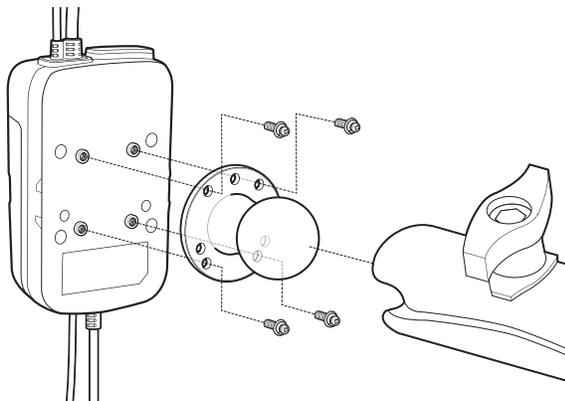


Figure 2-64 *Align with RAM Mount*

4. Secure the RAM Mount to the vehicle depending upon the type of RAM Mount. See instructions provided with RAM Mount.
5. Adjust RAM Mount according to RAM Mount instructions.

CLA Power Connection

To connect the Cigarette Lighter Adapter (CLA) to the USB I/O Hub:

1. Ensure that the connector collar is installed on the connector.
2. Connect the CLA power output connector to the Power Input Connector on the USB I/O Hub.
3. Plug the CLA into a power outlet (cigarette lighter receptacle).

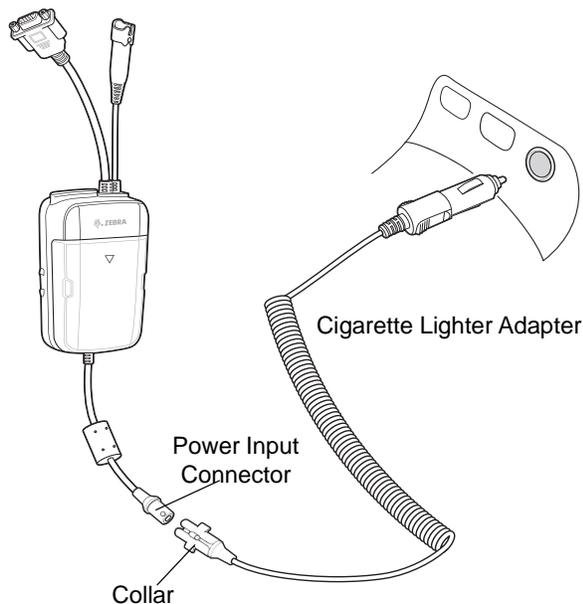


Figure 2-65 CLA Power Connection

Hard-Wired Power Connection

Please read all of these instructions before beginning.



WARNING! A properly trained technician must perform the power connection. Improper connection can damage your USB I/O Hub or mobile computer. Refer to the vehicle's Owner's Manual for instructions for removing power.

To connect the cradle to power:



CAUTION When setting up connection for this USB I/O Hub, only use the power input cable provided with this USB I/O Hub.

1. Locate the vehicle power source.



NOTE The ideal location for connecting the USB I/O Hub power input cable would be an accessory output in your vehicle's fuse panel. The USB I/O Hub should be added to a circuit with a maximum load capacity for the USB I/O Hub and the original circuit. Refer to the vehicle's *Owner's Manual* for identification of the circuit. If a fused output is not available, the USB I/O Hub must be installed with the provided in-line fuse holder and UL Listed 5A fuse. The fuse protects the vehicle from an electrical short on the power line to the USB I/O Hub. To use the USB I/O Hub to charge the device, when the vehicle's ignition is off, connect the USB I/O Hub to unswitched power.

2. Route the power input cable from the USB I/O Hub's power port to the connection point for the vehicle's power source.



NOTE The means of routing and securing the power input cable from the USB I/O Hub through to the vehicle power source is extremely important. Hazards associated with improper wiring can be severe. To avoid unintentional contact between the wire and any sharp edges, provide the cable with proper bushings and clamping where it passes through openings. If the wire is subjected to sharp surfaces and excess engine vibration, the wiring harness insulation can wear away, causing a short between the bare wire and chassis. This can start a fire. To avoid any mishaps, all wiring should be routed away from moving parts, high temperature areas and any contaminants.

3. When using the supplied in-line fuse holder (which must be used if not connecting to vehicle's fuse panel):
 - a. Ensure the fuse holder contains a 5A UL Listed slow-blow fuse.
 - b. Splice the fuse holder to the end of the red V+ wire, as shown below. Make the distance from the fuse to the power connection point as short as possible.

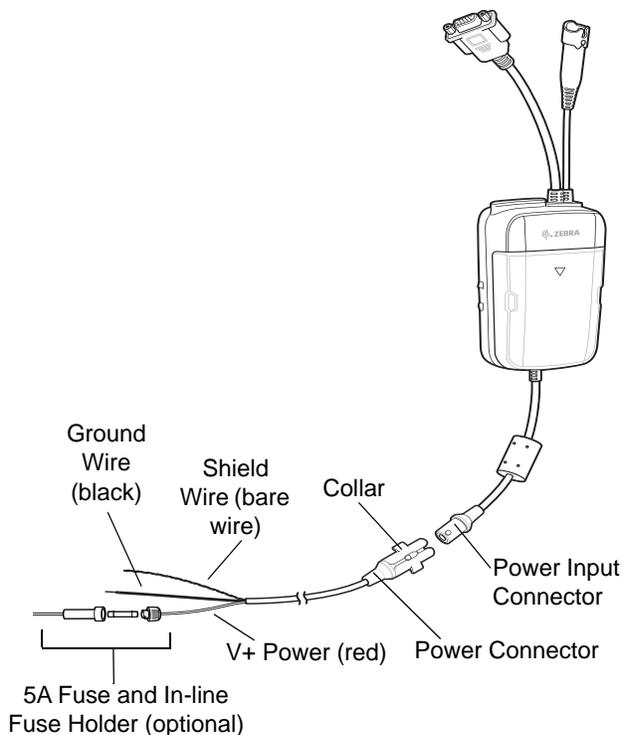


Figure 2-66 *Hard Wired Power Connection*

4. Prepare the cable termination.
 - a. Red wire: connect to a +12/24 V vehicle power source.
 - b. Black wire and Shield wire: connect to vehicle ground wire or chassis ground.



NOTE How the cable terminates depends on the vehicle. If the vehicle has a power output connector, then you must attach a mating connector to the end of the power cable. You may be able to connect to a fuse panel with a simple blade terminal or commercially available connector. Consult the vehicle *Owner's Manual* for information on how to access the power supply in the vehicle.

5. Ensure that the connector collar is installed on the connector.
6. Connect the power connector to the power Input Connector on the USB I/O Hub.

To see if the USB I/O Hub has power, connect to a vehicle cradle and insert a device into the cradle. The Charging LED on the device indicates charging. See the device User Guide for charging indications.

Power to Vehicle Cradle

The USB I/O Hub can provide power to a Vehicle Cradle.

1. Connect the Power Output Cable connector to the Power Input Cable connector of the Vehicle Cradle.
2. Tighten thumbscrews by hand until tight.

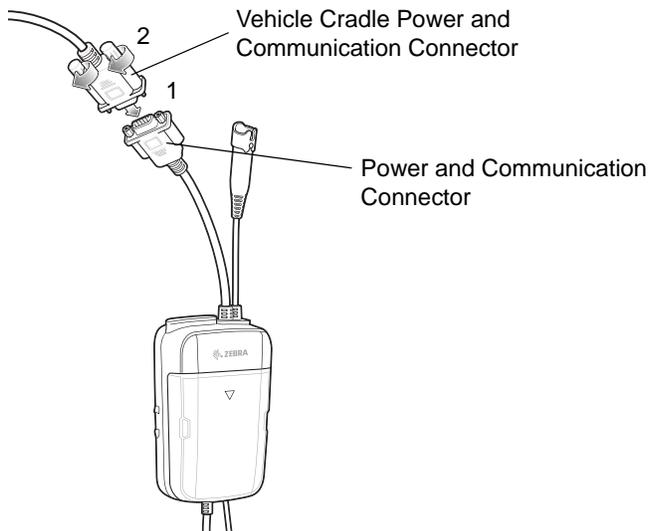


Figure 2-67 *Power to Vehicle Cradle*

CHAPTER 3 WLAN CONFIGURATION

Introduction

Wireless local area networks (WLANs) allow the TC70x to communicate wirelessly inside a building. Before using the TC70x 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 TC70x 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 TC70x to match the security scheme.

The TC70x supports the following WLAN security options:

- Open
- Wireless Equivalent Privacy (WEP).
- Wi-Fi Protected Access (WPA)/WPA2 Personal (PSK).
- 802.11x.

The **Status** bar displays icons that indicate Wi-Fi network availability and Wi-Fi status.



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

Configuring a WEP/WPA Wi-Fi Network

To set up a WEP/WPA Wi-Fi network:

1. Swipe down from the top of the screen, and touch  **All settings** >  **Network & wireless** > **Wi-Fi**.
2. Touch the **Wi-Fi networking** switch to turn on the Wi-Fi radio.
3. The device searches for WLANs in the area and lists them on the screen.
4. Scroll through the list and select the desired WLAN network.
5. Touch the desired network.

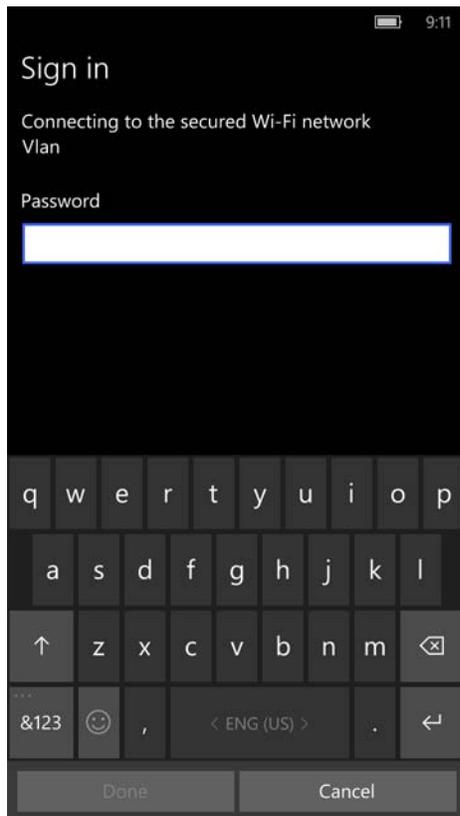


Figure 3-1 WEP WLAN Network Security Dialog Box

6. In the **Password** text box, enter the password.
7. Touch **Done**.

✓ **NOTE** By default, the network Proxy is set to **None** and the IP settings is set to **DHCP**. See [Configuring for a Proxy Server on page 3-5](#) for setting connection to a proxy server and see [Configuring the Device to Use a Static IP Address on page 3-6](#) for setting the device to use a static IP address.

8. Touch .

Configuring a 802.1x Wi-Fi Network

Configure a Wi-Fi network using:

- User Name and Password
- Certificate.

User name and Password

To set up a Wi-Fi network using a user name and password:

1. Swipe down from the top of the screen, and touch  **All settings** >  **Network & wireless** > **Wi-Fi**.
2. Touch the **Wi-Fi networking** switch to turn on the Wi-Fi radio.
3. The device searches for WLANs in the area and lists them on the screen.

4. Scroll through the list and select the desired WLAN network.
5. Touch the desired network.

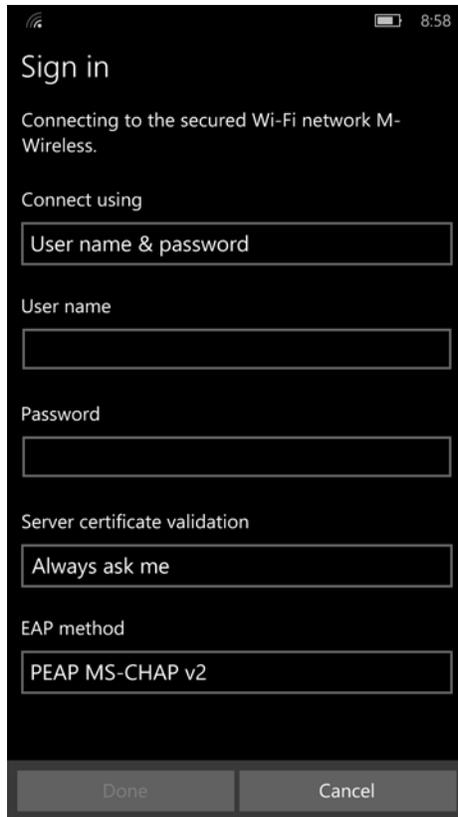


Figure 3-2 WLAN Network Security Dialog Box

6. Touch **Connect using** drop-down list and select **User name & password**.
7. In the **User name** text box, enter user name.
8. In the **Password** text box, enter the password.
9. Touch the **Server certificate validation** drop-down list and select one of the following:
 - a. None
 - b. Always ask me
 - c. Certificate authority.
10. Touch the **EAP method** drop-down list and select **PEAP MS-CHAPv2** or **TTLS**.
11. Touch **Done**.



NOTE By default, the network Proxy is set to **None** and the IP settings is set to **DHCP**. See [Configuring for a Proxy Server on page 3-5](#) for setting connection to a proxy server and see [Configuring the Device to Use a Static IP Address on page 3-6](#) for setting the device to use a static IP address.

12. Touch .

Certificate

To set up a Wi-Fi network using a certificate:

1. First install a certificate. See Security chapter.
2. Swipe down from the top of the screen, and touch  **All settings** >  **Network & wireless** > **Wi-Fi**.
3. Touch the **Wi-Fi networking** switch to turn on the Wi-Fi radio.
4. The device searches for WLANs in the area and lists them on the screen.
5. Scroll through the list and select the desired WLAN network.
6. Touch the desired network.

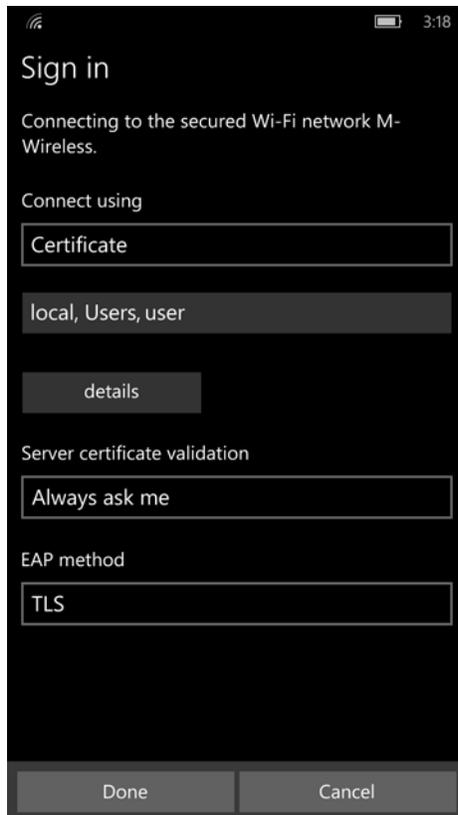


Figure 3-3 WLAN Network Security Dialog Box

7. Touch **Connect using** drop-down list and select **Certificate**.
8. Touch the **Server certificate validation** drop-down list and select one of the following:
 - a. None
 - b. Always ask me
 - c. Certificate authority.
9. Touch the **EAP method** drop-down list and select **TLS** or **TTLS**.
10. Touch **Done**.

✓ **NOTE** By default, the network Proxy is set to **None** and the IP settings is set to **DHCP**. See [Configuring for a Proxy Server on page 3-5](#) for setting connection to a proxy server and see [Configuring the Device to Use a Static IP Address on page 3-6](#) for setting the device to use a static IP address.

11. Touch .

Manually Adding a Wi-Fi Network

Manually add a Wi-Fi network if the network does not broadcast its name (SSID) or to add a Wi-Fi network when out of range.

1. Swipe down from the top of the screen, and touch  **All settings** >  **Network & wireless** > **Wi-Fi**.
2. Scroll down and touch **Manage** button.

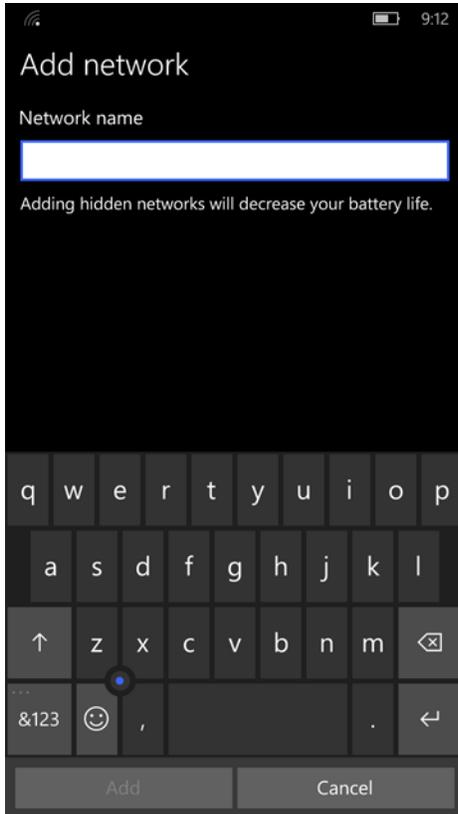


Figure 3-4 Add a Network

3. Touch . The **Add network** screen appears.
4. In the **Network name** field, enter the name of the Wi-Fi network.
5. Touch **Add**.

Configuring for a Proxy Server

A proxy server is a server that acts as an intermediary for requests from clients seeking resources from other servers. A client connects to the proxy server, requesting some service, such as a file, connection, web page, or other resource, available from a different server. The proxy server evaluates the request according to its filtering rules. For example, it may filter traffic by IP address or protocol. If the request is validated by the filter, the proxy provides the resource by connecting to the relevant server and requesting the service on behalf of the client.

It is important for enterprise customers to be able to set up secure computing environments within their companies, and proxy configuration is an essential part of doing that. Proxy configuration acts as a security barrier ensuring that the proxy server monitors all traffic between the Internet and the intranet. This is normally an integral part of security enforcement in corporate firewalls within intranets.

1. Swipe down from the top of the screen, and touch  **All settings** >  **Network & wireless** > **Wi-Fi**.
2. Touch and hold a network name until the menu appears.
3. Touch **Edit**.

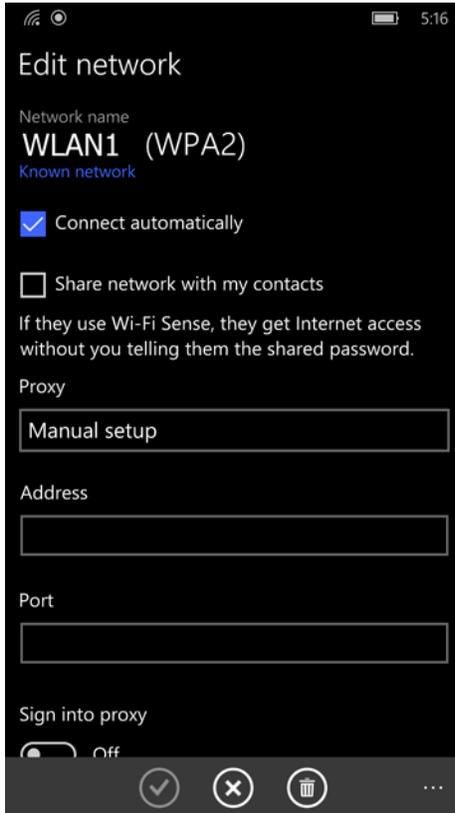


Figure 3-5 Proxy Settings

4. In the **Proxy** drop-down menu, select **Manual setup**.
5. In the **Address** text box, enter the address of the proxy server.
6. In the **Port** text box, enter the port number for the proxy server.
7. If the proxy server requires a log in, touch the **Sign into proxy** switch.
 - a. In the **User name** text box, enter the username.
 - b. In the **Password** text box, enter the password.
8. Touch .
9. Touch .

