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Trademarks

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# Revision History

Changes to the original guide are listed below:

<table>
<thead>
<tr>
<th>Change</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 Rev. A</td>
<td>10/15/2013</td>
<td>Initial release.</td>
</tr>
<tr>
<td>A01 Rev. B</td>
<td>12/12/13</td>
<td>Minor corrections.</td>
</tr>
<tr>
<td>A02 Rev A</td>
<td>04/02/14</td>
<td>Add support for configurations with Google Mobile Services (Standard Configura-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tion) and TC55CH.</td>
</tr>
<tr>
<td>A03 Rev A</td>
<td>08/5/14</td>
<td>Add TC55CH with 3G Voice and Data configuration support.</td>
</tr>
<tr>
<td>A03 Rev B</td>
<td>02/15/15</td>
<td>Zebra rebranding.</td>
</tr>
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### About This Guide

This guide provides information about setting up and configuring the TC55 and its accessories.

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

### Documentation Set

The documentation set for the TC55 provides information for specific user needs, and includes:

- *TC55 Quick Start Guide* - describes how to get the device up and running.
- *TC55 User Guide* - describes how to use the device.
- *TC55 Integrator Guide* - describes how to set up the device and accessories.

### Configurations

This guide covers the following configurations:

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Radios</th>
<th>Display</th>
<th>Memory</th>
<th>Data Capture Options</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC55AH</td>
<td>WLAN: 802.11a/b/g/n WPAN: Bluetooth v4.0 and NFC WWAN: LTE</td>
<td>4.3” color WVGA</td>
<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera, 2D imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2</td>
</tr>
<tr>
<td>Professional Configuration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2 with Google Mobile Services (GMS)</td>
</tr>
<tr>
<td>Standard Configuration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC55BH</td>
<td>WLAN: 802.11a/b/g/n WPAN: Bluetooth v4.0 and NFC WWAN: HSPA+</td>
<td>4.3” color WVGA</td>
<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera, 2D imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2</td>
</tr>
<tr>
<td>Professional Configuration</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>TC55BH</td>
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<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2</td>
</tr>
</tbody>
</table>

*Table continued...*
### Configuration

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Radios</th>
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<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Configuration</td>
<td>WPAN: Bluetooth v4.0 and NFC</td>
<td>4.3” color WVGA</td>
<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera or camera</td>
<td>Source Project 4.1.2 with GMS</td>
</tr>
<tr>
<td></td>
<td>WWAN: HSPA+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC55CH with LTE Data</td>
<td>WLAN: 802.11a/b/g/n</td>
<td>4.3” color WVGA</td>
<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2</td>
</tr>
<tr>
<td>Professional Configuration</td>
<td>WPAN: Bluetooth v4.0 and NFC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WWAN: CDMA/ EvDO, LTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC55CH with 3G Voice &amp; Data</td>
<td>WLAN: 802.11a/b/g/n</td>
<td>4.3” color WVGA</td>
<td>1 GB RAM / 8 GB Flash</td>
<td>Linear imager and camera or camera</td>
<td>Android-based, Android Open-Source Project 4.1.2</td>
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<td>WPAN: Bluetooth v4.0 and NFC</td>
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<tr>
<td></td>
<td>WWAN: CDMA/ EvDO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Software Versions

To determine the current software versions touch > > About phone.

- **Serial number** – Displays the serial number.
- **Model number** – Displays the model number.
- **Android version** – Displays the operating system version.
- **Kernel version** – Displays the kernel version number.
- **Build number** – Displays the software build number.

### Chapter Descriptions

Topics covered in this guide are as follows:

- **Getting Started on page 15** provides information on getting the TC55 up and running for the first time.
- **Accessories on page 33** describes the available accessories and how to use them with the TC55.
- **USB Communication on page 39** describes how to connect the TC55 to a host computer using USB.
- **DataWedge Configuration on page 41** describes how to use and configure the DataWedge application.
- **Administrator Utilities on page 71** provides information for using the suite of administrative tools for configuring the TC55.
- **Settings on page 89** provides the settings for configuring the TC55.
- **Application Deployment on page 99** provides information for developing and managing applications.
- **Maintenance and Troubleshooting on page 117** includes instructions on cleaning and storing the TC55, and provides troubleshooting solutions for potential problems during TC55 operation.
- **Technical Specifications on page 123** provides the technical specifications for the TC55.
- **Keypad Remap Strings on page 131** provides a list of remap strings used when remapping keys.
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.

- **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.
- **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.
- **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.

Service Information

If you have a problem with your equipment, contact Global Customer Support Center for your region. Contact information is available at: [http://www.zebra.com/support](http://www.zebra.com/support).

When contacting the Global Customer Support Center, 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
We respond to calls by email or telephone within the time limits set forth in support agreements.

If your problem cannot be solved by the Global Customer Support Center, you may need to return your 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.

If you purchased your product from a business partner, contact that business partner for support.
Chapter 1

Getting Started

This chapter provides the features of the TC55 and explains how to set it up for the first time.

Unpacking

Carefully remove all protective material from the TC55 and save the shipping container for later storage and shipping. Verify the following items are in the box:

- TC55
- Lithium-ion battery (2,940 mAh or 4,410 mAh)
- Charge Cable
- Quick Start Guide
- Regulatory Guide.

Note: Power Supply, p/n PWRS-124306–01R, is required and must be purchased separately.

Inspect the equipment for damage. If any equipment is missing or damaged, contact the Zebra Support Center immediately. See Service Information on page 13 for contact information.

Setup

To start using the TC55 for the first time:

- Install the SIM Card.
- Install microSD card (optional).
- Install the battery.
- Charge the TC55.
- Power on the TC55.
- Set up Google account.

Installing the SIM Card

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.
Note:
The TC55 accepts a full size SIM card. If using a micro or nano SIM card, a third-party SIM adapter is required.

TC55AH, TC55BH and TC55CH with LTE Data devices require an activated SIM card. Obtain the card from a service provider. TC55CH with 3G Voice & Data devices do not require a SIM card.

On TC55CH with LTE Data devices, if this is a new account, ensure that the account is set up for LTE data. Obtain a SIM card from Verizon. If you have an existing LTE account that you want to move over to this device, just install your currently active SIM card. No additional activation will be required. If this is a new account: provide the device IMEI number (located on the label under the battery) and the SIM card number to your service provider. After the service provider activates your account, install the SIM card. The TC55CH must be in good LTE coverage for activation to take place. Following the on-screen process.

On TC55CH with 3G Voice & Data devices, if this is a new account,: provide the device IMEI number (located on the label under the battery) to your service provider. After the service provider activates your account, following the on-screen process for activation.

Procedure:
1. Slide the SIM card holder toward the bottom of the TC55 to unlock.

Figure 2: Unlock SIM Card Holder

2. Lift the SIM door.
3. Insert the SIM card with the cut edge and the contacts facing up.
4 Close the SIM card holder.

Figure 4: Close SIM Card Holder

5 Slide the SIM card holder toward the top of the TC55 to lock into place.
Installing an Optional microSD Card

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

Changing the microSD card can change the functionality of the TC55.

Note: The TC55 supports microSD cards up to 32 GB.

Procedure:
1. Slide the microSD card door toward the top of the TC55 to unlock.
2 Lift the SD card door.
3 Align the microSD card with the card holder. Ensure that the contacts on the card are facing down and toward the card holder.
4 Insert the microSD card into the card holder.