Configuring the Device to Use a Static IP Address

By default, the device is configured to use Dynamic Host Configuration Protocol (DHCP) to assign an Internet protocol (IP) address when connecting to a wireless network. To configure the device to connect to a network using a static IP address:

1. In the Wi-Fi window, scroll down and select **Static IP** button.
2. Touch the **Configure network settings manually** switch.

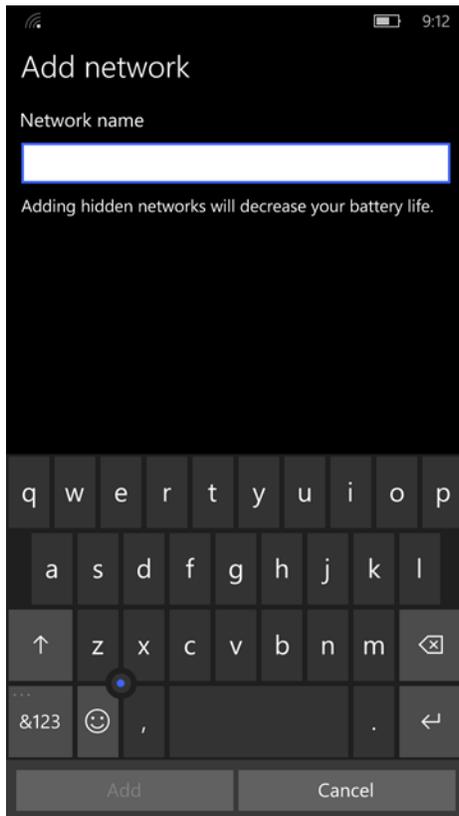


Figure 3-6 *Static IP Settings*

3. In the **IP address** text box, enter an IP address for the device.
4. In the Subnet mask text box, enter the subnet mask number.
5. If required, in the **Default Gateway** text box, enter a gateway address for the device.
6. If required, in the **Network prefix length** text box, enter a the prefix length.
7. If required, in the **DNS** text box, enter a Domain Name System (DNS) address.
8. Touch **Done**.
9. Touch .
10. Reboot the device.

CHAPTER 4 USB COMMUNICATION

Introduction

This chapter provides information for transferring files between the device and a host computer.

Connecting to a Host Computer via USB

Connect the TC70x to a host computer using the USB Charging cable to transfer files between the TC70x and the host computer.

When connecting the TC70x to a host computer, follow the host computer's instructions for connecting and disconnecting USB devices, to avoid damaging or corrupting files.

1. Connect the USB Charge cable to the TC70x and then to the host computer. The USB dialog box appears.

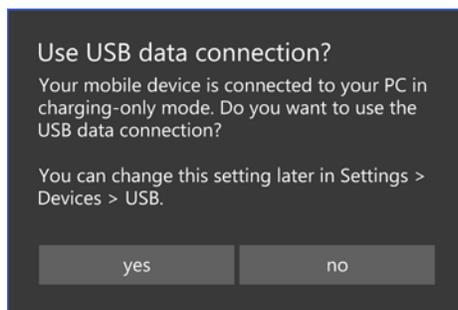


Figure 4-1 *USB Data Connection Dialog Box*

2. Touch **Yes**.
3. On the host computer, open a file explorer application.
4. Locate the **Windows phone** as a portable device.
5. Open the **SD card** or the **Phone** folder.
6. Copy or delete files 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.

7. On the host computer, unmount the device.
8. Remove the USB Charging cable from the device.

CHAPTER 5 SETTINGS

Introduction

This chapter describes settings available for configuring the device.

System

Display - Controls setting for brightness, screen rotation, and text size.

Notifications & Actions - Controls quick action items and the type of notifications that appear on the Action Center.

Phone - Not applicable.

Messaging - Not applicable.

Battery saver - Displays the current battery charge level and controls battery saver mode.

Storage - Displays the amount of space available of the device and SD card (if installed). Controls where data is saved by default.

Device encryption - Enables device encryption.

Offline maps - Allows user to download maps for access when no internet access is available.

About - Displays device information and allows user to change the name of the device.

Devices

Default camera - Use to set the default camera application.

Bluetooth - Use to configure Bluetooth radio. Refer to the TC70x User Guide for Windows 10 IoT Mobile Enterprise.

NFC - Use to configure NFC radio. Refer to the TC70x User Guide for Windows 10 IoT Mobile Enterprise.

Mouse - Use to set primary mouse button.

USB - Use to control the TC70x USB connection.

Network & Wireless

Data Usage - Displays the amount of data transferred over Wi-Fi.

Wi-Fi - Use to configure Wi-Fi radio. See [Chapter 3, WLAN Configuration](#) for more information.

Airplane Mode - Use to turn off all radios.

VPN - Use to configure connection to a VPN network.

Personalization

Start - Use to configure the Start screen.

Colors - Use to set the color scheme for Windows environment.

Sounds - Use to configure when a sounds plays.

Lock Screen - Use to configure the lock screen.

Accounts

Use the **Accounts** settings to add, remove, and manage accounts. Use these settings to control how applications send, receive, and sync data on their own schedules, and whether applications can synchronize user data automatically. Applications may also have their own settings to control how they synchronize data; see the documentation for those applications for details.

Your email and accounts - Use to set up Windows email accounts and other email accounts.

Sign-in options - Use to create a PIN that is required when unlocking the device.

Work access - Use to set up access to work network and enroll in a device management application.

Sync your settings - Use to sync Windows settings with other devices.

Kid's corner - Not applicable.

Apps Corner - Allows user to give people access to apps on the device.

Provisioning - Use to install a provisioning package. See [Chapter 9, Provisioning](#).

Time & language

Date & Time - Use to set the date and time on the device.

Language - Use to add a language feature to the device. Internet access required. See [Language Usage on page 5-4](#).

Region - Use to set the country and region that the device is located.

Keyboard - Use to add additional language keyboards.

Speech - Use to download and install additional speech languages.

Ease of Access

Narrator - Use to set the device to read aloud text and controls. Once enabled, choose a voice (male or female) and adjust the narrator's speed and pitch.

Magnifier - Use to enable screen magnification. When enabled, double touch the screen with two fingers to magnify the screen. Use two fingers to move the screen. Double touch the screen with two fingers to return to normal magnification.

High Contrast - Use to enable high contrast to make it easier for people with visual impairments to see different items on the screen.

Closed caption - Use to control how closed captions appear in Windows apps. Change the color, transparency, style, size, background color, background transparency, window color, and window transparency of the captions.

More Options - Adjust the size of the text displayed on the screen.

Privacy

Location - Use to allow apps to request device location and location history.

Camera - Use to allow apps to access the camera.

Microphone - Use to allow apps to access the microphone.

Motion - Use to allow apps to use motion data.

Speech, inking & typing - To improve the device's ability to correctly recognize your pronunciation and handwriting, Microsoft collects speech, inking, and typing information when you interact with the device by speaking, writing, or typing. If you have allowed Cortana to do so, Microsoft also collects information about your Calendar and People (also known as contacts) to help personalize your experience and helps Cortana better recognize people, events, places, and music when you dictate messages or documents.

Account info - Use to allow apps to access account information.

Contacts - Use to allow apps to access contacts.

Calendar - Use to allow apps to access the calendar.

Call History - Use to allow apps to access call history.

Email - Use to allow apps to access emails.

Messaging - Use to allow apps to access text messages.

Radios - Use to allow apps to use the device's radios.

Background apps - Choose which apps can receive information, send notifications and stay up-to-date when not in use.

Accessory Apps - Use to control notifications to and from accessory apps.

Advertising ID - Use to allow apps to use the device's advertising ID.

Other Devices - Use to allow apps to share and sync information with wireless devices that do not pair with the device.

Feedback & diagnostics - Use to set how often Microsoft asks for feedback and the amount of Windows diagnostic and usage data sent to Microsoft from the device.

Update & Security

Phone update - Check for system updates.

Backup - Controls backup of data to OneDrive.

Find My Phone - Use to set up and control locking and finding lost devices.

For developers - Use for developer use only.

Extras

Zebra TC700J Settings - Set device hardware beep and touch configuration. See *TC70x Touch Computer User Guide with Windows 10 IoT Mobile Enterprise*.

Zebra TC700J System Info - Display system information:

Language Usage

Use the **Language** settings to change the language that display for the text and including words added to its dictionary.

Changing the Language Setting

To add several writing languages to the keyboard and switch between the languages when writing.

1. Swipe down from the top of the screen, and touch **All settings** >  **Time & language** > **Keyboard**.
2. Touch **Add keyboards**.
3. In the list, select the languages.
4. Touch .
5. If the language package is not on the device, the device tries to download the language package.
6. Touch **Yes**.

To remove a language, touch and hold the language you want to remove, and touch **Remove**.

To switch between the languages when writing, swipe left or right on the space bar until the language appears. The keyboard layout and word suggestions change according to the language selected.

Storage

The TC70x has internal storage and optional external storage. The internal and external storage content can be viewed and files copied to and from when the TC70x is connected to a host computer.

1. Swipe down from the top of the screen, and touch  **All settings** >  **System** > **Storage**.

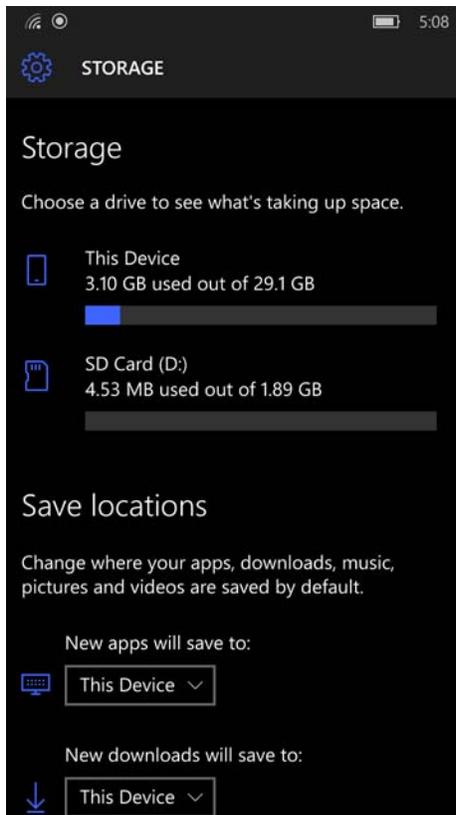


Figure 5-1 *Storage Screen*

The amount of space available and used is listed for each drive.

Touch to view detailed information.

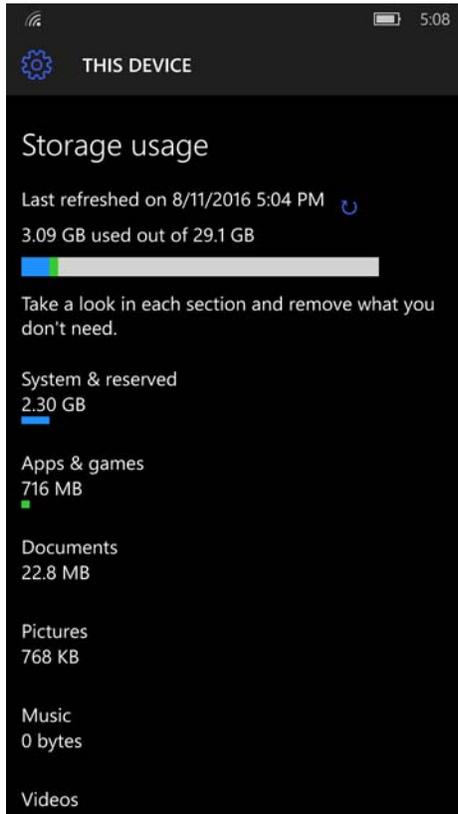


Figure 5-2 *Device Usage Screen*

CHAPTER 6 SCANNER PROFILES

Introduction

This chapter describes how to use the Zebra Scanning Profile application to create and edit profile parameters such as decoder parameters, scan parameters and reader parameters. Use the profiles to enable specific scanning parameters in scanning applications.

Note that default parameters are not be listed in the profile settings application.

Application Installation

Download the Zebra Scanner Profile application from the Zebra Support & Downloads web site. Go to: www.zebra.com/support.

To install the application, see [Application Installation on page 10-1](#).

Profiles

A profile contains information on how the scanner behaves within different applications. Using profiles, an application can have a specific configurations. For example, each application can have a profile which outputs scanned data in the required format when that application comes to the foreground. The application can be configured to process the same set of captured data differently based on the requirements of each application.

Creating a New Profile

To create a new profile:

1. Touch +.

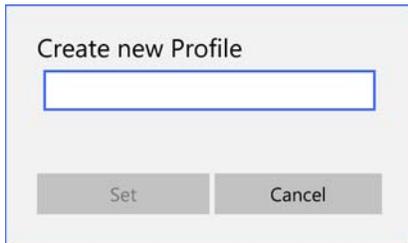


Figure 6-1 *Create New Profile Dialog Box*

2. In the **Create new Profile** dialog box, enter a name for the new profile.
It is recommended that profile names be unique and made up of only alpha-numeric characters (A-Z, a-z, 0-9).
The filename cannot contain: / \ : * ? " < > | or space.
3. Touch **Set**.
The new profile name appears in the **Profiles** list.



Figure 6-2 *Profile List*

Configuring a Profile

To configure a profile:

1. Touch the profile name. The **Profile** screen appears.

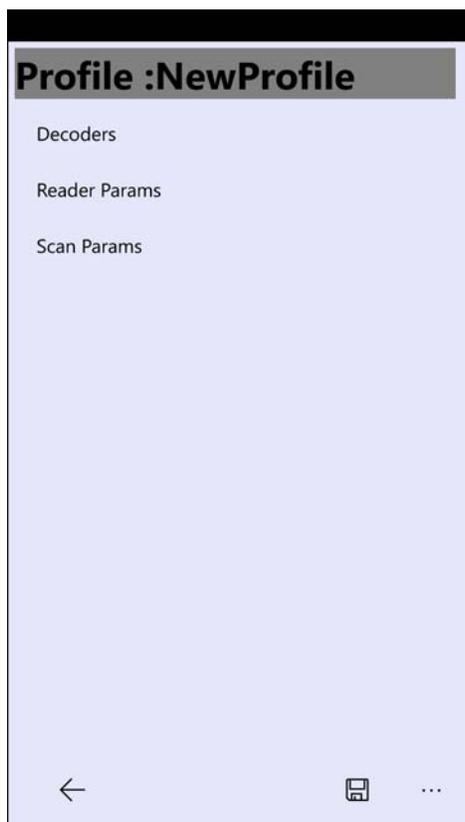


Figure 6-3 Profiles Screen

2. Touch **Decoders**. The Decoders screen appears.

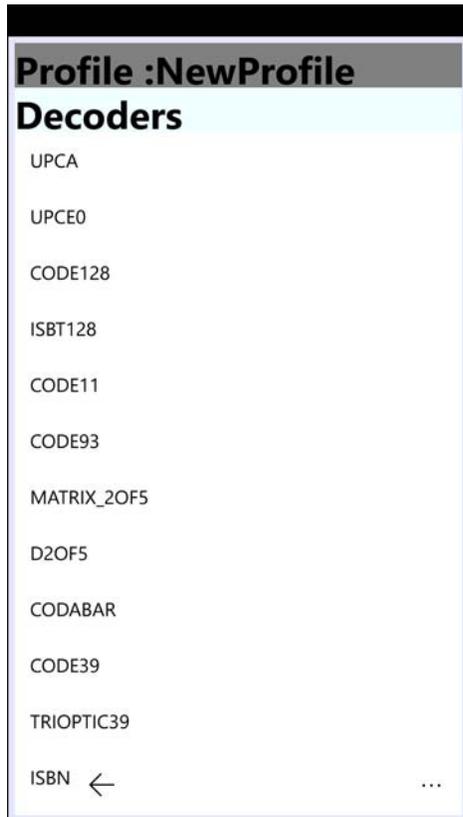


Figure 6-4 *Decoders*

3. Select a decoder type to configure for this profile. See [Decoders on page 6-7](#) for detailed information on each decoder.
4. Touch  to return to the **Profile** screen.
5. Touch **Reader Params** to configure the scanner parameters. The **Reader Params** screen appears.

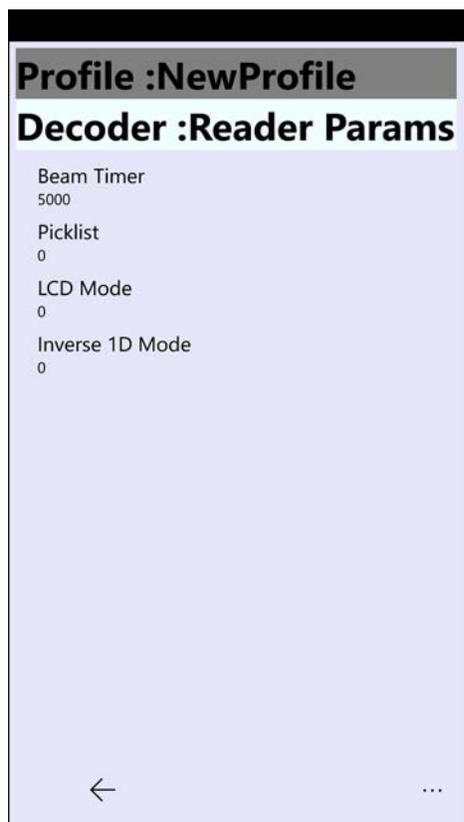


Figure 6-5 *Reader Parameters*

6. Select all the parameters for this profile and configure. See [Reader Params on page 6-13](#) for detailed information on each parameter.
7. Touch  to return to the **Profile** screen.
8. Touch **Scan Params** to configure the scanner parameters. The **Scan Params** screen appears.

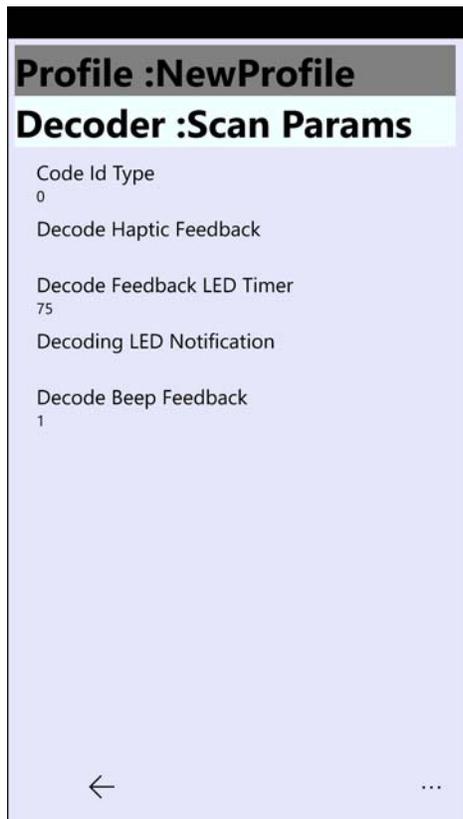


Figure 6-6 Scan Parameters

9. Select all the parameters for this profile and configure. See [Scan Params on page 6-13](#) for detailed information on each parameter.
10. Touch  to save the profile information. A profile file is created in the `Documents` folder. The scanner driver is updated.

Using a Profile

To use the profile, the application has to call `setActiveProfile` with newly created profile name as a parameter.

In an application, if the user selects the supported profiles, the newly added profile displays along with the list of default profiles.

Deleting a Profile

To delete a profile:

1. Touch and hold on the profile name until a menu appears.
2. Touch **Remove**.
The profile is remove from the device and from the scanner driver.

Decoders

Use **Decodes** to configure individual decoder parameters.

UPCA

- **Report Check Digit** - The check digit is the last character of the symbol used to verify the integrity of the data. Enables or disables this option. A check in the checkbox indicates that the option is enabled (default - True).
- **Preamble** - Preamble characters are part of the UPC symbol consisting of Country Code and System Character. Select the appropriate option to match the host system.

There are three options for transmitting a UPCA preamble:

- **Preamble None** - Transmit no preamble.
- **Preamble Sys Char** - Transmit System Character only (default).
- **Preamble Country and Sys Char** - Transmit System Character and Country Code ("0" for USA). Select the appropriate option to match the host system.

UPCE0

- **Report Check Digit** - The check digit is the last character of the symbol used to verify the integrity of the data. Enables or disables this option. A check in the checkbox indicates that the option is enabled (default - False).
- **Preamble** - Preamble characters are part of the UPC symbol consisting of Country Code and System Character. Select the appropriate option to match the host system.

There are three options for transmitting a UPCE0 preamble:

- **Preamble None** - Transmit no preamble (default).
- **Preamble Sys Char** - Transmit System Character only.
- **Preamble Country and Sys Char** - Transmit System Character and Country Code ("0" for USA).
- **Convert UPCE0 To UPCA** - Enable to convert UPCE0 (zero suppressed) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections. Disable to transmit UPCE0 decoded data as UPCE0 data, without conversion (default - False).

Code128

- **Length1** - Use to set decode lengths (default - 0). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - False).
- **Enable Plain Code** - Set the ISBT128 subtype. A check in the checkbox indicates that the option is enabled (default - True).

ISBT128

- **Check ISBT Table** - The If ISBT128 Concat Mode is set, enable this option to concatenate only those pairs found in this table. Other types of ISBT codes are not concatenated (default - False).

- **Security Level** - Options: **Security level 0**, **Security Level 1**, **Security Level 2** and **Security Level 3** (default - Security level 1).
 - **Security Level 0** - This setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding most “in-spec” bar codes.
 - **Security Level 1** - This setting eliminates most misdecodes (default).
 - **Security Level 2** - Select this option if Security level 1 fails to eliminate misdecodes.
 - **Security Level 3** - If Security Level 2 is selected and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the scanner. If this level of security is needed, try to improve the quality of the bar codes.
- **Code 128 Reduced Quiet Zone** - Enables decoding of margin-less Code 128 bar codes (default - False).
- **Ignore Code 128 FNC4** - Applies to Code 128 bar codes with an embedded <FNC4> character. Enable this to strip the <FNC4> character from the decode data. The remaining characters are sent to the host unchanged. When disabled, the <FNC4> character is processed normally as per Code 128 standard (default - False).

Code 11

- **Length1** - Use to set decode lengths (default - 4). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).
- **Verify Check Digit** - Check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code.
 - **No Check Digit** - Do not verify check digit.
 - **1 Check Digit** - Bar code contains one check digit (default).
 - **2 Check Digits** - Bar code contains two check digits.
- **Report Check Digit** - Transmit Code 11 data with or without the check digit. A check in the checkbox indicates to send Code 11 data with check digit (default - False).

Code93

- **Length1** - Use to set decode lengths (default - 0). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - False).

Matrix 2 of 5

- **Length1** - Use to set decode lengths (default - 10). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 0). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - False).
- **Report Check Digit** - Transmit Matrix 2 of 5 data with or without the check digit. A check in the checkbox indicates to send Matrix 2 of 5 data with check digit (default - True).
- **Verify Check Digit** - Enable this feature to check the integrity of all Matrix 2 of 5 symbols to verify that the data complies with a specified check digit algorithm (default - True).

Discrete 2 of 5

- **Length1** - Use to set decode lengths (default - 0). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 14). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).

Codabar

- **Length1** - Use to set decode lengths (default - 6). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).
- **CLSI Editing** - Enable this parameter to strip the start and stop characters and insert a space after the first, fifth, and tenth characters of a 14-character Codabar symbol. Enable this feature if the host system requires this data format (default - False).
- **NOTIS Editing** - Enable this parameter to strip the start and stop characters from a decoded Codabar symbol. Enable this feature if the host system requires this data format (default - False).

Code39

- **Length1** - Use to set decode lengths (default - 0). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths 4 (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Verify Check Digit** - Enable this feature to check the integrity of all Code 39 symbols to verify that the data complies with a specified check digit algorithm. The digital scanner decodes only those Code 39 symbols that include a modulo 43 check digit. Enable this feature only if the Code 39 symbols contain a modulo 43 check digit (default - False).
- **Report Check Digit** - Transmit Code 39 data with or without the check digit. A check in the checkbox indicates to send Code 39 data with check digit (default - False).
- **Full ASCII** - Code 39 Full ASCII is a variant of Code 39 that pairs characters to encode the full ASCII character set. To enable or disable Code 39 Full ASCII (default - False).
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - False).
- **Convert Code39 To Code32** - Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32 (default - False).
- **Report Code32 Prefix** - Scan the appropriate bar code to enable or disable adding the prefix character "A" to all Code 32 bar codes (default - False).
- **Security Level** - Options: **Security level 0**, **Security Level 1**, **Security Level 2** and **Security Level 3** (default - Security level 1).
 - **Security Level 0** - This setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding most "in-spec" bar codes.
 - **Security Level 1** - This setting eliminates most misdecodes (default).
 - **Security Level 2** - Select this option if Security level 1 fails to eliminate misdecodes.
 - **Security Level 3** - If Security Level 2 is selected and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the scanner. If this level of security is needed, try to improve the quality of the bar codes.

- **Code39 Reduced Quiet Zone** - Enables decoding of margin-less Code 39 bar codes (default - False).

Trioptic 39

- **Redundancy** - Sets the scanner to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).

ISBN

- **Bookland Format** - When Bookland is enabled, permits selection of an option for Bookland data.
 - **Format ISBN-10** - The scanner reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode (default).
 - **Format ISBN-13** - The scanner reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.

Interleaved 2 of 5

- **Length1** - Use to set decode lengths (default - 14). See [Decode Lengths on page 6-13](#) for more information.
- **Length2** - Use to set decode lengths (default - 10). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).
- **Check Digit**
 - **No Check Digit** - A check digit is not used. (default)
 - **USS Check Digit** - Select to check the integrity of all Interleaved 2 of 5 symbols to verify the data complies with either the Uniform Symbology Specification (USS) check digit algorithm.
 - **OPCC Check Digit** - Select to check the integrity of all Interleaved 2 of 5 symbols to verify the data complies with either the Optical Product Code Council (OPCC) check digit algorithm.
- **Report Check Digit** - Transmit Interleaved 2 of 5 data with or without the check digit. A check in the checkbox indicates to send Interleaved 2 of 5 data with check digit (default - False).
- **Convert ITF-14 To EAN13** - Convert 14-character Interleaved 2 of 5 bar codes to EAN-13, and transmit as EAN-13. The Interleaved 2 of 5 bar code must be enabled and must have a leading zero and a valid EAN-13 check digit. A check in the checkbox indicates that the option is enabled (default - False).
- **I2of5 Security Level** - Options: **I2of5 Security level 0**, **I2of5 Security Level 1** (default), **I2of5 Security Level 2** and **I2of5 Security Level 3**.
- **I2of5 Reduced Quiet Zone** - Enables decoding of margin-less I2of5 bar codes (default - False).

MSI

- **Length 1** - Use to set decode lengths (default - 4). See [Decode Lengths on page 6-13](#) for more information.
- **Length 2** - Use to set decode lengths (default - 55). See [Decode Lengths on page 6-13](#) for more information.
- **Redundancy** - Sets the reader to read the bar code twice before accepting data. A check in the checkbox indicates that redundancy is enabled (default - True).
- **Check Digit** - With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional.
 - **One Check Digit** - Verify one check digit (default).
 - **Two Check Digits** - Verify two check digits.

- **Check Digit Scheme** - Two algorithms are possible for the verification of the second MSI check digit. Select the algorithm used to encode the check digit.
 - **Mod-11-10** - First check digit is MOD 11 and second check digit is MOD 10 (default).
 - **Mod-10-10** - Both check digits are MOD 10.
- **Report Check Digit** - Transmit MSI data with or without the check digit. A check in the checkbox indicates to send MSI data with check digit (default - False).

GS1 DataBar Limited

- **GS1 Limited Security Level**
 - **GS1 Security Level 1** - This setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding most “in-spec” bar codes.
 - **GS1 Security Level 2** - This setting eliminates most misdecodes (default).
 - **GS1 Security Level 3** - Select this option if Security level 2 fails to eliminate misdecodes.
 - **GS1 Security Level 4** - If Security Level 3 is selected and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the scanner. If this level of security is needed, try to improve the quality of the bar codes.

UPCE1

- **Report Check Digit** - The check digit is the last character of the symbol used to verify the integrity of the data. Enables or disables this option. A check in the checkbox indicates that the option is enabled (default - False).
- **Preamble** - Preamble characters are part of the UPC symbol consisting of Country Code and System Character. Select the appropriate option to match the host system.
There are three options for transmitting a UPCE1 preamble:
 - **Preamble None** - Transmit no preamble (default).
 - **Preamble Sys Char** - Transmit System Character only.
 - **Preamble Country and Sys Char** - Transmit System Character and Country Code (“0” for USA).
- **Convert UPCE1 To UPCA** - Enable this to convert UPCE1 decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections. Disable this to transmit UPCE1 decoded data as UPCE1 data, without conversion (default - False).

UPC EAN Params

- ✓ **NOTE** This section pertains to the following profiles: **UPCAADD2, UPCAADD5, UPCEADD2, UPCEADD5, EAN8ADD2, EAN8ADD5, EAN13ADD2** and **EAN13ADD5**.

Allows the configuration of the parameters that apply to more than one UPC or EAN decoder.

- **Supplemental Mode**
 - **No Supplementals** - the scanner is presented with a UPC/EAN plus supplemental symbol, the scanner decodes UPC/EAN and ignores the supplemental characters (default).
 - **Supplemental Always** - the scanner only decodes UPC/EAN symbols with supplemental characters, and ignores symbols without supplementals.
 - **Supplements Auto** - the scanner decodes UPC/EAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times

set via UPC/EAN Supplemental Redundancy before transmitting its data to confirm that there is no supplemental.

- **Supplemental Smart** - Enables smart supplementals. In this mode the decoder returns the decoded value of the main block right away if it does not belong to one of the following supplemental types: 378, 379, 977, 978, 979, 414, 419, 434 or 439. If the bar code starts with one of the prefixes it searches the image more aggressively for a supplemental. Tries to scan the supplemental if it is present. If the supplemental scanning failed, then the main bar code is returned.
- **Supplemental 378-379** - Enables (auto-discriminate) supplemental for UPC/EAN codes starting with 378 or 379. Disables reading of supplementals for any other UPC/EAN bar code not starting with 378 or 379. Tries to scan the supplemental if it is present. If the supplemental scanning failed, then the main bar code is returned.
- **Supplemental 978-979** - Enables (auto-discriminate) supplemental for UPC/EAN codes starting with 978 or 979. Disables reading of supplementals for another UPC/EAN bar code not starting with 978 or 979. Tries to scan the supplemental if it is present. If the supplemental scanning failed, then the main bar code is returned.
- **Supplemental 414-419-434-439** - Enables (auto-discriminate) supplemental for UPC/EAN codes starting with 414, 419, 434 or 439. Disables reading of supplementals for another UPC/EAN bar code 4 - 16 not starting with 414, 419, 434 or 439. Tries to scan the supplemental if it is present. If the supplemental scanning failed, then the main bar code is returned.
- **Supplemental 977** - Enables (auto-discriminate) supplemental for UPC/EAN codes starting with 977. Disables reading of supplementals for another UPC/EAN bar code not starting with 977. Tries to scan the supplemental if it is present. If the supplemental scanning failed, then the main bar code is returned.

UPCCOUPON

- **Coupon Report Mode** - Traditional coupon symbols are composed of two bar code: UPC/EAN and Code 128. A new coupon symbol is composed of a single Data Expanded bar code. The new format offers more options for purchase values (up to \$999.999) and supports complex discount offers as a second purchase requirement. An interim coupon symbol also exists that contain both types of bar codes: UPC/EAN and Databar Expanded. This format accommodates both retailers that do not recognize or use the additional information included in the new coupon symbol, as well as those who can process new coupon symbols.
- **Old Coupon Report Mode** - Scanning an old coupon symbol reports both UPC and Code 128, scanning is interim coupon symbol reports UPC, and scanning a new coupon symbol reports nothing (no decode).
- **New Coupon Report Mode** - Scanning an old coupon symbol reports either UPC or Code 128, and scanning an interim coupon symbol or a new coupon symbol reports Databar Expanded.
- **Both Coupon Report Modes** - Scanning an old coupon symbol reports both UPC and Code 128, and scanning an interim coupon symbol or a new coupon symbol reports Databar Expanded (default).

GS1128COUPON

- **Coupon Report Mode** - Traditional coupon symbols are composed of two bar code: UPC/EAN and Code 128. A new coupon symbol is composed of a single Data Expanded bar code. The new format offers more options for purchase values (up to \$999.999) and supports complex discount offers as a second purchase requirement. An interim coupon symbol also exists that contain both types of bar codes: UPC/EAN and

Databar Expanded. This format accommodates both retailers that do not recognize or use the additional information included in the new coupon symbol, as well as those who can process new coupon symbols.

- **Old Coupon Report Mode** - Scanning an old coupon symbol reports both UPC and Code 128, scanning an interim coupon symbol reports UPC, and scanning a new coupon symbol reports nothing (no decode).
- **New Coupon Report Mode** - Scanning an old coupon symbol reports either UPC or Code 128, and scanning an interim coupon symbol or a new coupon symbol reports Databar Expanded.
- **Both Coupon Report Modes** - Scanning an old coupon symbol reports both UPC and Code 128, and scanning an interim coupon symbol or a new coupon symbol reports Databar Expanded (default).

Decode Lengths

- The allowable decode lengths are specified by options **Length1** and **Length2** as follows:
- Variable length: Decode symbols containing any number of characters.
 - Set both **Length1** and **Length2** to 0.
- Range: Decode a symbol with a specific length range (from **a** to **b**, including **a** and **b**).
 - Set **Length1** to **a** and set **Length2** to **b**.
- Two Discrete Lengths: Decode only symbols containing either of two selected lengths.
 - Set both **Length1** or **Length2** to the specific lengths. **Length1** must be greater than **Length2**.
- One Discrete Length: Decode only symbols containing a specific length.
 - Set both **Length1** and **Length2** to the specific length.

Reader Params

Allows the configuration of parameters specific to the selected bar code reader.

- **Beam Timer** - Sets the maximum amount of time that the reader remains on (0 - 60,000 ms in increments of 100 ms). A value of 0 sets the reader to stay on indefinitely (default -5000).
- **Picklist** - Allows the scanner to decode only the bar code that is directly under the cross-hair/reticle (+) part of the pattern. This feature is useful in applications where multiple bar codes may appear in the field of view during a decode session and only one of them is targeted for decode.
 - **Disabled** – Disables Picklist mode. Any bar code within the field of view can be decoded (default).
 - **Hardware Picklist**– Enables Picklist mode by sending a command to hardware.
- **LCD Mode** - Enables or disables LCD mode. LCD mode enhances the ability of the scanner to read bar codes from LCD displays such as cellphones.
 - **Disable** - Disables the LCD mode (default).
 - **Enable** - Enables LCD mode.
- **Inverse 1D Mode** - This parameter allows the user to select decoding on inverse 1D bar codes.
 - **Disable** - Disables decoding of inverse 1D bar codes (default).
 - **Enable** - Enables decoding of only inverse 1D bar codes.
 - **Auto** - Allows decoding of both twice positive and inverse 1D bar codes.

Scan Params

Allows the configuration of Code ID and decode feedback options.

- **Code ID Type** - A Code ID character identifies the code type of a scanned bar code. This is useful when the reader is decoding more than one code type. Select a code ID character to insert between the prefix and the decoded symbol.
 - **Code ID Type None** - No prefix (default)
 - **Code ID Type AIM** - Insert AIM Character prefix.
 - **Code ID Type Symbol** - Insert Symbol character prefix.
- **Decode Haptic Feedback** - Enable the device to vibrate upon a good decode (default - False).
- **Decode Feedback LED Timer** - Set the amount of time (in milliseconds) that the green Data Capture LED stays lit after a good decode. (default - 75 msec.). Move slider to change value.
- **Decoding LED Notification** - Enable the device to light the red Data Capture LED when data capture is in progress. (default - False).
- **Decode Beep Feedback** - Select an audio tone to sound upon a good decode.
 - No Beep Feedback - Audio tone does not sound.
 - Hardware Beep Feedback - Audio tone is system tone (default).
 - Software Beep Feedback - Audio tone is programmed by application.

CHAPTER 7 ADMINISTRATOR UTILITIES

Enterprise Assign Access

Enterprise Assigned Access allows IT administrators to configure settings, such as language and themes, lock down a device, and configure custom layouts on a device. For example, the administrator can lock down a device so that only applications specified in an Allow list are available. Apps not on the Allow list remain installed on the device, but are hidden from view and blocked from launching.

For more information go to: <https://msdn.microsoft.com/en-us/library/dn499754.aspx> and [https://msdn.microsoft.com/en-us/library/windows/hardware/mt157024\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/mt157024(v=vs.85).aspx).

Windows Imaging and Configuration Designer

The Windows Imaging and Configuration Designer (ICD) tool streamlines the customizing and provisioning of a Windows image.

Use the Windows ICD to do the following tasks:

- View all of the configurable settings and policies for a Windows 10 image or provisioning package.
- Create Windows provisioning answer files.
- Add third-party drivers, apps, or other assets to an answer file.
- Create variants and specify the settings that apply to each variant.
- Build and flash a Windows image.
- Build a provisioning package.