**Figure 7: Insert microSD Card**

5 Close the SD card door.
6 Slide the SD card door toward the bottom of the TC55 to lock into place.
Installing the Battery

There are two sizes of batteries available for the TC55; a 2,940 mAh battery and a 4,410 mAh battery.

Procedure:

1. Align the three tabs on the bottom of the battery with the three slots in the battery compartment.
2. Press the battery down and then rotate until it locks into place.
3 Align the battery cover with the back of the device and press the battery cover down until it snaps into place.

4 Press around the edge of the cover to ensure that the battery cover is seated properly.
Charging the Battery

**Caution:** Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines on page 117*.

**Charging the Main Battery**

Before using the TC55 for the first time, charge the main battery until the light emitting diode (LED) turns solid green (see *Charging LED Status on page 23* for charge status indications). To charge the TC55, use the Rugged Charge Cable with the optional power supply.

**Note:** Only connect the Rugged Charge Cable to the optional power supply. Do not connect the Rugged Charge Cable to a host computer for charging.
The TC55 begins charging. The LED blinks green while charging, then turns solid green when fully charged. The 2,940 mAh battery charges in approximately three hours and the 4,410 mAh battery charges in approximately 4.5 hours.

### Charging LED Status

<table>
<thead>
<tr>
<th>Status</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>TC55 is not inserted correctly in the cradle.</td>
</tr>
<tr>
<td></td>
<td>TC55 is not connected to a power source.</td>
</tr>
<tr>
<td></td>
<td>Cable or cradle is not powered.</td>
</tr>
<tr>
<td>Slow blinking green (1 blink every two seconds)</td>
<td>TC55 is charging.</td>
</tr>
<tr>
<td>Solid green</td>
<td>Charging complete.</td>
</tr>
<tr>
<td>Slow blinking red (1 blink every two seconds)</td>
<td>Battery is in an extremely low power state (normal slow charging mode).</td>
</tr>
<tr>
<td>Fast blinking red (2 blinks / per second)</td>
<td>Charging error:</td>
</tr>
<tr>
<td></td>
<td>• Temperature is too low or too high.</td>
</tr>
<tr>
<td></td>
<td>• Charging has gone on too long without completion (typically eight hours).</td>
</tr>
</tbody>
</table>

### Charging Temperature

Charge batteries in temperatures from 0 °C to 40 °C (32 °F to 104 °F). Note that charging is intelligently controlled by the TC55. To accomplish this, for small periods of time, the TC55 or accessory alternately enables and disables
battery charging to keep the battery at acceptable temperatures. The TC55 or accessory indicates when charging is
disabled due to abnormal temperatures via its LED.

**Powering On the TC55**

*Note:* Ensure that the battery cover is properly installed. Otherwise, the TC55 will not power on.

If the TC55 did not turn on when the battery was installed, press the Power button. The LED flashes green and the
device vibrates. The splash screen displays for about a minute as the TC55 boots.

**Replacing the 2,940 mAh Battery**

**Procedure:**

1. Press the Power button until the menu displays.
2. Touch **Power off**.
3. Touch **OK**.
4. Place thumbnail at notch and lift the battery cover.

*Figure 14: Remove the Battery Cover*

5. *Note:* Do not pull the battery tab straight out. Pull at a 45 degree angle.

Pull the battery tab down at a 45 degree angle.
Figure 15: Remove 2,940 mAh Battery

6 Remove the battery from the battery compartment.
7 Align the three tabs on the bottom of the replacement battery with the three slots in the battery compartment.
8 Press the battery down and rotate until it locks into place.

Figure 16: Inserting the 2,940 mAh Battery

9 Align the battery cover with the back of the device.

Figure 17: Align the Battery Cover

10 Press around the edge of the cover to ensure that the battery cover is seated properly.
11 Press the Power button to turn on the TC55.

Replacing the 4,410 mAh Battery

Procedure:

1. Press the Power button until the menu displays.
2. Touch Power off.
3. Touch OK.
4. Place thumbnail at notch and lift the battery cover.
5. With two fingers, press the battery down.
Figure 20: Remove 4,410 mAh Battery

6 Rotate the battery out of the compartment.
7 Align the three tabs on the bottom of the replacement battery with the three slots in the battery compartment.
8 Press the battery down and rotate until it locks into place.

Figure 21: Inserting the 4,410 mAh Battery

9 Align the battery cover with the back of the device.

Figure 22: Align the Battery Cover

10 Press around the edge of the cover to ensure that the battery cover is seated properly.
Replacing the microSD Card

**Caution:**

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

Changing the microSD card can change the functionality of the TC55.

Ensure that you follow the procedures to shut down the TC55 before replacing the microSD card. Data corruption can occur if reading or writing to the microSD card and power is removed.

**Note:** The TC55 supports microSD cards up to 32 GB.

To replace the microSD card:

**Procedure:**

1. Press the Power button until the menu displays.
2. Touch **Power off**.
3. Touch **OK**.
4. Wait for the device to power off completely.
5. Remove the battery cover.
6. Remove the battery.
7. Slide the microSD card cover up to unlock.
Figure 24: Unlock microSD Card Cover

8 Lift the microSD card cover.
9 Remove the microSD card from the card holder.
10 Align the replacement microSD card with the card holder. Ensure that the contacts on the card are facing down and toward the card holder.
11 Insert the microSD card into the card holder.

Figure 25: Insert microSD Card

12 Close the microSD card cover.
13 Slide the microSD card cover down to lock into place.
14 Replace the battery.
15 Align the battery cover with the back of the device and press the battery cover down until it snaps into place.
16 Press the Power button to turn on the device.

**Resetting the Device**

There are four reset functions:

- Soft Reset
- Hard Reset
- Enterprise Reset
- Factory Reset.

**Performing a Soft Reset**

Perform a soft reset if applications stop responding.

**Procedure:**

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

**Performing a Hard Reset**

![Caution: Performing a hard reset with a SD card installed in the TC55 may cause damage or data corruption to the SD card.](image)

Perform a hard reset if the TC55 stops responding.

**Procedure:**

The TC55 reboots.

### Performing an Enterprise Reset

An Enterprise Reset erases all data in the /cache and /data partitions and clears all TC55 settings, except those in the /enterprise partition.

**Procedure:**

1. Download the Enterprise Reset file from Zebra Support Central web site.
2. Copy the `TC55N0JxxVREyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy.zip` file to the root directory of the microSD card. See USB Communication on page 39.
3. Press and hold the Power button until the **Device options** menu appears.
4. Touch **Reset**.
5. Touch **OK**. The TC55 resets.
6. Press and hold the Volume Up button.
7. When the System Recovery screen appears release the Volume Up button.

**Figure 28: System Recovery Screen**

8. Use the Volume Up and Down buttons to navigate to **Apply update from SD card** or **apply from internal**.
9. Press the Scan button.
10 Use the Volume Up and Down keys to navigate to the TC55N0JxxVREyyzzzzz.zip file.
11 Press the Scan button. The Enterprise Reset occurs and then the TC55 resets.

Performing a Factory Reset

A Factory Reset erases all data in the /cache, /data and /enterprise partitions in internal storage and clears all TC55 device settings. A Factory Reset returns the TC55 to the last installed operating system image. To revert to a previous operating system version, re-install that operating system image. See Updating the System on page 103 for more information.