For more information go to: [https://msdn.microsoft.com/en-us/library/windows/hardware/dn916113\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/dn916113(v=vs.85).aspx).

Encryption

Device encryption is an option that comes disabled by default. To enable device encryption:

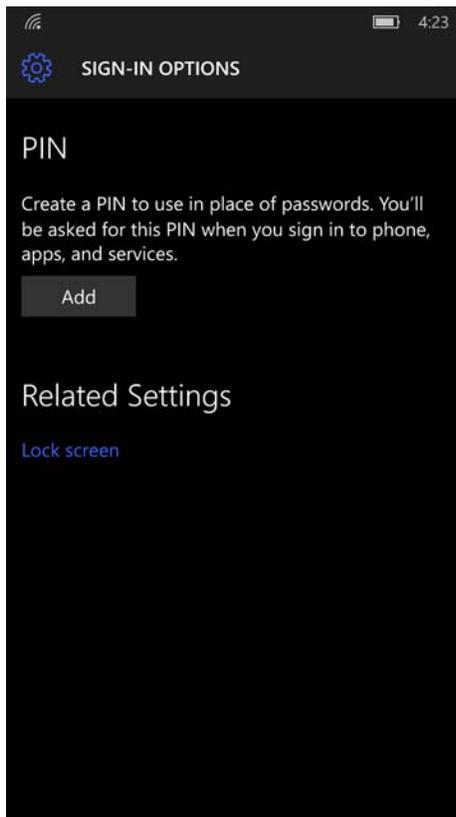
1. Swipe down from the top of the screen, and touch  **All settings** >  **System** > **Device encryption**.



Figure 7-1 *Device Encryption Screen*

2. Slide the **Device encryption** switch to the **On** position to enable the encryption.

✓ **NOTE** A password PIN must be in place to enable encryption. If a PIN is not set up, follow the on-screen instructions to create a PIN. Then you would just tap the Add button, under the PIN section, and follow the on-screen wizard to create a new PIN. After the PIN password is created, you can go back to Device encryption settings to verify that the feature has been enabled.



3. Touch **Add**.



NOTE Encryption will not encrypt data that you stored on an SD card.

Mobile Device Management Administration

Mobile Device Management (MDM) administration software (by VMWare and Soti) both have MDM consoles that support Windows 10 IoT Mobile Enterprise devices. Refer to their specific software for more information.

CHAPTER 8 SECURITY

The device implements a set of security policies that determine whether an application is allowed to run and, if allowed, with what level of trust. To develop an application, you must know the security configuration of the device, and how to sign an application with the appropriate certificate to allow the application to run (and to run with the needed level of trust).

✓ **NOTE** Ensure the date is set correctly before installing certificates or when accessing secure web sites.

The Windows Imaging and Configuration Designer (ICD) provides various security settings for the device. Use the ICD to configure specific security settings, create a provisioning package and deploy onto the device.

Go to: [https://msdn.microsoft.com/en-us/library/windows/hardware/dn916109\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/dn916109(v=vs.85).aspx) for more information.

For example, In ICD under Policies, BitLocker, DeviceLock and ApplicationManagement.

Use the security settings and the Enterprise Assigned Access CSP to lock down the device. got to: <https://msdn.microsoft.com/en-us/library/windows/hardware/mt157024> for more information.

Secure Certificates



CAUTION Installing certificates from unknown sources can expose the device and data to security risks or harm the device.

If the VPN or Wi-Fi networks rely on secure certificates, obtain the certificates and store them in the device's secure credential storage, before configuring access to the VPN or Wi-Fi networks.

If downloading the certificates from a web site, set a password for the credential storage. The device supports .cer, .p7b, .pem, and .pfx files.

Installing a Secure Certificate

Install certificates using:

- microSD card
- MDM (refer to the MDM documentation).

To install a certificate from a microSD card:

1. Copy the certificate from the host computer to the root of the microSD card. See [Chapter 4, USB Communication](#) for information about connecting the device to a host computer and copying files.
2. Open **File Explorer**.
3. Touch .
4. Touch **SD card**.
5. Navigate to the location of the certificate file.
6. Touch the filename of the certificate to install.

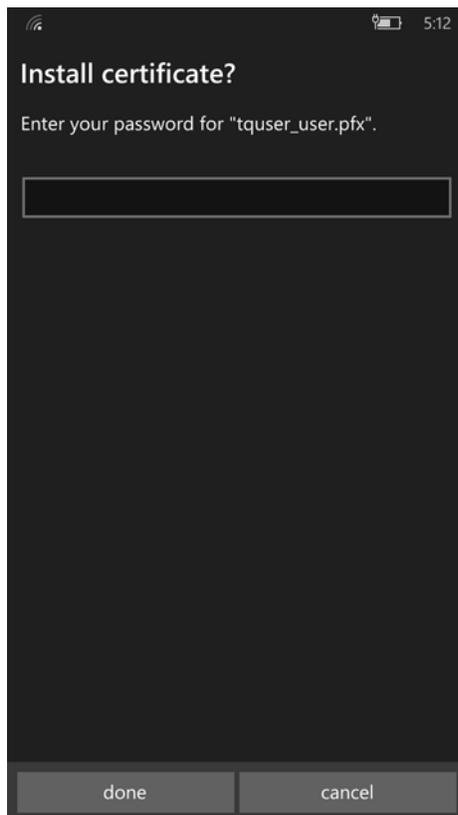


Figure 8-1 *Enter Certificate Password*

7. If prompted, enter the certificate's password and touch **Done**.

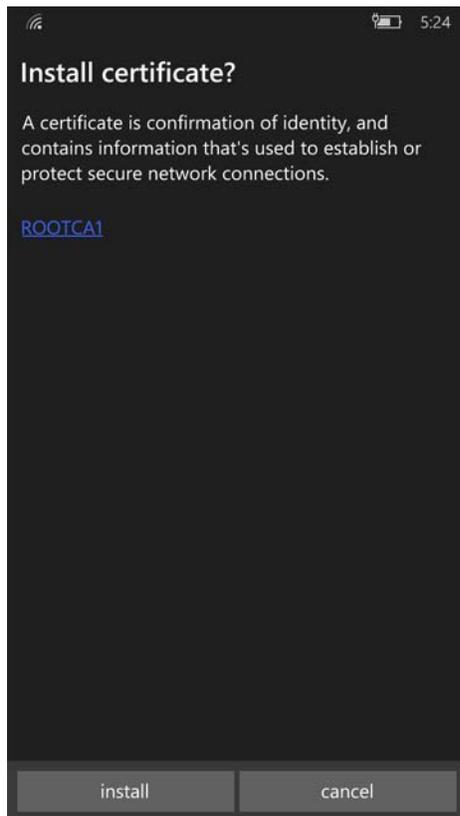


Figure 8-2 *Install Certificate*

8. Touch **Install** to install the certificate.
9. Touch **ok**.

The certificate can now be used when connecting to a secure network. For security, the certificate is deleted from the microSD card.

FIPS 1040

This product is FIPS 140-2 Level 1 validated by the Cryptographic Module Validation Program (CMVP), a joint effort between the US National Institute of Standards and Technology (NIST) and the Communications Security Establishment of Canada (CSEC). The standard ensures proper cryptographic algorithm implementation and operation. For more information goto: <https://technet.microsoft.com/en-us/library/cc750357.aspx>.

CHAPTER 9 PROVISIONING

Introduction

Windows provisioning makes it easy for administrators to configure end-user devices. Using provisioning, an administrator can easily specify desired configuration and settings required to enroll the devices into management and then apply that configuration to target devices. Administrators can create provisioning packages that quickly and efficiently configure a device without having to install a new image.

Creating a Package

Download and install Windows Driver Kit (WDK) and then Assessment and Deployment Kit (ADK) for Windows 10. Make sure the host computer has have enough memory available. The WDK requires up to 2.6GB and the ADK requires up to 6.6 GB.

To create a provisioning package:

1. Launch `ICD.exe` from `C:\Program Files (x86)\Windows Kits\10\Assessment and Deployment Kit\Imaging and Configuration Designer\x86`.

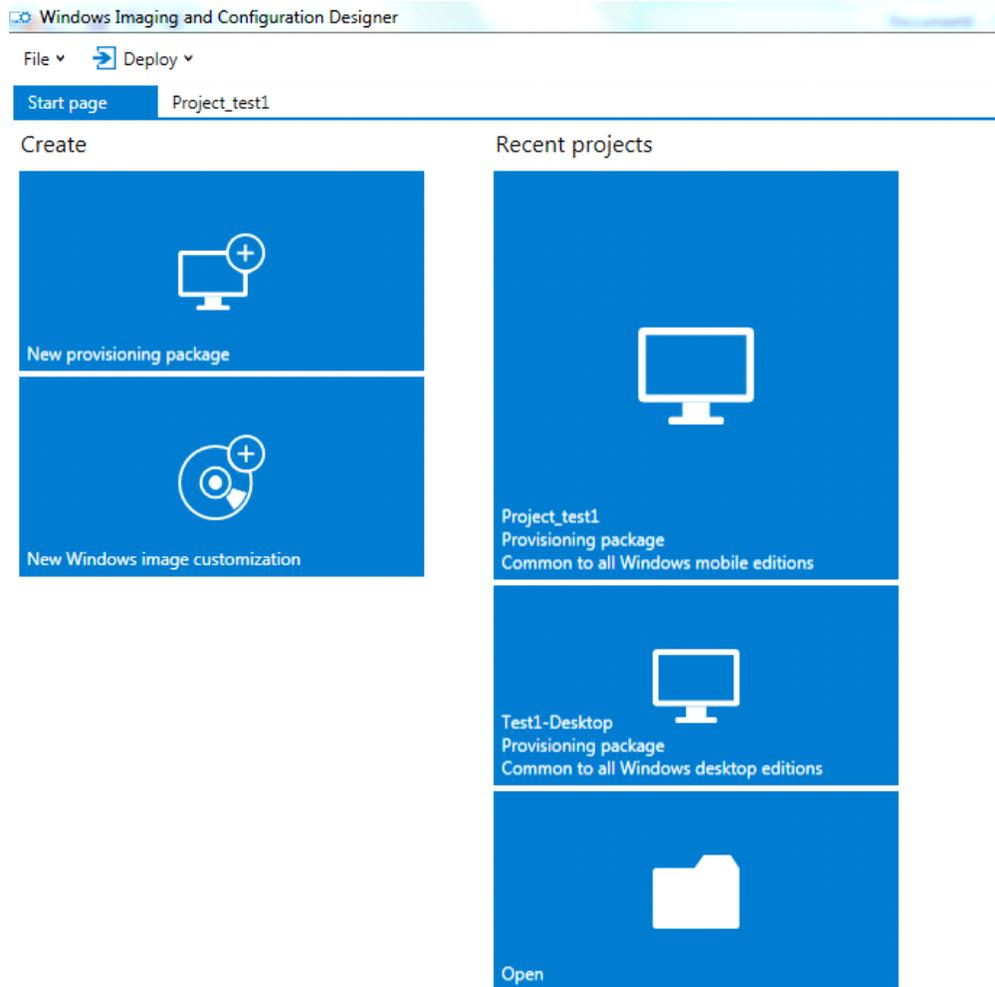


Figure 9-1 *Windows ICD Window*

2. Click **New provisioning package**.

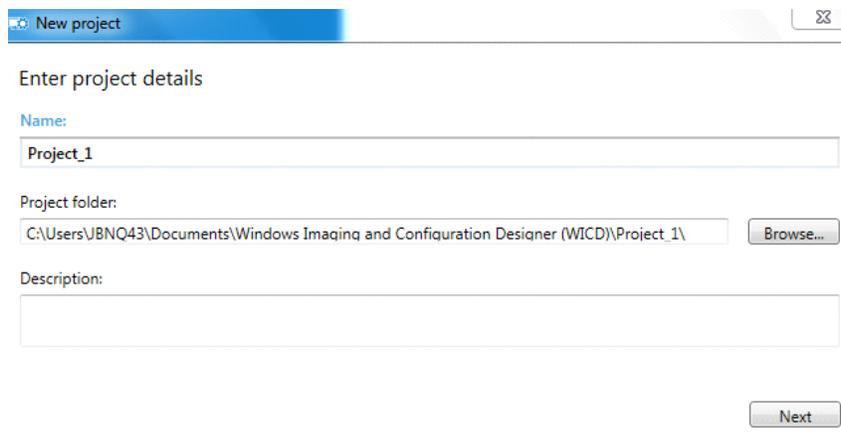


Figure 9-2 *New Project Window - Enter Details*

3. In the **Name** text box, enter a name for the package.
4. Click **Browse** and select the location of the package.

5. In the **Description** text box, enter a description for the package (optional).
6. Click **Next**.

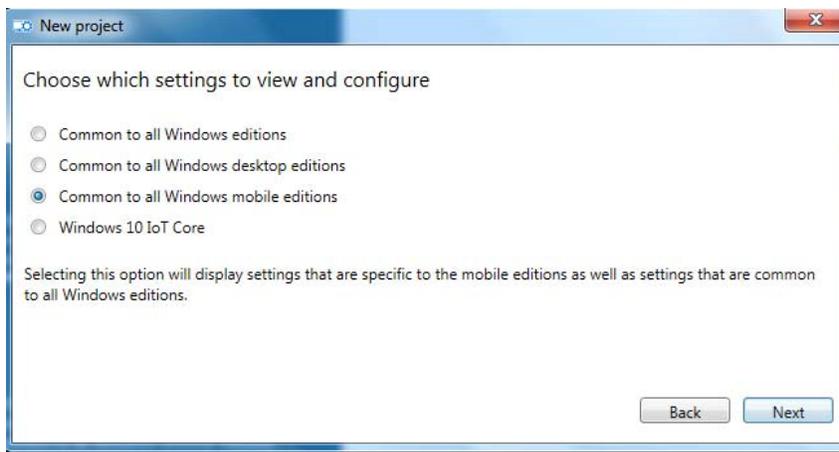


Figure 9-3 *New Project Window - Choose Settings to View and Configure*

7. Choose setting based on the requirement. Select **Common to all Windows mobile editions**.
8. Click **Next**.

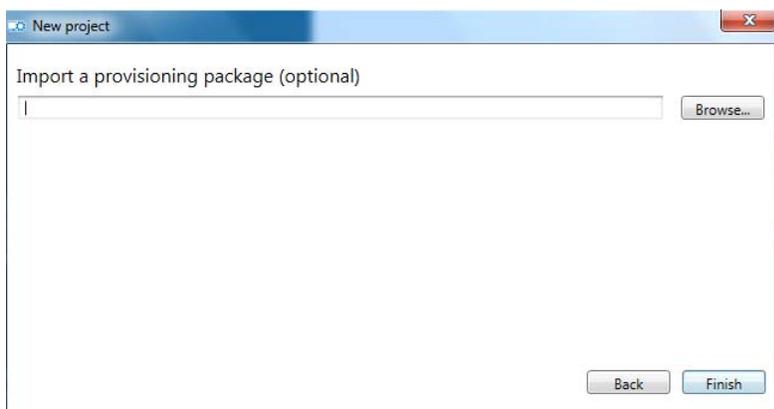


Figure 9-4 *New Project Window - Import Package*

9. Click **Browse** to import the existing provisioning package (optional).
10. Click **Finish**.

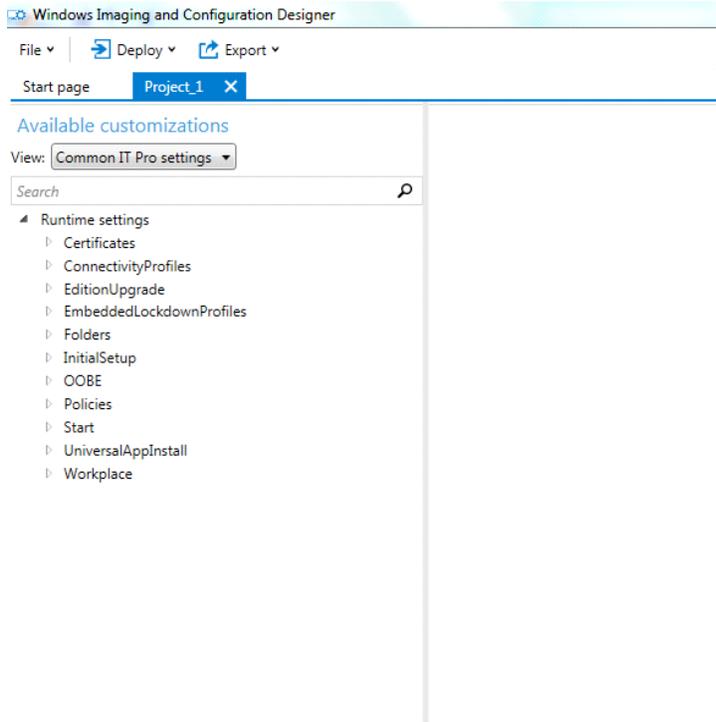


Figure 9-5 ICP New Project Screen

11. Click **View** drop-down and select **Common IT Pro settings**.
12. Configure the provisioning package based on the requirement.
13. To configure WLAN profile, navigate to **Runtime Settings > Connectivity Profiles > WLAN > WLAN Settings**.

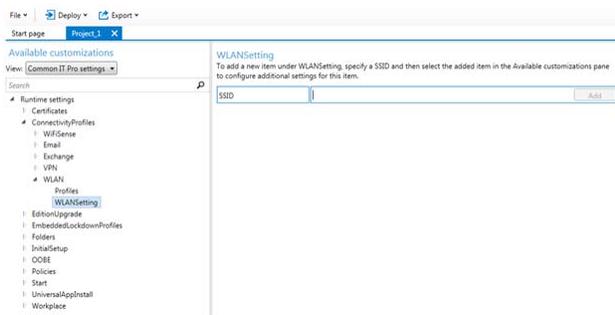


Figure 9-6 WLAN Settings

14. Enter the SSID of the WLAN profile on the middle pane and click **Add**. Added profile should be seen under **Existing WLANSetting**.