Procedure:

1 Download the Enterprise Reset file from Zebra Support Central web site.
2 Copy the TC55N0JxxVRFyyzzzzz.zip file to the root directory of the microSD card or to Internal Storage. See USB Communication on page 39.
3 Press and hold the Power button until the menu appears.
4 Touch Reset.
5 Touch OK. The TC55 resets.
6 Press and hold the Volume Up button.
7 When the System Recovery screen appears release the Volume Up button.

Figure 29: System Recovery Screen

8 Use the Volume Up and Down buttons to navigate to Apply update from SD card or apply from internal.
9 Press the Scan button.
10 Use the Volume Up and Down keys to navigate to the TC55N0JxxVRFyyzzzzz.zip file.
11 Press the Scan button. The Factory Reset occurs and then the TC55 resets.
Chapter 2
Accessories

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

TC55 Accessories

The table below lists the accessories available for the TC55.

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cradles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Five Slot Charge Only Cradle</td>
<td>CRDUNIV-55-5000R</td>
<td>Provides charging for up to five TC55 devices. Requires additional power supply.</td>
</tr>
<tr>
<td>Five Slot Charge Only Cradle Base</td>
<td>CRDUNIV-XX-5000R</td>
<td>Provides charging for up to five TC55 devices. Requires charging cups and additional power supply.</td>
</tr>
<tr>
<td>Vehicle Cradle</td>
<td>CRD-TC55-VCD1-01</td>
<td>Provides mounting of the TC55 in a vehicle.</td>
</tr>
<tr>
<td><strong>Chargers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Supply (12 VDC, 4.16 A.)</td>
<td>PWRS-14000-148R</td>
<td>Provides power to the Five Slot Charge Only Cradle.</td>
</tr>
<tr>
<td>Power Supply (5 VDC, 1.2 A)</td>
<td>PWRS-124306-01R</td>
<td>Provides power to the TC55.</td>
</tr>
<tr>
<td><strong>Cables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rugged Charge Cable</td>
<td>CBL-TC55-CHG1-01</td>
<td>Provides power to the TC55.</td>
</tr>
<tr>
<td>Micro USB Cable</td>
<td>25-MCXUSB-01R</td>
<td>Provides USB communication with a host computer.</td>
</tr>
<tr>
<td>Auto Charge Cable</td>
<td>VCA400-01R</td>
<td>Charges the TC55 in a Vehicle Cradle using a vehicle’s cigarette lighter.</td>
</tr>
<tr>
<td>US AC Line Cord (3-wire)</td>
<td>50-16000-221R</td>
<td>Provides power to the power supplies.</td>
</tr>
<tr>
<td>International AC line Cord</td>
<td>-</td>
<td>Provides power to the power supplies. Purchase separately.</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spare 2,940 mAh lithium-ion battery</td>
<td>BTRY-TC55-29MA1-01</td>
<td>Replacement 2,940 mAh battery.</td>
</tr>
</tbody>
</table>

Table continued...
<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare 4,410 mAh lithium-ion battery</td>
<td>BTRY-TC55-44MA1-01</td>
<td>Replacement 4,410 mAh battery.</td>
</tr>
<tr>
<td>2,940 mAh Battery Cover</td>
<td>KT-TC55-29BTYD1-01</td>
<td>Replacement battery cover for 2,940 mAh battery.</td>
</tr>
<tr>
<td>4,410 mAh Battery Cover</td>
<td>KT-TC55-44BTDYD1-01</td>
<td>Replacement battery cover for 4,410 mAh battery.</td>
</tr>
<tr>
<td>Charging Cup</td>
<td>CUPTC55XX-1000R</td>
<td>Mounts onto the Multi Slot Charge Only Cradle Base and provides TC55 charging slot.</td>
</tr>
<tr>
<td>Blank Slot Cover</td>
<td>CUPUNICVR-5000R</td>
<td>Mounts on the Five Slot Charge Only Cradle and covers a slot when a cup is not required (5-pack).</td>
</tr>
<tr>
<td>Protective Boot (Blue/Black)</td>
<td>SG-TC55-BOOT1-01</td>
<td>Provides additional protection for the TC55.</td>
</tr>
<tr>
<td>Protective Boot (Grey/Black)</td>
<td>SG-TC55-BOOT2-01</td>
<td>Provides additional protection for the TC55.</td>
</tr>
<tr>
<td>Stylus for Protective Boot</td>
<td>KT-TC55-STYLUS1-01</td>
<td>Single stylus for Protective Boot with tether.</td>
</tr>
<tr>
<td></td>
<td>KT-TC55–STYLUS1–03</td>
<td>Stylus for Protective Boot with tether (3-pack).</td>
</tr>
<tr>
<td>Handstrap</td>
<td>SG-TC55-HSTRPH-01</td>
<td>Attached to Protective boot.</td>
</tr>
<tr>
<td>Holster</td>
<td>SG-TC55-HLSTR1-01</td>
<td>Mounts on belt and provides storage for the TC55.</td>
</tr>
</tbody>
</table>

**Five Slot Charge Only Cradle**

The Five Slot Charge Only cradle:
- Provides 5 VDC power for operating the TC55.
- Simultaneously charges up to five TC55s.
- Contains five removal cups.

**Charging the TC55**

To charge the TC55, insert the TC55 into an open slot.

**Figure 30: Five Slot Charge Only Cradle**
Power Setup

Figure 31: Five Slot Charge Only Cradle Power Connections

Inserting a TC55 with Boot into Cradle

Each cradle cup has an insert that must be removed prior to inserting the TC55 with Protective Boot. Remove the insert and then insert the TC55 into the cup.

Figure 32: Remove Cup Insert

Installing a Cup

Cups on the Five Slot Charge Only Cradle can be removed and replaced with new cups or blank cups. To install the cradle cups:

Procedure:

1. Remove power from the cradle base before installing cups.
2. Using a Phillips screwdriver, remove the two screws securing the cup to the base.
3. Lift the front of the cup and then slide off the back of the base.
4. Align the lip of the cup with the slot on the front of the cradle. Ensure that the cup is positioned within the Slot Alignment Tabs.
5 Slide the lip into the slot and rotate the cup until it is flat on the cradle base.
6 Using a Phillips screwdriver, secure the cup to the charger base using the two screws provided with the cup.

Figure 34: Securing Cup to Base
7 Each slot on the Cradle Base must have a cup installed.
8 Repeat for each additional cup.

**Handstrap Installation**

The optional handstrap can be installed onto the optional protective boot for ease of holding the device.

**Procedure:**
1 If closed, lift ends of handstrap and extend away from main section.
2 Insert the handstrap top end (near stylus holder) into the top opening of the boot and under the bottom cross-beam.

![Figure 35: Insert Handstrap onto Boot](image)

3 Fold the end to the center and press down on the hook and loop material.
4 Turn the boot over.
5 Insert the TC55 top first into the boot.

![Figure 36: Insert Top of Device into Boot](image)

6 Press bottom of TC55 into bottom.
Figure 37: Insert Bottom of Device into Boot

7 Adjust handstrap as required.
Chapter 3

USB Communication

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

Connecting to a Host Computer via USB

Connect the TC55 to a host computer using the micro USB cable to transfer files between the TC55 and the host computer.

Caution:
When connecting the TC55 to a host computer, follow the host computer’s instructions for connecting and disconnecting USB devices, to avoid damaging or corrupting files.

Connecting to the TC55 as a Media Device

Procedure:
1 Connect the micro USB cable to the TC55 and then to the host computer. Connected as a media device or Connected as an installer appears on the Status bar.
2 If Connected as an installer appears, pull down the Notification shade and touch Connected as an installer and then touch Media device (MTP).
3 On the host computer, open a file explorer application.
4 Locate the TC55 as a portable device. If an external microSD card is installed, it displays as SD card. The internal memory appears as Internal Storage.
5 Open either SD card or Internal Storage.
6 Copy or delete files as required.

Connecting to the TC55 as an Installer

Procedure:
1 Connect the micro USB cable to the TC55 and then to the host computer. Connected as a media device or Connected as an installer appears on the Status bar.
2 If Connected as media device appears, pull down the Notification shade and touch Connected as media device and then touch Media device (MTP) to de-select.
3 On the host computer, open a file explorer application. The TC55 storage appears as Removable Disks.
4 On the TC55, pull down the Notification shade and touch USB Connected.
5 On the USB mass storage screen, touch Turn on USB storage.
On the host computer, the TC55 Internal Storage appears as **INTERNAL** and the microSD card appears as **Removable Disk**.

6. Locate the TC55 as a devices within Removable Storage.
7. Open either **INTERNAL** or **Removable Disk**.
8. Copy or delete files as required.
9. Touch **Turn off USB storage**

### 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.

**Procedure:**

1. On the host computer, unmount the microSD card.
2. Remove the micro USB cable from the TC55.
Chapter 4

DataWedge Configuration

DataWedge is an application that reads data, processes the data and sends the data to an application.

Basic Scanning

Scanning can be performed using either the linear imager or the rear-facing camera.

Using the Camera

To capture bar code data:

Procedure:
1. Ensure that an application is open on the TC55 and a text field is in focus (text cursor in text field).
2. Aim the rear-facing camera at a bar code.
3. Press and hold the Programmable button. By default, a preview window appears on the screen. The LED light red to indicate that data capture is in process.
4 Move the TC55 until the bar code is centered under the red target.
5 The LED light green, a beep sounds and the TC55 vibrates, by default, to indicate the bar code was decoded successfully. The captured data appears in the text field.

**Using the Imager**

To capture bar code data:

**Procedure:**

1 Ensure that an application is open on the TC55 and a text field is in focus (text cursor in text field).
2 Point the top of the TC55 at a bar code.
3 Press and hold the Programmable button. The LED lights red to indicate that data capture is in process.

4 Place the red aiming pattern across the bar code. The LED lights green and a beep sounds, by default, to indicate the bar code was decoded successfully.

5 The captured data appears in the text field.

Profiles

DataWedge is based on profiles and plug-ins. A profile contains information on how DataWedge should behave with different applications.

Profile information consists of:

- Associated application
- Input plug-in configurations
- Output plug-in configurations
- Process plug-in configurations

Using profiles, each application can have a specific DataWedge configuration. For example, each user application can have a profile which outputs scanned data in the required format when that application comes to the foreground. DataWedge can be configured to process the same set of captured data differently based on the requirements of each application.

DataWedge includes the following visible and hidden pre-configured profiles which support specific built-in applications:

- Visible profiles:
  - Profile0 - created automatically the first time DataWedge runs. Generic profile used when there are no user created profiles associated with an application.
  - Launcher - disables scanning when the Launcher is in foreground.
  - DWDemo - provides support for the DWDemo application.

- Hidden profiles (not shown to the device):
  - RD Client - provides support for MSP.
  - MSP Agent - provides support for MSP.
  -MspUserAttribute - provides support for MSP.
  - Camera - disables scanning when the default camera application is in foreground.
  - RhoElements - disables scanning when RhoElements is in foreground.

Profile0

Profile0 can be edited but cannot be associated with an application. That is, DataWedge allows manipulation of plug-in settings for Profile0 but it does not allow assignment of a foreground application. This configuration allows DataWedge to send output data to any foreground application other than applications associated with user-defined profiles when Profile0 is enabled.

Profile0 can be disabled to allow DataWedge to only send output data to those applications which are associated in user-defined profiles. For example, create a profile associating a specific application, disable Profile0 and then scan. DataWedge only sends data to the application specified in the user-created profile. This adds additional security to DataWedge enabling the sending of data only to specified applications.

Plug-ins

A plug-in is a software module utilized in DataWedge to extend its functionality to encompass technologies such as bar code scanning. The plug-ins can be categorized into three types based on their operations:
• Input Plug-ins
• Output Plug-ins
• Process Plug-ins.

**Input Plug-ins**

An Input Plug-in supports an input device, such as a bar code scanner contained in, or attached to the device. **DataWedge** contains base plug-ins for these input devices.

- **Bar Code Scanner Input Plug-in** – The Bar Code Scanner Input Plug-in is responsible for reading data from the integrated bar code scanner and supports different types of bar code readers including laser, imager and internal camera. Raw data read from the bar code scanner can be processed or formatted using Process Plug-ins as required. **DataWedge** has built-in feedback functionality for the bar code scanner to issue user alerts. The feedback settings can be configured according to user requirement.

**Process Plug-ins**

Process Plug-ins are used in **DataWedge** to manipulate the received data according to the requirement, before sending to the foreground application via the Output Plug-in.

- **Basic Data Formatting Process Plug-in** – The Basic Data Formatting Plug-in allows **DataWedge** to add a prefix and/or a suffix to the captured data before passing it to an Output Plug-in.
- **Advanced Data Formatting Process Plug-in** – The Advanced Data Formatting Plug-in allows **DataWedge** to apply rules (actions to be performed based on defined criteria) to the data received via an input plug-in before passing it to an Output Plug-in.

**Output Plug-ins**

Output Plug-ins are responsible for sending the data from Input Plug-ins to a foreground application on the device.

- **Keystroke Output Plug-in** – The Keystroke Output Plug-in collects and sends data received from the Input Plug-in to the foreground application by emulating keystrokes.
- **Intent Output Plug-in** – The Intent Output Plug-in collects and sends data received from the Input Plug-ins to foreground applications using the Android Intent mechanism.
- **IP Output Plug-in** – The IP Output Plug-in collects and sends data received from the Input Plug-ins to a host computer via a network connection. Captured data can be sent over an IP network to a specified IP address and port using either TCP or UDP transport protocols.

**Profiles Screen**

To launch DataWedge, touch " > **DataWedge**. By default, three profiles appear:

- **Profile0**
- **Launcher**
- **DWDemo**.

Profile0 is the default profile and is used when no other profile can be applied.
Figure 40: DataWedge Profiles Screen

Profile names are color coded. Enabled profiles are white and disabled profiles are gray.
To configure a profile touch the profile name.

Profile Context Menu
Touch and hold a profile to open a context menu that allows additional actions to be performed on the selected profile.

Figure 41: Profile Context Menu

The profile context menu allows the profile to be edited (same as just tapping on a profile), renamed or deleted.

Options Menu
Touch to open the options menu.
Figure 42: DataWedge Options Menu

The menu provides options to create a new profile, access to general DataWedge settings and DataWedge version information.

Disabling DataWedge

Procedure:
1. Touch 📲.
2. Touch 📱.
3. Touch 📱.
4. Touch Settings.
5. Touch DataWedge enabled.
   The blue check disappears from the checkbox indicating that DataWedge is disabled.