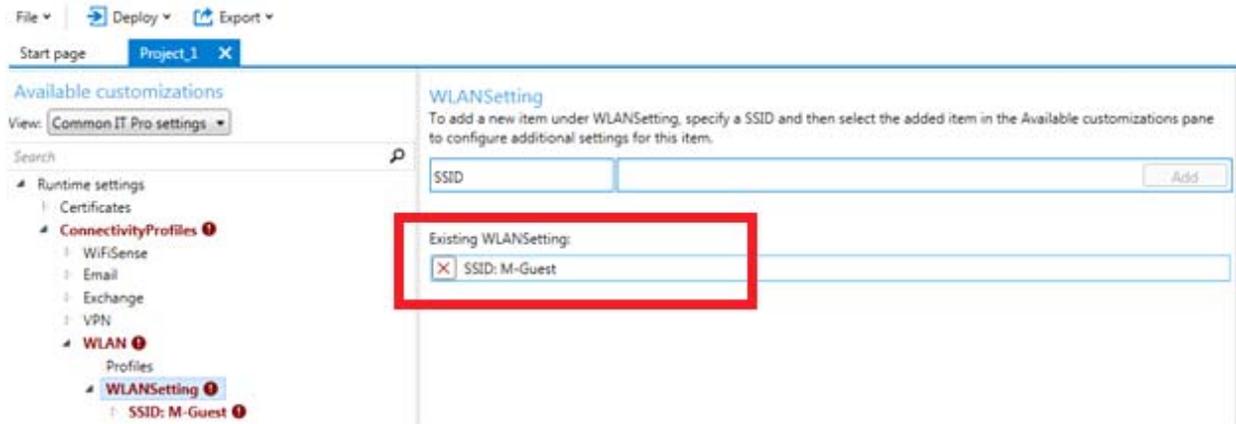


Figure 9-7 Select WLAN

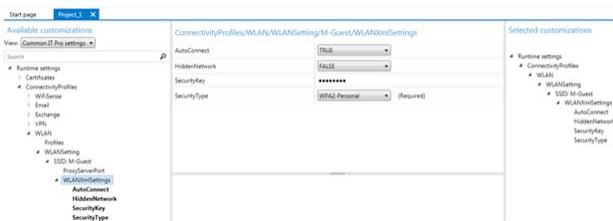


Figure 9-8 Enter WLAN Settings

15. In the left pane, click on the **WLANSetting** and fill in the details in the middle pane.



Figure 9-9 Export Settings

16. Click **Export** and select **provisioning package**. Following screen should appear.

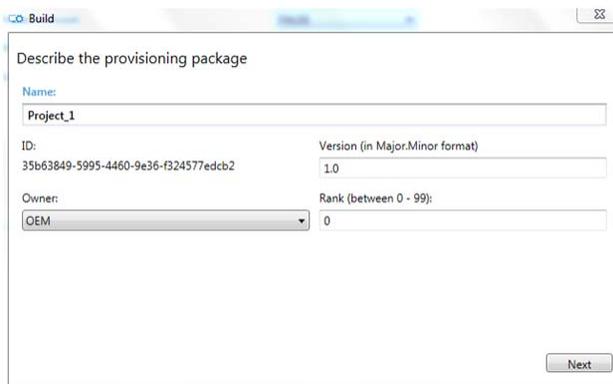


Figure 9-10 Build Window

17. If you have multiple packages that needs to be executed in order you can give rank for each package while creating. Click **Next**.

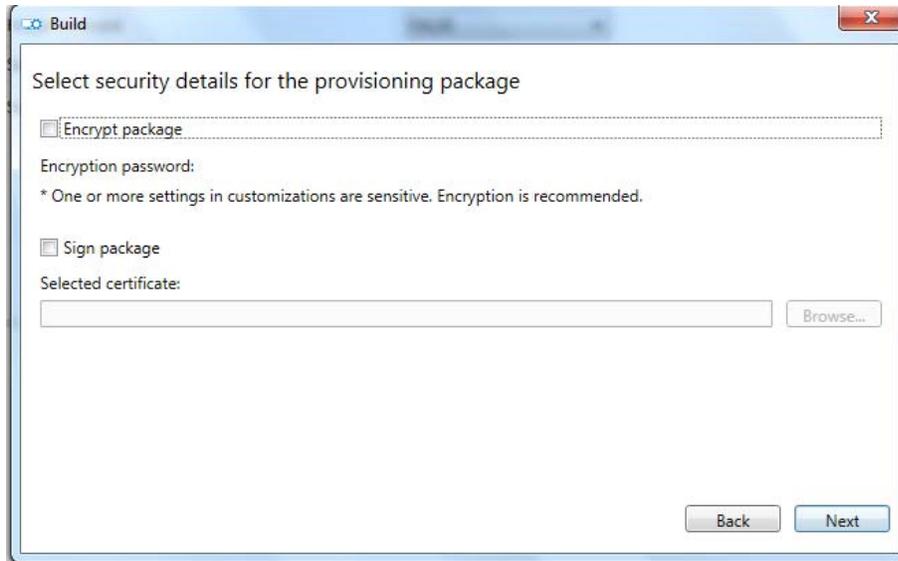


Figure 9-11 *Package Encryption*

18. Uncheck encryption based on requirement.
19. Click **Next**.

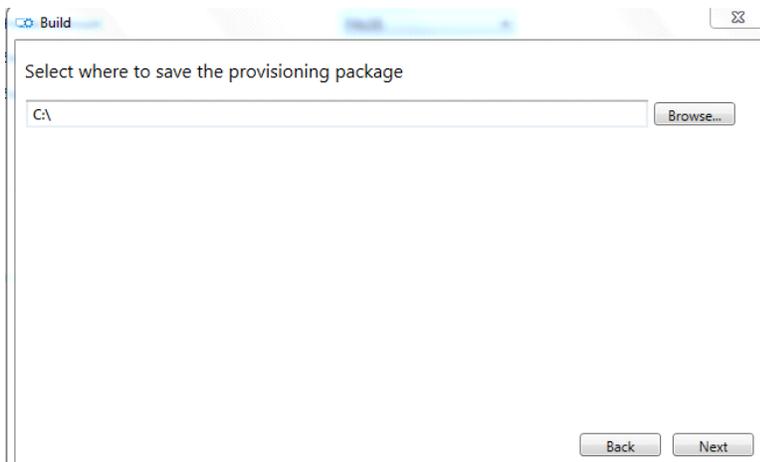


Figure 9-12 *Select Storage Location*

20. Click **Browse** and select the destination location.
21. Click **Next**.

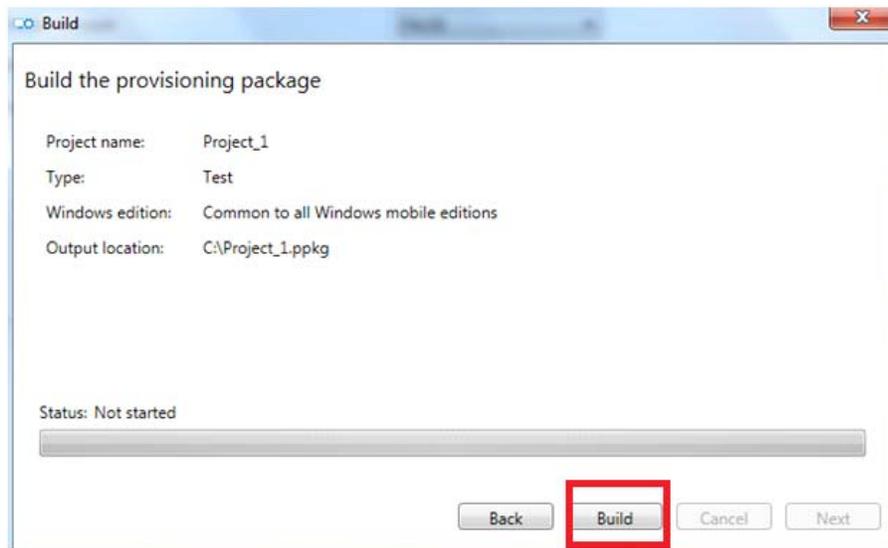


Figure 9-13 *Build Provisioning Package*

22. Click **Build**.

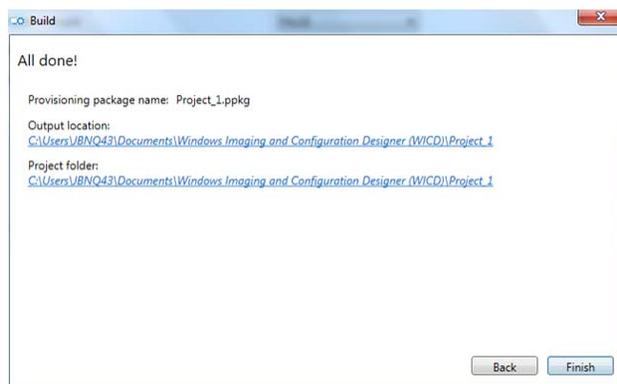


Figure 9-14 *Build Complete*

23. The package is available in output folder.

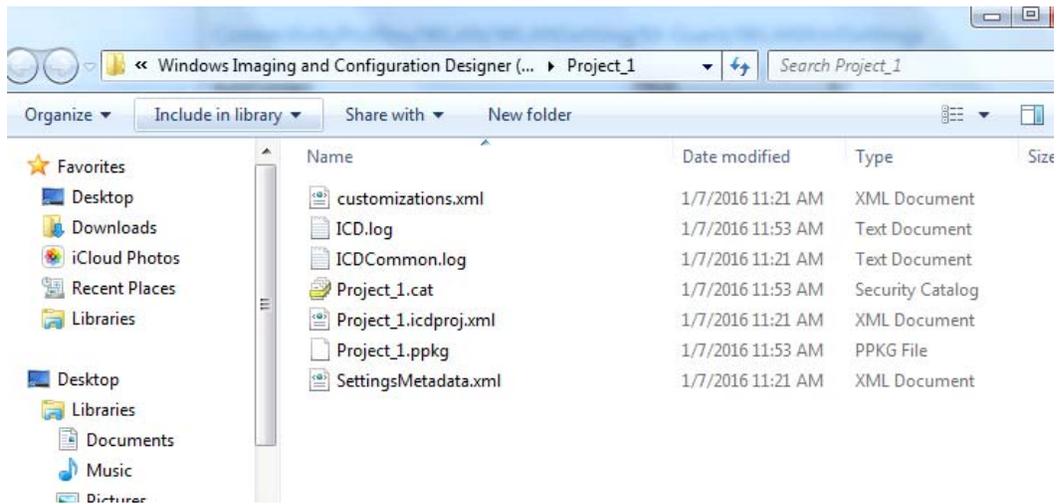


Figure 9-15 *Package Output in Windows Explorer*

Provisioning During Factory Reboot

During the initial booting of the device, the setup screens provide an option to add a provisioning package using:

- removable media
- bar codes
- NFC.

✓ **NOTE** To perform a factory reset, see [Resetting the TC70x on page 1-9](#).

Using Removable Media

To provision the device using a microSD card:

1. Copy the provisioning package file (*.ppkg) into the root of a microSD card.
2. Insert into microSD card slot of the TC70x. See [Installing a microSD Card on page 1-1](#).
3. Perform a factory reset. See [Resetting the TC70x on page 1-9](#).
4. Follow the on-screen instructions until the **Provisioning** screen appears.

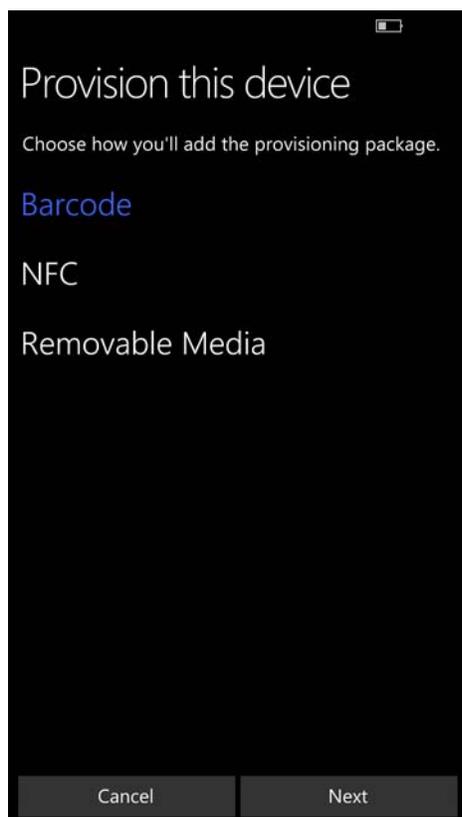


Figure 9-16 *Provision this Device Screen*

5. At the Provisioning screen, touch **Removable Media**.
6. Touch **Next**.



Figure 9-17 Choose a Package Screen

7. Touch the package to deploy.
8. Touch **Next**. If the package does not have any encryption enabled while creating, the TC70x prompts with the following message.

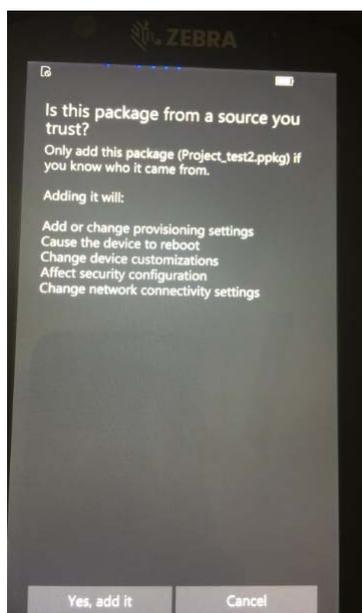


Figure 9-18 Trust Source Confirmation Screen

9. Touch **Yes, add it** and proceed further to continue configuring the device.
10. Follow the on-screen instructions to complete the set up.

Using Bar Codes

To provision using bar codes, the provisioning package has to be converted to bar codes. Use the package splitter tool to split the package file into smaller files. Go to [https://msdn.microsoft.com/en-us/library/windows/hardware/mt622460\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/mt622460(v=vs.85).aspx) for more information. Once the package file is split into smaller files, use a bar code generation application to create the bar codes.

Provisioning

To provision the device using bar codes:

1. Perform a factory reset. See [Resetting the TC70x on page 1-9](#).
2. Follow the on-screen instructions until the **Provisioning** screen appears.

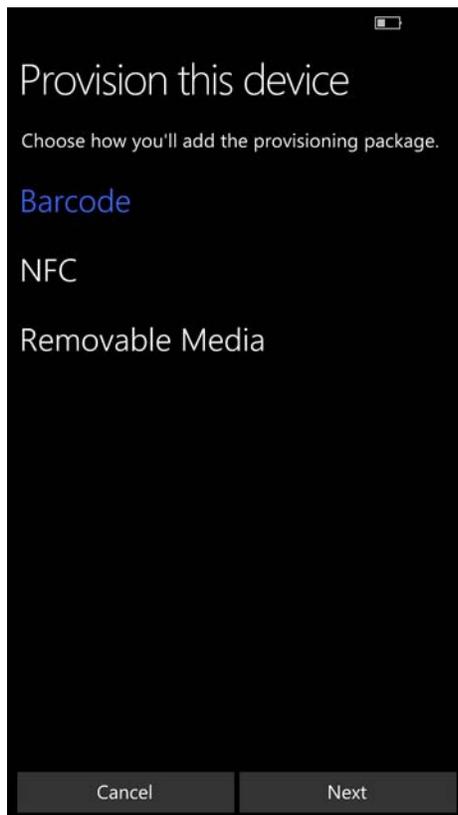


Figure 9-19 *Provision this Device Screen*

3. Touch **Barcode**.
4. Touch **Next**.

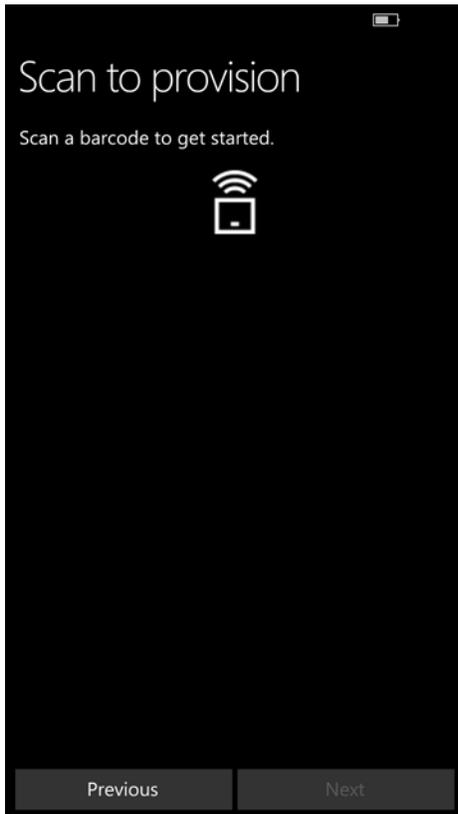


Figure 9-20 *Provision this Device Screen*

5. Press the scan button and scan the first bar code.
After scanning the first bar code, the TC70x displays the number of bar codes remaining to scan.
6. Scan all the remaining bar codes.

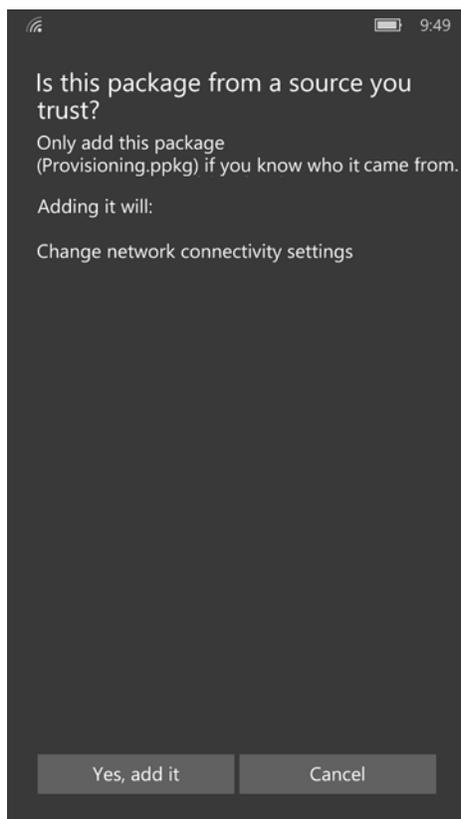


Figure 9-21 *Trust Screen*

7. Touch **Yes, Add it**.
8. Follow the on screen instructions with the rest of the set up.

Using NFC

✓ **NOTE** Use of tags supported by the TC70x.

Near field communication (NFC) enables Windows 10 IoT Mobile Enterprise devices to communicate with an NFC tag or another NFC-enabled transmitting device. Enterprises that do bulk provisioning can use NFC-based device provisioning to provide a provisioning package to the device that is being provisioned. NFC provisioning is simple and convenient and it can easily store an entire provisioning package. For more information go to: [https://msdn.microsoft.com/en-us/library/windows/hardware/mt637870\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/hardware/mt637870(v=vs.85).aspx).

To provision the device using an NFC card:

1. Perform a factory reset. See [Resetting the TC70x on page 1-9](#).
2. Follow the on-screen instructions until the **Provisioning** screen appears.

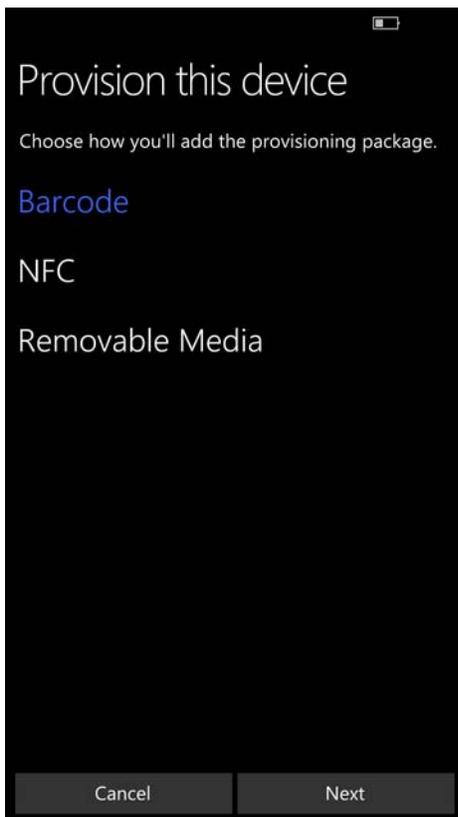


Figure 9-22 *Provision this Device Screen*

3. Touch **NFC**.
4. Touch **Next**.
5. Next screen is the Tap to Provision screen, which waits on a NFC tag provisioned with a package.