Creating a New Profile

Procedure:
1. Touch 📴.
2. Touch 📴.
3. Touch 📴.
4. Touch New profile.
5. In the 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).
6  Touch OK.
   The new profile name appears in the DataWedge profile screen.

Profile Configuration

To configure the Profile0 or a user-created profile, touch the profile name.

Bar Code Input

Use the Bar Code Input options to configure the Bar Code Scanner Input Plug-in for the profile.

Enabled

Enables or disables this plug-in. A check in the checkbox indicates that the plug-in is enabled.
Scanner Selection

Configures which scanning device to use for bar code data capture when the profile is active.

- **Auto** - The software automatically determines the best scanning device. If the linear imager is installed, then the **Serial SSI Scanner** is selected. Otherwise the **Camera Scanner** is selected.
- **Camera scanner** - Scanning is performed with the rear-facing camera.
- **Serial SSI Scanner** - Scanning is performed using the Linear Imager.

Decoders

Configures which bar code decoders are enabled or disabled. For best performance disable all unnecessary decoders.

Touch **Decoders**. The **Barcode input** screen appears. A check in the checkbox indicates that the decoder is enabled. By default the most commonly used decoders are enabled (shown below with an asterisk). The supported decoders are:

<table>
<thead>
<tr>
<th>Decoders</th>
<th>Enable Decoders</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPC-A*</td>
<td>EAN-13*</td>
</tr>
<tr>
<td>EAN-8*</td>
<td>Code 128*</td>
</tr>
<tr>
<td>Interleaved 2 of 5</td>
<td>GS1 DataBar*</td>
</tr>
<tr>
<td>GS1 DataBar Expanded</td>
<td>Datamatrix*</td>
</tr>
<tr>
<td>PDF417*</td>
<td>Composite AB</td>
</tr>
<tr>
<td>MicroQR</td>
<td>Maxicode*</td>
</tr>
<tr>
<td>MicroPDF</td>
<td>USPostnet</td>
</tr>
<tr>
<td>UK Postal</td>
<td>Australian Postal</td>
</tr>
<tr>
<td>Canadian Postal</td>
<td>US4state FICS</td>
</tr>
<tr>
<td>Codabar*</td>
<td>MSI</td>
</tr>
<tr>
<td>Trioptic 39</td>
<td>Chinese 2 of 5</td>
</tr>
<tr>
<td>Korean 3 of 5</td>
<td>Code 11</td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>UPC-E1</td>
</tr>
</tbody>
</table>

To return to the previous screen.

Decoder Params

Use **Decode Params** 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 - enabled).
  - **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 UPC-A 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 - disabled).

- **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 Sys Char** - Transmit System Character only.
  + **Preamble Country and Sys Char** - Transmit System Character and Country Code (“0” for USA).
  + **Preamble None** - Transmit no preamble (default).

- **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 - disabled).

- **Code128**
  
  - **Length1** - Use to set decode lengths (default - 0). See *Decode Lengths on page 52* for more information.
  
  - **Length2** - Use to set decode lengths (default - 55). See *Decode Lengths on page 52* 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 - disabled).

  - **Enable Plain Code 128** - Flag to enable other 128 sub types (besides GS1-128 and ISBT-128).

  - **Enable GS1-128** - Set the GS1 128 subtype. A check in the checkbox indicates that the option is enabled (default - enabled).

  - **Enable ISBT128** - Set the ISBT128 subtype. A check in the checkbox indicates that the option is enabled (default - enabled).

  - **ISBT128 Concatenation Mode** - Select an option for concatenating pairs of ISBT code types:
    
    + **Concat Mode Never** - Do not concatenate pairs of ISBT codes encountered (default).
    
    + **Concat Mode Always** - There must be two ISBT codes in order to decode and perform concatenation. Does not decode single ISBT symbols.
    
    + **Concat Mode Auto** - Decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the device must decode the symbol the number of times set via DataWedge Configuration 4 - 11 Redundancy - Code128 before transmitting its data to confirm that there is no additional ISBT symbol.

  - **Check ISBT Table** - The ISBT specification includes a table that lists several types of ISBT bar codes that are commonly used in pairs. If ISBT128 Concat Mode is set, enable Check ISBT Table to concatenate only those pairs found in this table. Other types of ISBT codes are not concatenated. A check in the checkbox indicates that redundancy is enabled (default - disabled).

  - **Security Level** - The scanner offers four levels of decode security for Code 128 bar codes. Select increasing levels of security for decreasing levels of bar code quality. There is an inverse relationship between security and scanner aggressiveness, so choose only that level of security necessary for any given application.
    
    + **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**
  
  - **Length1** - Use to set decode lengths (default - 0). See *Decode Lengths on page 52* for more information.
  
  - **Length2** - Use to set decode lengths 4 (default - 55). See *Decode Lengths on page 52* 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 - disabled).


- **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 - disabled),

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

- **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 - disabled).

- **Report Code32 Prefix** - Scan the appropriate bar code to enable or disable adding the prefix character “A” to all Code 32 bar codes (default - disabled).

- **Security Level** - Options: Security level 0, Security Level 1, Security Level 2 and Security Level 3 (default - Security level 1).

- **Interleaved 2 of 5**

  - **Length1** - Use to set decode lengths (default - 14). See *Decode Lengths on page 52* for more information.

  - **Length2** - Use to set decode lengths (default - 10). See *Decode Lengths on page 52* 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 - enabled).

  - **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 - disabled).

  - **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 - disabled).


- **Composite AB**

  - **UCC Link Mode**

    + **Link Flag ignored** - 1D component is transmitted regardless of whether a 2D component is detected.

    + **Always Linked** - 1D and the 2D components are transmitted. If 2D is not present, the 1D component is not transmitted.

    + **Auto Discriminate** - the digital scanner determines if there is a 2D portion, then transmits the 1D component, as well as the 2D portion if present. (default).

- **UK Postal**

  - **Report Check Digit** - Transmit UK Postal data with or without the check digit. A check in the checkbox indicates to send UK Postal data with check digit (default - disabled).

- **Codabar**

  - **Length1** - Use to set decode lengths (default - 6). See *Decode Lengths on page 52* for more information.

  - **Length2** - Use to set decode lengths (default - 55). See *Decode Lengths on page 52* 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 - enabled).

  - **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 - disabled).
- **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 - disabled).

  - **MSI**
    - **Length 1** - Use to set decode lengths (default - 4). See *Decode Lengths on page 52* for more information.
    - **Length 2** - Use to set decode lengths (default - 55). See *Decode Lengths on page 52* 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 - enabled).
    - **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 - disabled).

  - **Code93**
    - **Length1** - Use to set decode lengths (default - 0). See *Decode Lengths on page 52* for more information.
    - **Length2** - Use to set decode lengths (default - 55). See *Decode Lengths on page 52* 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 - disabled).

  - **Discrete 2 of 5**
    - **Length1** - Use to set decode lengths (default - 0). See *Decode Lengths on page 52* for more information.
    - **Length2** - Use to set decode lengths (default - 14). See *Decode Lengths on page 52* 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 - enabled).

  - **Code 11**
    - **Length1** - Use to set decode lengths (default - 4). See *Decode Lengths on page 52* for more information.
    - **Length2** - Use to set decode lengths (default - 55). See *Decode Lengths on page 52* 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 - enabled).

  - **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 - disabled).

  - **Matrix 2 of 5**
    - **Length1** - Use to set decode lengths (default - 10). See *Decode Lengths on page 52* for more information.
    - **Length2** - Use to set decode lengths (default - 0). See *Decode Lengths on page 52* 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 - disabled).
    - **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 - enabled).
    - **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 - enabled).

  - **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 - disabled).

- **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 Sys Char** - Transmit System Character only.
  + **Preamble Country and Sys Char** - Transmit System Character and Country Code (“0” for USA).
  + **Preamble None** - Transmit no preamble (default).

- **Convert UPCE1 To UPC-A** - 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 - disabled).

### 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.

### UPC EAN Params

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

- **Security Level** - The scanner offers four levels of decode security for UPC/EAN bar codes. Select higher security levels for lower quality bar codes. There is an inverse relationship between security and decode speed, so be sure to choose only that level of security necessary for the application.
  - **Level 0** - This default setting allows the scanner to operate fastest, while providing sufficient security in decoding “in-spec” UPC/EAN bar codes (default).
  - **Level 1** - As bar code quality levels diminish, certain characters become prone to misdecodes before others (i.e., 1, 2, 7, 8). If the scanner is misdecoding poorly printed bar codes, and the misdecodes are limited to these characters, select this security level.
  - **Level 2** - If the scanner is misdecoding poorly printed bar codes, and the misdecodes are not limited to characters 1, 2, 7, and 8, select this security level.
  - **Level 3** - If the scanner is still misdecoding, select this security level. Be advised, selecting this option is an extreme measure against misdecoding severely out of spec bar codes. Selecting this level of security can significantly impair the decoding ability of the scanner. If this level of security is necessary, try to improve the quality of the bar codes.

- **Supplemental2** - Enables or disables this option. A check in the checkbox indicates that the option is enabled.

- **Supplemental5** - Enables or disables this option. A check in the checkbox indicates that the option is enabled.

- **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 barcode 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.

- **Retry Count** - Retry count for auto-discriminating for supplementals. Possible values are 2 to 20 inclusive. Note that this flag is only considered if Supplemental Mode - UPC EAN is set to one of the following values: Supplementals Auto, Supplementals Smart, Supplementals 378-379, Supplementals 978-979, Supplementals 977 or Supplementals 414-419-434-439 (2 to 20, default 10).

- **Bookland** - Enable Bookland decoding. A check in the checkbox indicates that the option is enabled.

- **Coupon** - Enables Coupon code decoding. Note that in order to successfully decode Coupon codes, all of the correct decoders must be enabled. A check in the checkbox indicates that the option is enabled.

- **Convert DataBar To UPC EAN** - If this is set it converts DataBar bar codes to UPC/EAN format. For this setting to work UPC/EAN symbologies must be enabled. A check in the checkbox indicates that the option is enabled.

**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 -15000).

- **Power Mode** - Set the linear imager power mode:
  - **Low Power Mode** - Imager power is enabled only when scanning.
  - **Optimized Power Mode** - Imager power remains enabled after scanning and turns off after a timeout value. (default)
  - **High Power Mode** - Imager power is enabled when scanning is enabled.
  - **Always On** - Imager power is enabled when the scanner object is opened.

- **Linear Security Level** - Sets the number of times a bar code is read to confirm an accurate decode.
  - **Security Short or Codabar** - Two times read redundancy if short bar code or Codabar.
  - **Security All Twice** - Two times read redundancy for all bar codes (default).
  - **Security Long and Short** - Two times read redundancy for long bar codes, three times for short bar codes.
  - **Security All Thrice** - Three times read redundancy for all bar codes.

- **Picklist** - Allows the imager 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.
  - **Disable** – Disables Picklist mode. Any bar code within the field of view can be decoded (default).
- **Centered** - Enables the Picklist mode so that only the bar code in the center of the image is decoded. This is most useful when used in conjunction with the static and dynamic reticle viewfinder modes. Note: This mode is only valid for decoder modules that supports a viewfinder. If one tries to set this for a unsupported decoder then the device would issue an error. (Camera scanner only).

- **Reticule** - Enables the Picklist mode so that only the bar code that is directly under the cross-hair (reticle) is decoded. This is useful when used in conjunction with the static and dynamic reticle viewfinder modes. (Scan Module Only)

- **Illumination mode** - Turns camera illumination on and off. This option is only available when camera is selected in the Barcode input Scanner selection option.
  - **On** - Illumination is on.
  - **Off** - Illumination is off (default).

- **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.

- **Viewfinder Mode** - Configures the Viewfinder modes supported for camera scanning.
  - **Viewfinder Enabled** - Enables only the viewfinder.
  - **Static Reticle** - Enables the viewfinder and a red reticle in the center of the screen which helps selecting the bar code (default).

### 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** - A standards based three character prefix.
  - **Code ID Type Symbol** - A Symbol defined single character prefix.

*Note:* Not all ringtones are fully supported as decode tones and those of longer length may be truncated when used as a decode tone. The recommendation is to test the selected tone for operation before deployment to a customer site.

- **Decode Audio Feedback** - Select an audio tone to sound upon a good decode.
- **Decode Haptic Feedback** - Enable the device to vibrate upon a good decode (default - enabled).

### Keystroke Output

Use to configure the Keystroke Output Plug-in for the profile.

- **Enabled** — Enables or disables this plug-in. A check in the checkbox indicates that the plug-in is enabled (default - enabled).
- **Action key character** - Enables decoding of a special character embedded within a bar code data for use in native Android applications. This feature is helpful when populating or executing a form.
  - **None** - Action key character feature is disabled (default).
  - **Tab** - Tab character code in a bar code is processed. When DataWedge detects this character code in a bar code, move the focus to the next field.
  - **Line feed** - Line feed character code in a bar code is processed. When DataWedge detects this character code in a bar code, move the focus to the next field.
  - **Carriage return** - Carriage return character code in a bar code is processed. When DataWedge detects this character code in a bar code, move the focus to the next field.
• **Advanced data formatting** - is a way to customizing data before transmission. Use advanced data formatting (ADF) to edit scan data to suit requirements.
  - **Enable** - Enables or disables ADF. A check in the checkbox indicates that ADF is enabled (default - disabled).
  - **Rules** - ADF uses rules to customize data. These rules perform detailed actions when the data meets certain criteria. One rule may consist of single or multiple criteria applied to single or multiple actions. See [Generating Advanced Data Formatting Rules on page 58](#) for more information.

• **Basic data formatting** - Allows the configuration of any data formatting for the related Output Plug-in. When the plug-in is disabled, any data is passed on without modification.
  - **Enabled** - Enables or disables Basic Data Formatting. A check in the checkbox indicates that it is enabled (default - enabled).
  - **Prefix to data** - Add characters to the beginning of the data when sent.
  - **Suffix to data** - Add characters to the end of the data when sent.
  - **Send data** - Set to transfer the captured data to the foreground application. Disabling this option prevents the actual data from being transmitted. However, the prefix and suffix strings, if present, are still transmitted even when this option is disabled (default - enabled).
  - **Send as hex** - Set to send the data in hexadecimal format. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
  - **Send TAB key** - Set to append a tab character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
  - **Send ENTER key** - Set to append an Enter character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).

**Intent Output**

Allows configuration of the Intent Output Plug-in for the profile. The Intent Output Plug-in allows the captured data to be sent to an application in the form of an implicit Intent. Refer to the Android Developer web site for more information, [http://developer.android.com](http://developer.android.com).