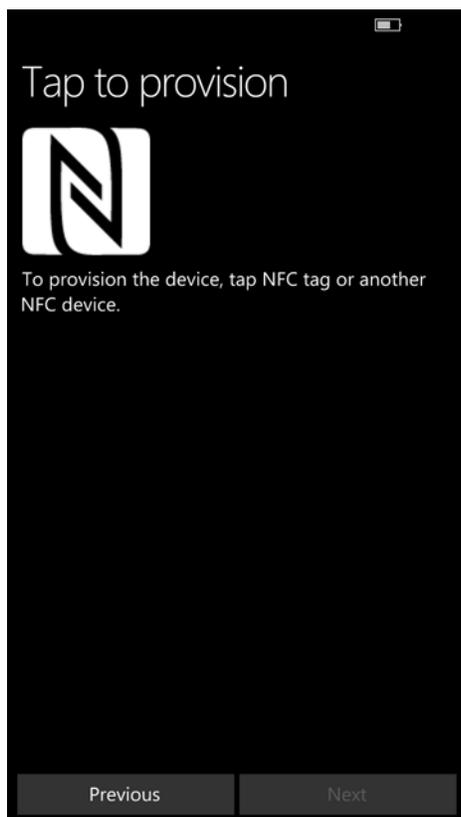


Figure 9-23 *Tap to Provision Screen*

6. Touch the NFC card to the NFC antenna on the device.

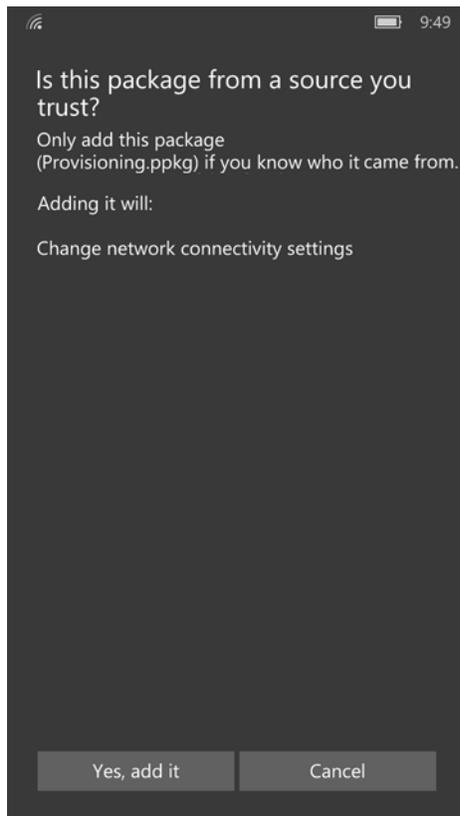


Figure 9-24 *Trust Screen*

7. Touch **Yes, Add it**.
8. Follow the on screen instructions with the rest of the set up.

Manual Provisioning

To provision a package from the device:

1. Swipe down from the top of the screen, and touch  **All settings** >  **Accounts** > **Provisioning**.

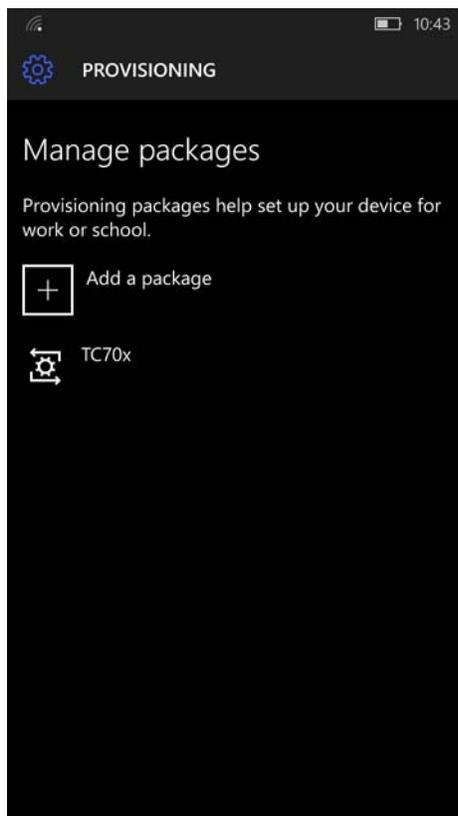


Figure 9-25 *Provisioning Screen*

2. Touch **Add a package**.

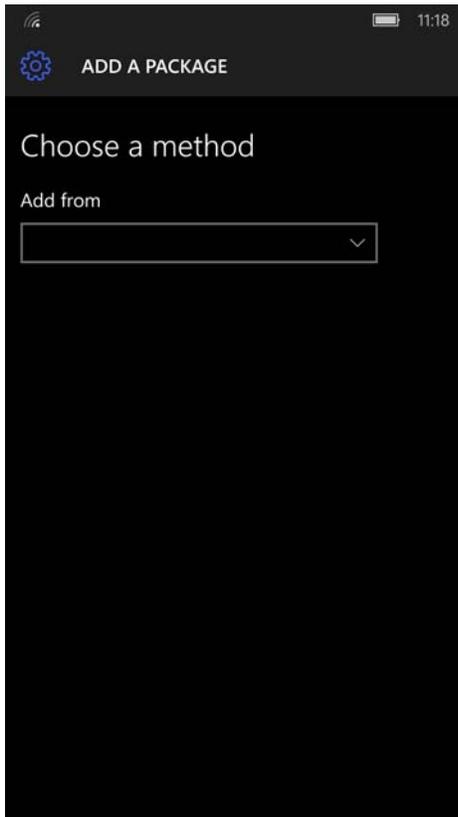


Figure 9-26 *Add a Package Screen*

3. From the **Add From** drop-down list, select **Removable Media**.
4. Under **Select a package**, touch the package name.
5. Touch **Add**.

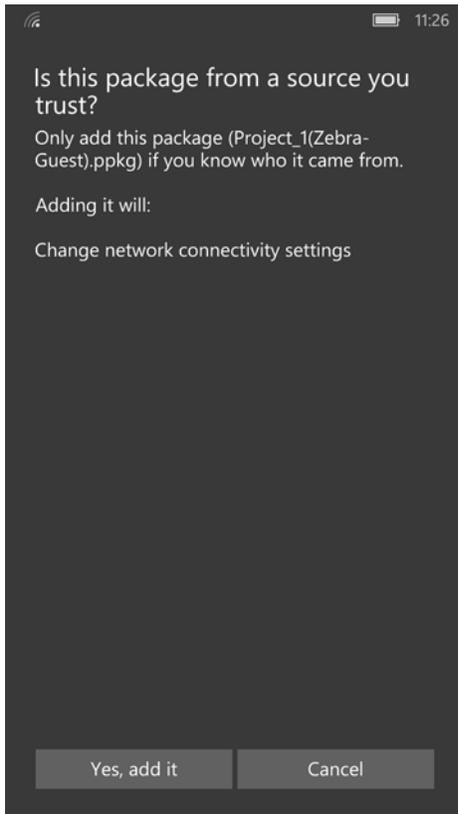


Figure 9-27 *Trusted Source Screen*

6. Touch **Yes, add it**. The package installs. Depending upon the package, a reset might be required.

CHAPTER 10 APPLICATION DEPLOYMENT

Introduction

This chapter describes how to deploy applications onto a device.

Application Installation



CAUTION Installing applications from unknown sources can expose the device and data to security risks or harm the device.

After an application is developed, install the application onto the device using one of the following methods:

- Microsoft Store, refer to *TC70x User Guide with Windows 10 IoT Mobile Enterprise for information on installing applications from the Store*.
- USB connection, see [Installing Applications Using the USB Connection on page 10-1](#).
- microSD Card, see [Installing Applications Using a microSD Card on page 10-2](#)
- Mobile device management (MDM) platforms that have application provisioning. Refer to the MDM software documentation for details.

For loading applications onto the device using USB or a microSD card, go to <https://technet.microsoft.com/en-us/itpro/windows/deploy/sideload-apps-in-windows-10> for more information.

Installing Applications Using the USB Connection



CAUTION When connecting the device to a host computer and mounting its microSD card, follow the host computer's instructions for connecting and disconnecting USB devices, to avoid damaging or corrupting files.

1. Connect the device to a host computer using USB. See [Chapter 4, USB Communication](#).
2. On the host computer, copy the application .appx file from the host computer to the device.
3. Disconnect the device from the host computer. See [Chapter 4, USB Communication](#).

4. Swipe down from the top of the screen, and touch  **All settings** > **Updates & Security** > **For developers**.
5. In the **Use developer features** section, touch **Developer mode**. A warning dialog box appears.
6. Touch **Yes**.
7. On the TC70x, open **File Explorer**.
8. Locate the application .appx file.
9. Touch the application file to begin the installation process.
10. To confirm installation and accept what the application affects, touch **Install** otherwise touch **Cancel**.

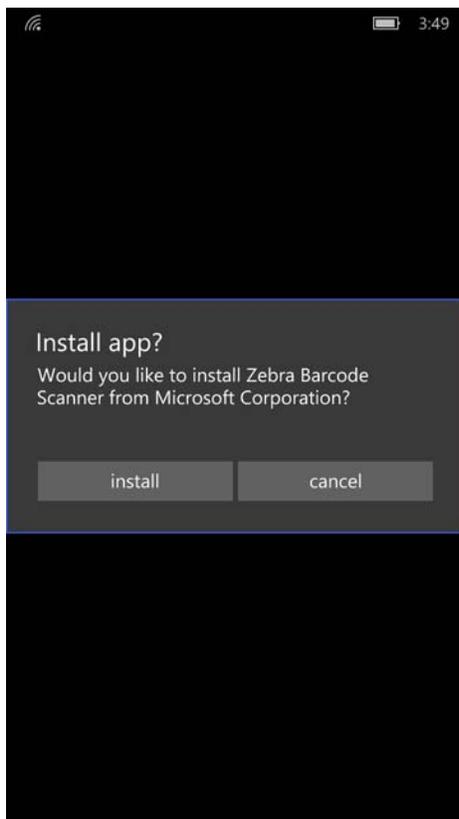


Figure 10-1 *Accept Installation Screen*

11. Swipe down from the top of the screen, and touch  **All settings** > **Updates & Security** > **For developers**.
12. In the **Use developer features** section, touch **Windows Store apps**.
13. Touch .

Installing Applications Using a microSD Card



CAUTION When connecting the device to a host computer and mounting its microSD card, follow the host computer's instructions for connecting and disconnecting USB devices, to avoid damaging or corrupting files.

1. Copy the application .appx file from the host computer to a microSD card.
2. Remove the microSD card from the host computer.
3. Press and hold the Power button until the menu appears.

4. Touch **Power off**.
5. If hand strap is attached, slide the hand strap clip up toward the top of the device and then lift.
6. Press the two battery latches in.
7. Lift the battery from the device.
8. Lift the access door.
9. Insert the microSD card.
10. Replace the access door.
11. Insert the battery, bottom first, into the battery compartment in the back of the device.
12. Press the battery down until the battery release latch snaps into place.
13. Replace the hand strap, if required.
14. Press and hold the Power button to turn on the device.
15. Touch **Settings > Updates & Security > For developers**.
16. Touch **Developer mode**. A warning dialog box appears.
17. Touch **Yes**.
18. On the TC70x, open **File Explorer**.
19. Locate the application .appx file.
20. Touch the application file to begin the installation process.
21. To confirm installation and accept what the application affects, touch **Install** otherwise touch **Cancel**.
22. Swipe down from the top of the screen, and touch  **All settings > Updates & Security > For developers**.
23. In the **Use developer features** section, touch **Windows Store apps**.
24. Touch .

Uninstalling an Application

To uninstall an application:

1. Swipe the Start screen to the left. The All Apps screen appears.
2. Touch and hold the application to uninstall until a menu appears.

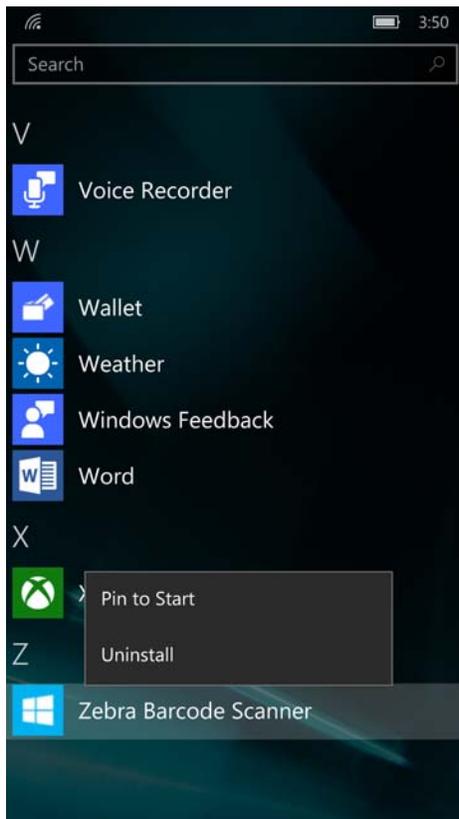


Figure 10-2 All Apps Screen - Uninstall App

3. Touch **Uninstall**.
4. Touch **OK** to confirm.

Windows Update

Depending upon how the TC70x is provisioned, it checks for updates from the Microsoft Windows Update Server or an internal update server, Windows Server Update Services (WSUS).

By default, the TC70x automatically downloads available updates whenever the data connection exists. When the TC70x indicates that an update is available, follow the instructions on the screen. If the TC70x does not have enough memory, move apps, photos, and other files to a memory card.

✓ **NOTE** Make sure that the TC70 battery has enough power, or connect the charger before starting the update.

Choosing How Updates Install

To select how Windows updates are installed:

1. Swipe down from the top of the screen, and touch  **All settings** >  **Updates & security** > **Phone updates**.

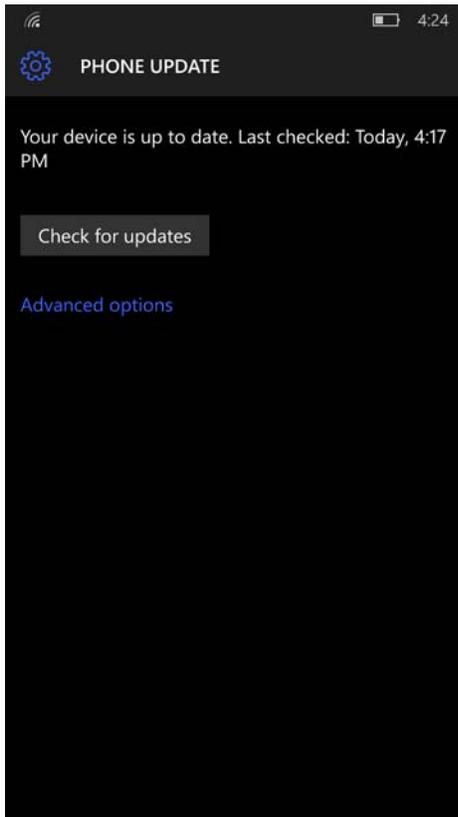


Figure 10-3 *Phone Update*

2. Touch **Check for updates** to force the TC70x to check for any updates. If updates are available, follow the on-screen instructions to install the update.
3. Touch **Advanced options**.

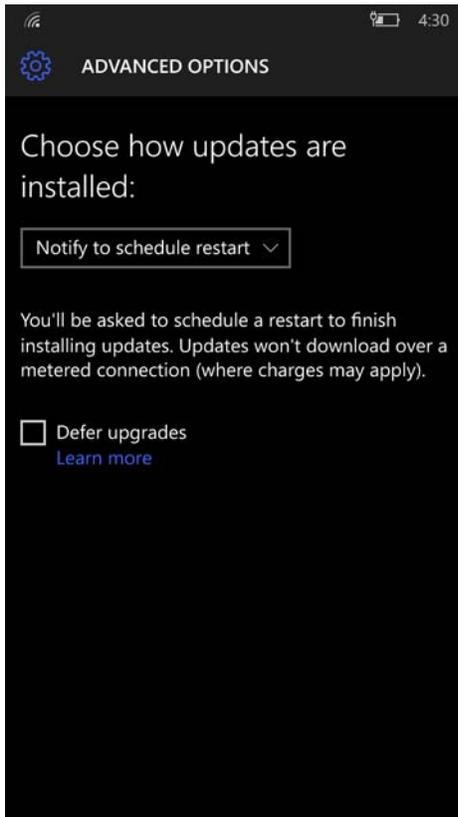


Figure 10-4 *Advanced Options*

4. Touch the drop-down menu under **Choose how updates are installed** and select **Automatic** or **Notify to schedule restart**.
5. Touch **Defer upgrades** checkbox to disable the TC70x from installing updates.
If deferring updates, new Windows features will not be downloaded or installed for several months. Deferring upgrades does not affect security updates. Note that deferring upgrades prevents getting the latest Windows features as soon as they are available.

CHAPTER 11 FIELD MEDIC

Introduction

Field Medic is the diagnostic application that allows easy collection of device information and Event Tracing for Windows (ETW) logs right from the device. Field Medic saves the ETW log files and the general information in a folder that is accessible using the USB Media Transfer Protocol (MTP).



NOTE MTP is enabled on all devices by default. It allows for the easy extraction of output files such as Field Medic reports without requiring TShell or other test tools

Generating a Report

This section describes how to create a report.

Recording a Field Medic Report

To record device information in a Field Medic report:

1. Run the **Field Medic** app.
2. Touch **Advanced**.
3. Touch **Choose which ETW providers to use**.
4. Select the categories to include in the report.

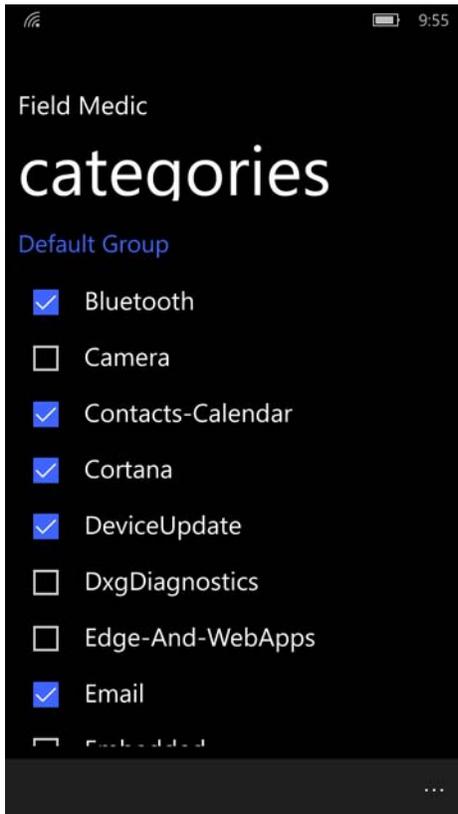


Figure 11-1 Categories

5. Touch ←.
6. Touch ←.
7. Touch **Start Logging**.
8. **Field Medic** displays the elapsed capture time under the **Stop Logging** option.
9. Touch ← to close Field Medic.
10. Reproduce the problem that you want to collect information about.