• **Enabled** - Enables or disables this plug-in. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
  • **Intent action** - Enter the Intent Action name (required).
  • **Intent category** - Enter the Intent Category name (required).
  • **Intent delivery** - Select the method by which the intent is delivered:
    - Send via StartActivity
    - Send via startService (default)
    - Broadcast intent

• **Advanced data formatting** - is a way to customizing data before transmission. Use advanced data formatting (ADF) to edit scan data to suit requirements.
  - **Enable** - Enables or disables ADF. A check in the checkbox indicates that ADF is enabled (default - disabled).
  - **Rules** - ADF uses rules to customize data. These rules perform detailed actions when the data meets certain criteria. One rule may consist of single or multiple criteria applied to single or multiple actions. See [Generating Advanced Data Formatting Rules on page 58](#) for more information.

• **Basic data formatting** - Allows configuration of any data formatting for the related Output Plug-in. When the plug-in is disabled any data is passed on without modification.
  - **Enabled** - Enables or disables Basic Data Formatting. A check in the checkbox indicates that it is enabled (default - enabled).
  - **Prefix to data** - Add characters to the beginning of the data when sent.
  - **Suffix to data** - Add characters to the end of the data when sent.
  - **Send data** - Set to transfer the captured data to the foreground application. Disabling this option prevents the actual data from being transmitted. However, the prefix and suffix strings, if present, are still transmitted even when this option is disabled (default - enabled).
Send as hex - Set to send the data in hexadecimal format. A check in the checkbox indicates that the plug-in is enabled (default - disabled).

Send TAB key - Set to append a tab character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).

Send ENTER key - Set to append an Enter character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).

**Intent Overview**

The core components of an Android application (its activities, services, and broadcast receivers) are activated by intents. An intent is a bundle of information (an Intent object) describing a desired action - including the data to be acted upon, the category of component that should perform the action, and other pertinent instructions. Android locates an appropriate component to respond to the intent, launches a new instance of the component if one is needed, and passes it the Intent object.

Components advertise their capabilities, the kinds of intents they can respond to, through intent filters. Since the system must learn which intents a component can handle before it launches the component, intent filters are specified in the manifest as `<intent-filter>` elements. A component may have any number of filters, each one describing a different capability. For example, if the manifest contains the following:

```
<intent-filter . . . >
<action android:name="android.intent.action.DEFAULT" />
<category android:name="android.intent.category.MAIN" />
</intent-filter>
```

In the Intent output plug-in configuration, the Intent action would be:

`android.intent.category.DEFAULT`

and the Intent category would be:

`android.intent.category.MAIN`.

The Intent delivery option allows the method by which the intent is delivered to be specified. The delivery mechanisms are Send via startActivity, Send via startService or Broadcast intent.

The decode related data added to the Intent’s bundle can be retrieved using the `Intent.getStringExtra()` and `Intent.getSerializableExtra()` calls, using the following String tags:

- String LABEL_TYPE_TAG = “com.motorolasolutions.emdk.datawedge.label_type”;
  - String contains the label type of the bar code.
- String DATA_STRING_TAG = “com.motorolasolutions.emdk.datawedge.data_string”;
  - String contains the output data as a String. In the case of concatenated bar codes, the decode data is concatenated and sent out as a single string.
- String DECODE_DATA_TAG = “com.motorolasolutions.emdk.datawedge.decode_data”;
  - Decode data is returned as a list of byte arrays. In most cases there will be one byte array per decode. For bar code symbologies that support concatenation e.g. Codabar, Code128, MicroPDF, etc., the decoded data is stored in multiple byte arrays (one byte array per bar code). Clients can get data in each byte array by passing an index.

Most scanning applications might want the user to be able to decode data and for that decode data to be sent to the *current* activity but not necessarily displayed. If this is the case, then the activity needs to be marked as ‘singleTop’ in its AndroidManifest.xml file. If your activity is not defined as singleTop, then on every decode, the system will create another copy of your Activity and send the decode data to this second copy.

Finally there will be a configuration option for each process plug-in so that the process plug-in can be configured specifically for the intent output, which in this case is the basic data formatting process plug-in.
IP Output

Note: IPWedge application is required on a host computer. Download the IPWedge application from the Support Central web site: http://www.zebra.com/support.

IP Output allows DataWedge to send captured data to a host computer via a network connection. Captured data can be sent over an IP network to a specified IP address and port using either TCP or UDP transport protocols.

- **Enabled** - Enables or disables this plug-in. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
- **Remote Wedge** - Enable or disable the Remote Wedge option (default - enabled). Remote Wedge is used with the IPWedge application.
- **Protocol** - Select the protocol used by the remote application. Options: TCP (default) or UDP.
- **IP address** - Enter the IP address used by the remote application (default - 0.0.0.0).
- **Port** - Enter the port number used by the remote application (default - 58627).
- **Advanced data formatting** - is a way of customizing data before transmission. Use advanced data formatting (ADF) to edit scan data to suit requirements.
  - **Enable** - Enables or disables ADF. A check in the checkbox indicates that ADF is enabled (default - disabled).
  - **Rules** - ADF uses rules to customize data. These rules perform detailed actions when the data meets certain criteria. One rule may consist of single or multiple criteria applied to single or multiple actions. See Generating Advanced Data Formatting Rules on page 58 for more information.
- **Basic data formatting** - Allows configuration of any data formatting for the related Output Plug-in. When the plug-in is disabled any data is passed on without modification.
  - **Enabled** - Enables or disables Basic Data Formatting. A check in the checkbox indicates that it is enabled (default - enabled).
  - **Prefix to data** - Add characters to the beginning of the data when sent.
  - **Suffix to data** - Add characters to the end of the data when sent.
  - **Send data** - Set to transfer the captured data to the foreground application. Disabling this option prevents the actual data from being transmitted. However, the prefix and suffix strings, if present, are still transmitted even when this option is disabled (default - enabled).
  - **Send as hex** - Set to send the data in hexadecimal format. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
  - **Send TAB key** - Set to append a tab character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).
  - **Send ENTER key** - Set to append an Enter character to the end of the processed data. A check in the checkbox indicates that the plug-in is enabled (default - disabled).

Usage

This section provides information on how to configure IP Output using the DataWedge configuration user interface. To use IP Output in a particular DataWedge profile (for example: Profile0), scroll downward on IP Output.
Figure 45: IP Output Screen

Generating Advanced Data Formatting Rules

The ADF plug-in applies rules (actions to be performed based on defined criteria) to the data received via an input plug-in before sending it to the output plug-in.

- Rules - The ADF process plug-in consists of one or more rules. DataWedge formats the output data according to the first matching rule. A rule is a combination of criteria and a set of actions to be performed, upon fulfillment of the criteria set in the rule.
- Criteria - Criteria can be set according to Input plug-in, symbology, matching string within the data (at the specified position) and/or data length. Received data must match the defined criteria in order for the data to be processed.
- Actions - A set of procedures defined to format data. There are four types of actions which are for formatting cursor movement, data modification, data sending and delay specifications. An action can be defined to send the first number of characters to the Output plug-in, pad the output data with spaces or zeros, remove spaces in data, etc.

Configuring ADF Plug-in

Configuring the ADF plug-in consists of creating a rule, defining the criteria and defining the actions.