✓ **NOTE** ETW logging for the selected categories remains enabled, even after the device reboots, until you stop logging.

11. After you have reproduced the problem, run **Field Medic**.
12. Touch **Stop Logging**.

✓ **NOTE** It can take five seconds or longer for **Field Medic** to stop ETW sessions and create the report files.

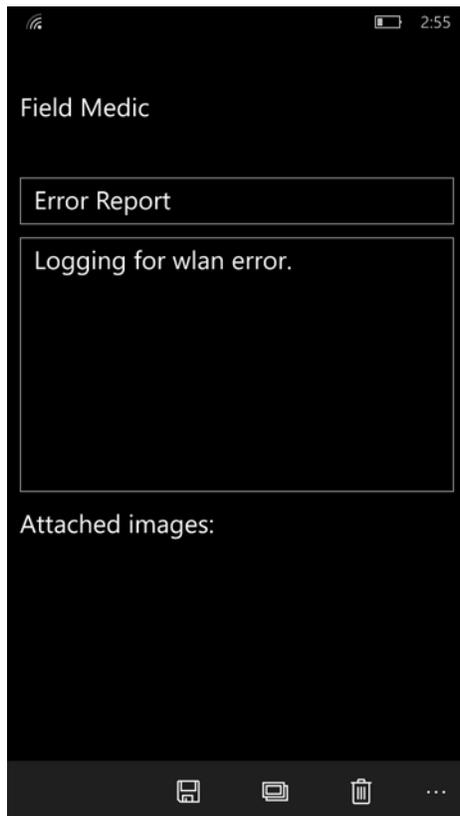


Figure 11-2 *Logging Report*

13. Enter a name for the report.
14. Enter a description for the report.
15. Touch  to add a screen shot to the report.
16. Touch .

To view a report:

1. Touch **View Reports**.
2. Touch a report to view from the list.



NOTE By default, reports shown in the reports screen are named with the format of “WPB_###_Date_Time.”

Use tools such as Xperf and Tracerpt, and ETWDump to examine the ETL files.

View Log Files

To view log files:

1. Connect the device to a host computer with a USB cable.
2. Copy the Field Medic report from the TC70x (either the root of the device or the root of the microSD card) to the host computer. Each folder in this directory represents a different report and contains several ETW log files.
3. On the host computer, locate ETWDump in the Windows Driver Kit.

Example: `C:\Program Files (x86)\Windows Kits\10\ToolFunnel\EtwDump\2.0\EtwDump.exe`

4. Locate the ETW manifest files in the Windows Driver Kit.

Example: `C:\Program Files (x86)\Windows Kits\10\Manifests`

The manifest (.mc) files contain formatting information that ETWDump uses to decode the log (.etl) files.

5. Open a Command Prompt window, and make sure the path to `ETWDump.exe` is on the Path environment variable.

Example using EtwDump to decode the `FieldMedic-Contacts-Calendar.etl` log file:

```
etwdump FieldMedic-Contacts-Calendar.etl -import "C:\Program Files (x86)\Windows  
Kits\10\Manifests" -o FmCC.csv -of CSV
```

ETWDump is one of several tools to use to decode ETW log files. Other tools include:

- Xperf (included in the Windows Adaptation and Deployment Kit (ADK)).
- Tracerpt (included in Windows).

Specify Advanced Options

To set advanced options:

1. Open the **Field Medic** app.
2. Touch **Advanced**.



Figure 11-3 *Field Medic Advanced*

3. Touch **Choose which ETW providers** to use and select categories.
4. Touch .

5. Touch **Configure system log and crash dump options** and select to include system logs and crash dumps, disksnapshot data and power logs.
6. Touch .
7. Touch **Include Netlogs** switch to include Net logs.
8. Touch **Choose where to store reports** and select location for storing report.
9. Touch .

✓ **NOTE** To get crash dumps, you must opt in for feedback in the main OS settings screen. After you opt in, crash dump information is periodically sent to Microsoft when the device is charging and connected to a Wi-Fi network. When a Field Medic report is in session, the crash reports are not sent to Microsoft, but are included in the Field Medic reports. Any crash dumps that are currently not uploaded to Microsoft before a Field Medic report is recorded are also included in the next Field Medic report and will not be uploaded to Microsoft afterwards.

Specify Custom Loggers

Field Medic can include reports from custom loggers that you specify. For more information, see [Custom Logging on page 11-7](#).

Use Field Medic from a Command Prompt

To use Field Medic from a command prompt (Field Medic Helper), you can install the `Microsoft.Phone.Test.Tools.FieldMedicHelper` package.

You must use IUTool to install it on your device.

```
%WPDKCONTENTROOT%\tools\bin\i386\IUTool.exe -p
Microsoft.Phone.Test.Tools.FieldMedicHelper.spkg
```

Field Medic Helper includes the following modules:

- FileMedicHelper.exe - The Field Medic Helper executable file.
- DiagnosticSvcRPC.dll - The diagnostic service RPC wrapper.
- DICData.dll - The device information library.

Syntax

```
FieldMedicHelper parameter <options>
```

Table 11-1 *Parameters*

Parameter	Description
-netlog	start - Start NETLOG logging. stop - Stop NETLOG logging.
-netlog	start - Start QXDM logging. stop - Stop QXDM logging.

Table 11-1 *Parameters (Continued)*

Parameter	Description
-etw	start - Start ETW logging. stop - Stop ETW logging.
-userdump	Start a user-mode dump.
-kerneldump	Start a kernel-mode dump.

Table 11-2 *Options*

Option	Description
-mode	Dump mode for user-mode or kernel mode dump. Default - Use the default dump mode. Full - Use the full dump mode.
-storage	The storage type. This cannot be used with the path parameter. SD - Use the SD card for storage. Phone - Use the device for storage. Default value.
-path	The MTP path to store the report. This cannot be used with the storage parameter.
-timeoutduration	The duration that the logging should occur in hours. By default, this is 48 hours. Caution: If you specify a value larger than 48 hours, make sure you have enough buffer allocation and memory.
-dmcinputpath	Path to the custom DMCFfile for QXDM.
-custominputpath	Path to the custom profile XML file for ETW or QXDM.

Examples

Use the following examples to run Field Medic Helper from a command prompt. You should use Cmd-device in TShell to run these commands from a PC.

Start QXDM, store the log on the SD card, and stop after 48 hours:

```
FieldMedicHelper -qxdm start -storage SD -timeoutduration 48
```

Start QXDM and store the log in C:\data\test\bin\logs:

```
FieldMedicHelper -qxdm start -path C:\data\test\bin\logs
```

Stop QXDM:

```
FieldMediaHelper -qxdm stop
```

Start Netlog, store the log on the SD card, and stop after 10 hours:

```
FieldMedicHelper -netlog start -storage SD -timeoutduration 10
```

Start Netlog with default values:

```
FieldMedicHelper -netlog start
```

Start Netlog, store the log on the device, and stop after 10 hours:

```
FieldMedicHelper -netlog start -timeoutduration 10
```

or

```
FieldMedicHelper -netlog start -storage Phone -timeoutduration 10
```

Stop Netlog:

```
FieldMedicHelper -netlog stop
```

To start ETW with a custom provider:

```
FieldMedicHelper -etw start -custominputpath  
c:\data\test\bin\FieldMedicHelper\mycustomprofile.xml
```

To start QXDM with a custom provider in a custom path:

```
FieldMedicHelper -qxdm start -dmcinputpath c:\data\test\MyDMCFile.dmc  
-custominputpath c:\data\test\mycustomprofile.xml -path C:\data\test\bin\logs
```

Custom Logging

The user can configure **Field Medic** to generate reports from custom loggers that are not part of the default group of loggers. To specify a custom logger, create a profile XML file and copy it to Phone\Documents\FieldMedic\CustomProfiles.

On the TC70x, T-shell can be used to place XML files into the OEM shared folder. A simple package can be created to place the files there. For more info about the structure of XML that a custom profile XML file has to contain.

Create a Custom Profile XML File

Here is an example how to create of a custom profile XML file. Suppose you want to create a custom category that includes these two ETW providers.

Table 11-3 *ETW Providers*

ETW Provider Name	ETW provider GUID
Microsoft-WindowsPhone-TileHelper	B3448AD3-4BE8-4F7C-892B-EA1D69B14ADB
Microsoft-WindowsPhone-AccessoryManagerSvc	68EC658D-C373-4166-996F-D8A757108B27

This custom profile XML file describes an event collector that has an ID of EventCollector_TileManager. The event collector contains your two providers, which are specified in the <EventProvider> and <EventProviderId> elements.

```

<?xml version="1.0" encoding="utf-8" standalone='yes'?>

<WindowsPerformanceRecorder Version="1.0" Author="You" Team="Your team"
Comments="Your comments" Company="Your company" Copyright="Your company"
Tag="WPDiet">
  <Profiles>
    <!-- Event Collectors -->
    <EventCollector Id="EventCollector_TileManager" Name="WPDiet TileHelper
Category Event Collector" Private="false" ProcessPrivate="false"
Secure="false" Realtime="false">
      <BufferSize Value="128"/>
      <Buffers Value="40"/>
      <MaximumFileSize Value="5" FileMode="Circular"/>
      <FileMax Value="3"/>
    </EventCollector>

    <!-- Event Providers -->
    <EventProvider Id="EventProvider_Microsoft-WindowsPhone-TileHelper"
Name="B3448AD3-4BE8-4F7C-892B-EA1D69B14ADB" Level="5"/>
    <EventProvider
Id="EventProvider_Microsoft-WindowsPhone-AccessoryManagerSvc"
Name="68EC658D-C373-4166-996F-D8A757108B27" Level="5"/>

    <!-- Profiles -->
    <Profile Id="TileHelperCategory.Verbose.File" LoggingMode="File"
Name="TileManagerCategory" DetailLevel="Verbose" Description="WPDiet
TileHelper category profile">
      <Collectors>
        <EventCollectorId Value="EventCollector_TileManager">
          <EventProviders>
            <EventProviderId
Value="EventProvider_Microsoft-WindowsPhone-TileHelper"/>
            <EventProviderId
Value="EventProvider_Microsoft-WindowsPhone-AccessoryManagerS
vc"/>
          </EventProviders>
        </EventCollectorId>
      </Collectors>
    </Profile>
  </Profiles>
</WindowsPerformanceRecorder>

```



NOTE The ETW providers listed in the preceding XML are user-mode components. If your custom profile XML file lists a kernel-mode provider, add `NonPagedMemory="true"` to the `<EventProvider>` element.

Add Custom Profile to Field Medic

To add a custom profile:

1. Create a custom profile XML file as described previously.
2. Copy the custom profile XML file to `Phone\Documents\FieldMedic\CustomProfiles`.
3. Open the **FieldMedic** app.
4. Touch **Advanced**.
5. Touch the box under **Choose which ETW providers to use**.
6. Scroll down to **Custom Group**.
7. Under **Custom Group**, Field Medic displays the names of the custom profile XML files that are in `Phone\Documents\FieldMedic\CustomProfiles`.

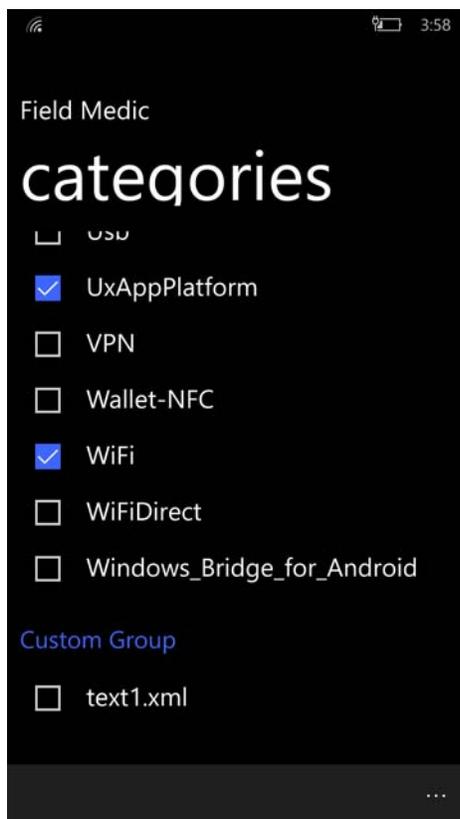


Figure 11-4 Custom Groups

8. Select the custom profile.
9. Generate a report as described in [Generating a Report on page 11-1](#). The resulting ETL files have a prefix of "Custom-" and are placed in root of the device or the microSD card.

Custom profiles can be selected together, separate from, or mixed with the regular profiles depending on logging requirements.



NOTE Windows 10 Mobile has a limitation of 64 total parallel profiles, of which a variable number is always taken by the standard OS logging. This reserved amount depends on the type of image. For example, on retail phones, the reserved amount is going to be much lower than on test devices. Therefore, we recommend bundling multiple ETW providers together in a custom profile XML file if possible, or avoid selecting too many ETW providers in parallel. If an error still occurs when running reports, try and unselect some of the profiles.

Another consideration to take into account is that each running profile takes an amount of system memory away from the rest of the OS. So having too many parallel logging sessions may impact performance, especially on low memory devices. This amount of memory can be configured in the profile XML file. The standard included profiles use 8 MB per XML file. When investigating low-memory issues, we recommend running only the profiles that are needed for that specific investigation.

CHAPTER 12 MAINTENANCE AND TROUBLESHOOTING

Introduction

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

Maintaining the TC70x

For trouble-free service, observe the following tips when using the TC70x:

- Do not scratch the screen of the TC70x. When working with the TC70x, use the supplied 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 TC70x screen.
- The touch-sensitive screen of the TC70x is glass. Do not drop the TC70x or subject it to strong impact.
- Protect the TC70x 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 TC70x in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the TC70x. If the surface of the TC70x screen becomes soiled, clean it with a soft cloth moistened with a diluted window-cleaning solution.
- Periodically replace the rechargeable battery to ensure maximum battery life and product performance. Battery life depends on individual usage patterns.

Battery Safety Guidelines

- The area in which the units are charged should be clear of debris and combustible materials or chemicals. Particular care should be taken where the device is charged in a non commercial environment.
- Follow battery usage, storage, and charging guidelines found in this guide.
- Improper battery use may result in a fire, explosion, or other hazard.
- To charge the mobile device battery, the battery and charger temperatures must be between +32°F and +104°F (0°C and +40°C)

- Do not use incompatible batteries and chargers. Use of an incompatible battery or charger may present a risk of fire, explosion, leakage, or other hazard. If you have any questions about the compatibility of a battery or a charger, contact the Global Customer Support Center.
- For devices that utilize a USB port as a charging source, the device shall only be connected to products that bear the USB-IF logo or have completed the USB-IF compliance program.
- To enable authentication of an approved battery, as required by IEEE1725 clause 10.2.1, all batteries will carry a hologram. Do not fit any battery without checking it has the authentication hologram.
- Do not disassemble or open, crush, bend or deform, puncture, or shred.
- Severe impact from dropping any battery-operated device on a hard surface could cause the battery to overheat.
- Do not short circuit a battery or allow metallic or conductive objects to contact the battery terminals.
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, or expose to fire, explosion, or other hazard.
- Do not leave or store the equipment in or near areas that might get very hot, such as in a parked vehicle or near a radiator or other heat source. Do not place battery into a microwave oven or dryer.
- Battery usage by children should be supervised.
- Please follow local regulations to properly dispose of used re-chargeable batteries.
- Do not dispose of batteries in fire.
- In the event of a battery leak, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with large amounts of water and seek medical advice.
- If you suspect damage to your equipment or battery, contact the Global Customer Support Center to arrange for inspection.

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; carboric 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 ethanalamine, 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 TC70x

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. Remove the main battery from mobile computer.
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 pointed 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.

TC70x

Table 12-1 Troubleshooting the TC70x

Problem	Cause	Solution
When pressing the power button the TC70x does not turn on.	Battery not charged.	Charge or replace the battery in the TC70x.
	Battery not installed properly.	Install the battery properly.
	System crash.	Perform a reset.
When pressing the power button the TC70x 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 or replace the battery in the TC70x.
Battery did not charge.	Battery failed.	Replace battery. If the TC70x still does not operate, perform a reset.
	TC70x removed from cradle while battery was charging.	Insert TC70x in cradle. The 4,620 mAh battery fully charges in less than six hours at room temperature.
	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.	TC70x not powered on.	Press the Power button.
During data communication with a host computer, no data transmitted, or transmitted data was incomplete.	TC70x removed from cradle or disconnected from host computer during communication.	Replace the TC70x 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.
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.

Table 12-1 *Troubleshooting the TC70x (Continued)*

Problem	Cause	Solution
No sound.	Volume setting is low or turned off.	Adjust the volume.
TC70x shuts off.	TC70x 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.	Replace 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 TC70x memory is full.	Too many files stored on the TC70x.	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 TC70x.	Remove user-installed applications on the TC70x to recover memory.
The TC70x does not decode with reading bar code.	Scanning application is not loaded.	Load a scanning application on the TC70x. See the system administrator.
	Unreadable bar code.	Ensure the symbol is not defaced.
	Distance between exit window and bar code is incorrect.	Place the TC70x within proper scanning range.
	TC70x is not programmed to generate a beep.	If the TC70x 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 TC70x low battery condition notification. Note: If the scanner is still not reading symbols, contact the distributor or the Global Customer Support Center.

Table 12-1 *Troubleshooting the TC70x (Continued)*

Problem	Cause	Solution
TC70x 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 TC70x.	User enters incorrect password.	If the user enters an incorrect password eight times, the user is requested to enter a code before trying again. If the user forgot the password, contact system administrator.

2-Slot Charge Only Cradle

Table 12-2 *Troubleshooting the 2-Slot Charge only Cradle*

Symptom	Possible Cause	Action
LEDs do not light when TC70x or spare battery is inserted.	Cradle is not receiving power.	Ensure the power cable is connected securely to both the cradle and to AC power.
	TC70x is not seated firmly in the cradle.	Remove and re-insert the TC70x into the cradle, ensuring it is firmly seated.
	Spare battery is not seated firmly in the cradle.	Remove and re-insert the spare battery into the charging slot, ensuring it is firmly seated.
TC70x battery is not charging.	TC70x was removed from cradle or cradle was unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure TC70x is seated correctly. Confirm main battery is charging. The 4,620 mAh battery fully charges in less than six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The TC70x is not fully seated in the cradle.	Remove and re-insert the TC70x into the cradle, ensuring it is firmly seated.
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 40°C (104°F).

Table 12-2 *Troubleshooting the 2-Slot Charge only Cradle (Continued)*

Symptom	Possible Cause	Action
Spare battery is not charging.	Battery not fully seated in charging slot.	Remove and re-insert the spare battery in the cradle, ensuring it is firmly seated. The 4,620 mAh battery fully charges in less than six hours.
	Battery inserted incorrectly.	Re-insert the battery so the charging contacts on the battery align with the contacts on the cradle.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.

2-Slot USB/Ethernet Cradle

Table 12-3 *Troubleshooting the 2-Slot USB/Ethernet Cradle*

Symptom	Possible Cause	Action
During communication, no data transmits, or transmitted data was incomplete.	TC70x removed from cradle during communications.	Replace TC70x in cradle and retransmit.
	Incorrect cable configuration.	Ensure that the correct cable configuration.
	TC70x has no active connection.	An icon is visible in the status bar if a connection is currently active.
	USB/Ethernet module switch in not in the correct position.	For Ethernet communication, slide the switch to the  position. For USB communication, slide the switch to the  position.
LEDs do not light when TC70x or spare battery is inserted.	Cradle is not receiving power.	Ensure the power cable is connected securely to both the cradle and to AC power.
	TC70x is not seated firmly in the cradle.	Remove and re-insert the TC70x into the cradle, ensuring it is firmly seated.
	Spare battery is not seated firmly in the cradle.	Remove and re-insert the spare battery into the charging slot, ensuring it is firmly seated.

Table 12-3 *Troubleshooting the 2-Slot USB/Ethernet Cradle (Continued)*

Symptom	Possible Cause	Action
TC70x battery is not charging.	TC70x was removed from cradle or cradle was unplugged from AC power too soon.	Ensure cradle is receiving power. Ensure TC70x is seated correctly. Confirm main battery is charging. The 4,620 mAh battery fully charges in less than six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	The TC70x is not fully seated in the cradle.	Remove and re-insert the TC70x into the cradle, ensuring it is firmly seated.
	Extreme battery temperature.	Battery does not charge if ambient temperature is below 0°C (32°F) or above 40°C (104°F).
Spare battery is not charging.	Battery not fully seated in charging slot.	Remove and re-insert the spare battery in the cradle, ensuring it is firmly seated. The 4,620 mAh battery fully charges in less than six hours.
	Battery inserted incorrectly.	Re-insert the battery so the charging contacts on the battery align with the contacts on the cradle.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.

5-Slot Charge Only Cradle Troubleshooting

Table 12-4 *Troubleshooting the 5-Slot Charge Only Cradle*

Problem	Cause	Solution
Battery is not charging.	TC70x removed from the cradle too soon.	Replace the TC70x in the cradle. The battery fully charges in approximately six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	TC70x is not inserted correctly in the cradle.	Remove the TC70x and reinsert it correctly. Verify charging is active.
	Ambient temperature of the cradle is too warm.	Move the cradle to an area where the ambient temperature is between -10°C (+14°F) and +60°C (+140°F).

5-Slot Ethernet Cradle Troubleshooting

Table 12-5 *Troubleshooting the 5-Slot Ethernet Cradle*

Problem	Cause	Solution
During communication, no data transmits, or transmitted data was incomplete.	TC70x removed from cradle during communications	Replace TC70x in cradle and retransmit.
	Incorrect cable configuration.	Ensure that the correct cable configuration.
	TC70x has no active connection.	An icon is visible in the status bar if a connection is currently active.
Battery is not charging.	TC70x removed from the cradle too soon.	Replace the TC70x in the cradle. The battery fully charges in approximately six hours.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	TC70x is not inserted correctly in the cradle.	Remove the TC70x and reinsert it correctly. Verify charging is active.
	Ambient temperature of the cradle is too warm.	Move the cradle to an area where the ambient temperature is between -10°C (+14°F) and +60°C (+140°F).

4-Slot Battery Charger Troubleshooting

Table 12-6 *Troubleshooting the 4-Slot Battery Charger*

Problem	Cause	Solution
Spare Battery Charging LED does not light when spare battery is inserted.	Spare battery is not correctly seated.	Remove and re-insert the spare battery into the charging slot, ensuring it is correctly seated.

Table 12-6 *Troubleshooting the 4-Slot Battery Charger (Continued)*

Problem	Cause	Solution
Spare Battery not charging.	Charger is not receiving power.	Ensure the power cable is connected securely to both the charger and to AC power.
	Spare battery is not correctly seated.	Remove and re-insert the battery into the battery adapter, ensuring it is correctly seated.
	Battery adapter is not seated properly.	Remove and re-insert the battery adapter into the charger, ensuring it is correctly seated.
	Battery was removed from the charger or charger was unplugged from AC power too soon.	Ensure charger is receiving power. Ensure the spare battery is seated correctly. If a battery is fully depleted, it can take up to five hours to fully recharge a Standard Battery and it can take up to eight hours to fully recharge an Extended Life Battery.
	Battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.

APPENDIX A TECHNICAL SPECIFICATIONS

Introduction

This chapter provides technical specification for the TC70x.

TC70x

Table A-1 *TC70x Technical Specifications*

Item	Description
Physical Characteristics	
Dimensions	Height: 161 mm (6.3 in.) Width: 84 mm (3.3 in.) Depth: 28 mm (1.1 in.)
Weight	376 g (13.3 oz)
Display	4.7 in. High Definition (1280 x 720); exceptionally bright, outdoor viewable; optically bonded to touch panel
Imager Window	Corning Gorilla Glass
Touch Panel	Dual mode capacitive touch with stylus or bare fingertip input (conductive stylus sold separately); Corning Gorilla Glass
Backlight	Light Emitting Diode (LED) backlight
Battery Pack	PowerPrecision/PowerPrecision+: Improved battery technology for longer cycle times and real-time visibility into battery metrics for better battery management Li-Ion 3.7 V, 4620 mAh typical
Expansion Slot	User accessible microSD up to 32 GB SDHC and up to 32 GB SDXC support
Connection Interface	Universal Serial Bus (USB) 2.0 High Speed (host and client)
Notification	Audible tone plus multi-color LEDs, vibration

Table A-1 TC70x Technical Specifications (Continued)

Item	Description
Voice and Audio	Three microphone support with noise cancellation; vibrate alert; speaker; Bluetooth wireless headset support.
Performance Characteristics	
CPU	1.7 GHz hex core 64 bit processor (QC 8092).
Operating System	Windows 10 IoT Mobile Enterprise
Memory	2 GB RAM/16 GB Flash pSLC
Output Power	USB - 5 VDC @ 500 mA max
User Environment	
Operating Temperature	-20°C to 50°C (-4°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)
Humidity	5 to 85% non-condensing
Drop Specification	8 ft./2.4 m to concrete at room temperature per MIL-STD 810G 6 ft./1.8 m drop to concrete across full operating temperature range
Tumble	2,000 3.2 ft./1.0 m tumbles; meets and exceeds IEC tumble specifications
Electrostatic Discharge (ESD)	+/-15kVdc air discharge, +/-8kVdc direct discharge, +/-8kVdc indirect discharge
Sealing	IP65 and IP67 per applicable IEC sealing specifications
Vibration	4 g's PK Sine (5 Hz to 2 kHz); 0.04g2/Hz Random (20 Hz to 2 kHz); 60 minute duration per axis, 3 axis
Thermal Shock	-40° C to 70° C (-40° F to 158° F) rapid transition
Interactive Sensor Technology (IST)	
Motion Sensor	3-axis accelerometer provides motion-sensing for dynamic screen orientation and power management
Light Sensor	Ambient light sensor to auto adjust display backlight brightness
Wireless LAN Data and Voice Communications	
Radio	IEEE® 802.11a/b/g/n/d/h/i/w/ac
Data Rates Supported	5GHz: 802.11a/n/ac - up to 866.7 Mbps 2.4GHz: 802.11b/g/n - up to 144 Mbps

Table A-1 TC70x Technical Specifications (Continued)

Item	Description
Operating Channels	Chan 1 - 11 (2412 - 2422 MHz) - North America (FCC and IC) Chan 1 - 13 (2412 - 2472 MHz) - Rest of the World Chan 36 - 165 (5180 - 5825 MHz) Channel Bandwidth: 20, 80 MHz Actual operating channels/frequencies depend on regulatory rules and certification agency
Security	WEP (40 or 104 bit) WPA/WPA2 Personal (TKIP, and AES) WPA/WPA2 Enterprise (TKIP, and AES) — EAPTTLS (PAP, MSCHAP, MSCHAPv2), EAP-TLS, PE APv0-MSCHAPv2, PE APv1-EAP-GTC, EAP Fast and LEAP FIPS DIM4
Voice Communications	Voice-over-IP ready, Wi-Fi™-certified, IEEE 802.11a/b/g/n direct sequence wireless LAN, Wi-Fi Multimedia™ (WMM)
Wireless PAN Data and Voice Communications	
Bluetooth	Bluetooth v4.1 Low Energy
Data Capture Specifications	
2D Imager	SE4750-SR – 1D and 2D bar codes.
Camera	Rear: 8 Mega pixel auto focus; f/2.4 aperture Front: 1.3 Mega pixel fixed focus
Near Field Communications (NFC)	ISO 14443 Type A, B and F, FeliCa, and ISO 15963 cards. Secure NFC via SAM supporting Mifare, Calypso and FeliCa. P2P mode and Card Emulation via UICC and Host.
2D Imager Engine (SE4750-SR) Specifications	
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)

Table A-1 TC70x Technical Specifications (Continued)

Item	Description
Focal Distance	From front of engine: 17.7 cm (7.0 in.)
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 A-2 Data Capture Supported Symbolologies

Item	Description
1D Bar Codes	Code 128, EAN-8, EAN-13, GS1 DataBar Expanded, GS1 128, GS1 DataBar Coupon, UPCA, Interleaved 2 of 5, UPC Coupon Code
2D Bar Codes	PDF-417, QR Code

SE4750-SR Decode Distances

The table below lists the typical distances for selected bar code densities. The minimum element width (or “symbol density”) is the width in mils of the narrowest element (bar or space) in the symbol.

Table A-3 SE4750-SR Decode Distances

Symbol Density/ Bar Code Type	Typical Working Ranges	
	Near	Far
3 mil Code 39	4.1 in. 10.41 cm	4.9 in. 12.45 cm
5.0 mil Code 128	3.5 in. 8.89 cm	6.8 in. 17.27 cm
5 mil PDF417	4.4 in. 11.18 cm	6.3 in. 16.00 cm
6.67 mil PDF417	3.2 in. 8.13 cm	8.1 in. 20.57 cm
10 mil Data Matrix	3.3 in. 8.38 cm	8.5 in. 21.59 cm
100% UPCA	2.0 in. 5.08 cm	18.0 in. 45.72 cm

Table A-3 SE4750-SR Decode Distances

Symbol Density/ Bar Code Type	Typical Working Ranges	
	Near	Far
15 mil Code 128	2.6 in. 6.06 cm	19.8 in. 50.29 cm
20 mil Code 39	1.8 in. 4.57 cm	27.0 in. 68.58 cm

Note: Photographic quality bar code at 18° tilt pitch angle under 30 fcd ambient illumination.

I/O Connector Pin-Outs

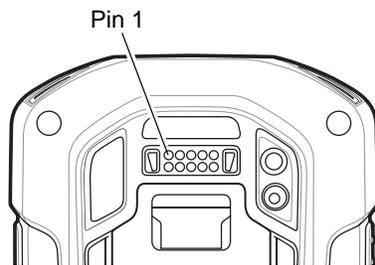


Figure A-1 I/O Connector

Table A-4 I/O Connector Pin-Outs

Pin	Signal	Description
1	GND	Power/signal ground.
2	RXD_MIC	UART RXD + Headset microphone.
3	PWR_IN_CON	External 5.4 VDC power input.
4	TRIG_PTT	Trigger or PTT input.
5	GND	Power/signal ground.
6	USB-OTG_ID	USB OTG ID pin.
7	TXD_EAR	UART TXD, Headset ear.
8	USB_OTG_VBUS	USB VBUS
9	USB_OTG_DP	USB DP
10	USB_OTG_DM	USB DM

2-Slot Charge Only Cradle Technical Specifications

Table A-5 2-Slot Charge Only Cradle Technical Specifications

Item	Description
Dimensions	Height: 10.6 cm (4.17 in.) Width: 19.56 cm (7.70 in.) Depth: 13.25 cm (5.22 in.)
Weight	748 g (26.4 oz.)
Input Voltage	12 VDC
Power Consumption	30 watts
Operating Temperature	0°C to 50°C (32°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)
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10 kV contact +/- 10 kV indirect discharge

2-Slot USB/Ethernet Cradle Technical Specifications

Table A-6 2-Slot USB/Ethernet Cradle Technical Specifications

Item	Description
Dimensions	Height: 20 cm (7.87 in.) Width: 19.56 cm (7.70 in.) Depth: 13.25 cm (5.22 in.)
Weight	870 g (30.7 oz.)
Input Voltage	12 VDC
Power Consumption	30 watts
Operating Temperature	0°C to 50°C (32°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)

Table A-6 2-Slot USB/Ethernet Cradle Technical Specifications

Item	Description
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact +/- 10kV indirect discharge

5-Slot Charge Only Cradle Technical Specifications

Table A-7 5-Slot Charge Only Cradle Technical Specifications

Item	Description
Dimensions	Height: 90.1 mm (3.5 in.) Width: 449.6 mm (17.7 in.) Depth: 120.3 mm (4.7 in.)
Weight	1.31 kg (2.89 lbs.)
Input Voltage	12 VDC
Power Consumption	65 watts 90 watts with 4-Slot Battery Charger installed.
Operating Temperature	0°C to 50°C (32°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)
Humidity	0% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact +/- 10kV indirect discharge

5-Slot Ethernet Cradle Technical Specifications

Table A-8 5-Slot Ethernet Cradle Technical Specifications

Item	Description
Dimensions	Height: 21.7 cm (8.54 in.) Width: 48.9 cm (19.25 in.) Depth: 13.2 cm (5.20 in.)
Weight	2.25 kg (4.96 lbs)
Input Voltage	12 VDC
Power Consumption	65 watts 90 watts with 4-Slot Battery Charger installed.
Operating Temperature	0°C to 50°C (32°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)
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact +/- 10kV indirect discharge

4-Slot Battery Charger Technical Specifications

Table A-9 4-Slot Battery Charger Technical Specifications

Item	Description
Dimensions	Height: 4.32 cm (1.7 in.) Width: 20.96 cm (8.5 in.) Depth: 15.24 cm (6.0 in.)
Weight	386 g (13.6 oz.)
Input Voltage	12 VDC
Power Consumption	40 watts
Operating Temperature	0°C to 40°C (32°F to 104°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)

Table A-9 4-Slot Battery Charger Technical Specifications

Item	Description
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact +/- 10kV indirect discharge

Charge Only Vehicle Cradle Technical Specifications

Table A-10 Charge Only Vehicle Cradle Technical Specifications

Item	Description
Dimensions	Height: 12.3 cm (4.84 in.) Width: 11.0 cm (4.33 in.) Depth: 8.85 cm (3.48 in.)
Weight	320 g (11.3 oz.)
Input Voltage	12/24 VDC
Power Consumption	40 watts
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Charging Temperature	0°C to 40°C (32°F to 104°F)
Humidity	5% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

Magnetic Stripe Reader Technical Specifications

Table A-11 Magnetic Stripe Reader Technical Specifications

Item	Description
Dimensions	Height: 5.18 mm (2.04 in.) Width: 7.47 cm (2.94 in.) Depth: 2.74 cm (1.08 in.)
Weight	37 g (1.3 oz.)
Input Voltage	5 VDC

Table A-11 *Magnetic Stripe Reader Technical Specifications*

Item	Description
Interface	Serial with baud rate up to 19,200
Format	ANSI, ISO, AAMVA, CA DMV
Certification	PCI-DSS 2.0
Swipe Speed	5 to 50 in. (127 to 1270 mm) /sec, bi-directional
Decoders	Generic, Raw Data
Mode	Buffered, unbuffered
Track Reading Capabilities	Tracks 1 and 3: 210 bpi Track 2: 75 and 210 bpi, autodetect
Operating Temperature	-20°C to 50°C (68°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Drop	76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

Trigger Handle Technical Specifications

Table A-12 *Trigger Handle Technical Specifications*

Item	Description
Dimensions	Height: 11.2 cm (4.41 in.) Width: 6.03 cm (2.37 in.) Depth: 13.4 cm (5.28 in.)
Weight	110 g (3.8 oz.)
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Drop	1.8 m (6 feet) drops to concrete over temperature range.
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

Charging Cable Cup Technical Specifications

Table A-13 *Charging Cable Cup Technical Specifications*

Item	Description
Length	25.4 cm (10.0 in.)
Input Voltage	5.4 VDC
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

Snap-On USB Cable Technical Specifications

Table A-14 *Snap-On USB Cable Technical Specifications*

Item	Description
Length	1.5 cm (60.0 in.)
Input Voltage	5.4 VDC (external power supply)
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

Snap-On Serial Cable Technical Specifications

Table A-15 *Snap-On USB Cable Technical Specifications*

Item	Description
Length	1 m (39.0 in.)
Input Voltage	5.4 VDC
Operating Temperature	-20°C to 50°C (-4°F to 122°F)

Table A-15 *Snap-On USB Cable Technical Specifications*

Item	Description
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

DEX Cable Technical Specifications

Table A-16 *DEX Cable Technical Specifications*

Item	Description
Length	1.5 cm (60.0 in.)
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

2.5 mm Audio Adapter Technical Specifications

Table A-17 *2.5 mm Audio Adapter Technical Specifications*

Item	Description
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	10% to 95% non-condensing
Electrostatic Discharge (ESD)	+/- 20kV air +/- 10kV contact

APPENDIX B APPLICATION DEVELOPMENT

Development Tools

Windows 10 introduces the Universal Windows Platform (UWP), which further evolves the Windows Runtime model and brings it into the Windows 10 unified core. As part of the core, the UWP now provides a common app platform available on every device that runs Windows 10. With this evolution, apps that target the UWP can call not only the WinRT APIs that are common to all devices, but also APIs (including Win32 and .NET APIs) that are specific to the device family the app is running on. The UWP provides a guaranteed core API layer across devices. This means you can create a single app package that can be installed onto a wide range of devices. And, with that single app package, the Windows Store provides a unified distribution channel to reach all the device types your app can run on.

Because your UWP app runs on a wide variety of devices with different form factors and input modalities, you want it to be tailored to each device and be able to unlock the unique capabilities of each device. Devices add their own unique APIs to the guaranteed API layer. You can write code to access those unique APIs conditionally so that your app lights up features specific to one type of device while presenting a different experience on other devices. Adaptive UI controls and new layout panels help you to tailor your UI across a broad range of screen resolutions.

Developers create UWP apps using the programming languages they are most familiar with, like C# or Visual Basic with XAML, JavaScript with HTML, or C++ with DirectX and/or Extensible Application Markup Language (XAML). You can even write components in one language and use them in an app that's written in another language.

UWP apps use the Windows Runtime, a native API built into the operating system. This API is implemented in C++ and supported in C#, Visual Basic, C++, and JavaScript in a way that feels natural for each language.

Microsoft Visual Studio 2015 provides a UWP app template for each language that lets you create a single project for all devices. When your work is finished, you can produce an app package and submit it to the Windows Store from within Visual Studio to get your app out to customers on any Windows 10 device.

The Microsoft ADK is available at:

<https://developer.microsoft.com/en-us/windows/hardware/windows-assessment-deployment-kit>.

Porting App to Windows 10

For information on porting existing apps to Universal Windows Platform (UWP), refer to: <https://msdn.microsoft.com/en-us/windows/uwp/porting/index>.

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