Procedure:

1. Touch 🔍.
2. Touch 🔍.
3. Touch a DataWedge profile.
4. In Keystroke Output, touch Advanced data formatting.
Creating a Rule

Note: By default, Rule0, is the only rule in the Rules list.

Procedure:
1. Touch the Enable checkbox to enable ADF.

2. Touch New rule.
3. Touch the Enter rule name text box.
4. In the text box, enter a name for the new rule.
5. Touch Done.
6. Touch OK.

Defining a Rule

Procedure:
1. Touch the newly created rule in the Rules list.
2 Touch the Rule enabled checkbox to enable the current rule.

**Defining Criteria**

Procedure:
1 Touch Criteria.

2 Touch String to check for option to specify the string that must be present in the data.
3 In the Enter the string to check for dialog box, enter the string
4 Touch Done.
5 Touch OK.
6 Touch **String position** option to specify the position of the string specified in the **String to check for** option. The ADF rule is only applied if the specific string in **String to check for** is found at the specified **String position** location (zero for the start of the string).

7 Touch the + or - to change the value.

8 Touch **OK**.

9 Touch **String length option** to specify a length for the received data. The ADF rule only applies to the bar code data with that specified length.

10 Touch the + or - to change the value.

11 Touch **OK**.

12 Touch **Source criteria** option to associate an input device to an ADF rule. The ADF rule only applies to data received from associated input devices.

13 Touch **Barcode input**.

14 Touch the **Source enabled** checkbox to accept data from this source.

**Figure 49: Barcode Input Screen**

15 For **Barcode inputs**, touch the **All decoders enabled** checkbox to select all bar code symbologies. Deselect the **All decoders enabled** checkbox to individually select the symbologies.

16 Touch \(\rightarrow\) until the **Rule** screen appears.

17 If required, repeat steps to create another rule.

18 Touch \(\rightarrow\) until the **Rule** screen appears.

**Defining an Action**

---

**Note:** By default the **Send remaining** action is in the **Actions** list.

**Procedure:**

1 Touch \(\equiv\).

2 Touch **New action**.

3 In the **New action** menu, select an action to add to the **Actions** list. See *Table 3: ADF Supported Actions on page 62* for a list of supported ADF actions.

4 Some Actions require additional information. Touch the Action to display additional information fields.
5 Repeat steps to create more actions.
6 Touch $\Rightarrow$. 
7 Touch $\Rightarrow$.

Deleting a Rule

Procedure:
1 Touch and hold on a rule until the context menu appears.
2 Touch Delete to delete the rule from the Rules list.

Note: When there is no rule available for ADF plug-in or all rules are disabled, DataWedge passes decoded data to the output plug-in without processing the data.

Order Rules List

Note: When there are no rules defined, ADF passes the captured data through as is. In contrast, when rules are defined but all are disabled, ADF does not pass any captured data through.

Rules are processed in top-down order. The rules that are on top of the list are processed first. Use the icon next to the rule to move it to another position in the list.

Table 3: ADF Supported Actions

<table>
<thead>
<tr>
<th>Type</th>
<th>Actions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cursor Movement</td>
<td>Skip ahead</td>
<td>Moves the cursor forward by a specified number of characters. Enter the number of characters to move the cursor ahead.</td>
</tr>
<tr>
<td></td>
<td>Skip back</td>
<td>Moves the cursor back by a specified number of characters. Enter the number of characters to move the cursor back.</td>
</tr>
<tr>
<td></td>
<td>Skip to start</td>
<td>Moves the cursor to the beginning of the data.</td>
</tr>
<tr>
<td></td>
<td>Move to</td>
<td>Moves the cursor forward until the specified string is found. Enter the string in the data field.</td>
</tr>
<tr>
<td></td>
<td>Move past a</td>
<td>Moves the cursor forward past the specified string. Enter the string in the data field.</td>
</tr>
<tr>
<td>Data Modification</td>
<td>Crunch spaces</td>
<td>Remove spaces between words to one and remove all spaces at the beginning and end of the data.</td>
</tr>
<tr>
<td></td>
<td>Stop space crunch</td>
<td>Stops space crunching. This disables the last Crunch spaces action.</td>
</tr>
<tr>
<td></td>
<td>Remove all spaces</td>
<td>Remove all spaces in the data.</td>
</tr>
<tr>
<td></td>
<td>Stop space removal</td>
<td>Stop removing spaces. This disables the last Remove all spaces action.</td>
</tr>
<tr>
<td></td>
<td>Remove leading zeros</td>
<td>Remove all zeros at the beginning of data.</td>
</tr>
<tr>
<td></td>
<td>Stop zero removal</td>
<td>Stop removing zeros at the beginning of data. This disables the previous Remove leading zeros action.</td>
</tr>
<tr>
<td></td>
<td>Pad with zeros</td>
<td>Left pad data with zeros to meet the specified length. Enter the number zeros to pad.</td>
</tr>
<tr>
<td></td>
<td>Stop pad zeros</td>
<td>Stop padding with zeros. This disables the previous Pad with zeros action.</td>
</tr>
</tbody>
</table>

Table continued...
<table>
<thead>
<tr>
<th>Type</th>
<th>Actions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pad with spaces</td>
<td>Left pad data with spaces to meet the specified length. Enter the number</td>
</tr>
<tr>
<td></td>
<td>Stop pad spaces</td>
<td>Stop padding with spaces. This disables the previous <strong>Pad with spaces</strong></td>
</tr>
<tr>
<td></td>
<td>Replace string</td>
<td>Replaces a specified string with a new string. Enter the string to replace</td>
</tr>
<tr>
<td></td>
<td>Stop all replace string</td>
<td>Stop all <strong>Replace string</strong> actions.</td>
</tr>
<tr>
<td>Data Sending</td>
<td>Send next</td>
<td>Sends the specified number of characters from the current cursor position.</td>
</tr>
<tr>
<td></td>
<td>Send remaining</td>
<td>Sends all data that remains from the current cursor position.</td>
</tr>
<tr>
<td></td>
<td>Send up to</td>
<td>Sends all data up to a specified string. Enter the string.</td>
</tr>
<tr>
<td></td>
<td>Send pause</td>
<td>Pauses the specified number of milliseconds before continuing the next action.</td>
</tr>
<tr>
<td></td>
<td>Send string</td>
<td>Sends a specified string. Enter the string to send.</td>
</tr>
<tr>
<td></td>
<td>Send char</td>
<td>Sends a specified ASCII/ Unicode character. Enter a character value.</td>
</tr>
</tbody>
</table>

### Deleting an Action

**Procedure:**

1. Touch and hold the action name.
2. Select **Delete action** from the context menu.

### ADF Example

The following illustrates an example of creating Advanced Data Formatting:

When a user scans a bar code with the following criteria:

- Code 39 bar code.
- length of 12 characters.
- contains 129 at the start position.

Modify the data as follows:

- Pad all sends with zeros to length 8.
- send all data up to character X.
- send a space character.

To create an ADF rule for the above example:

**Procedure:**

1. Touch ☰.
2. Touch **DataWedge**.
3. Touch **Profile0**.
4. Under **Keystroke Output**, touch **Advanced data formatting**.
5. Touch **Enable**.
6 Touch Rule0.
7 Touch Criteria.
8 Touch String to check for.
9 In the Enter the string to check for text box, enter 129 and then touch OK.
10 Touch String position.
11 Change the value to 0.
12 Touch OK.
13 Touch String length.
14 Change value to 12.
15 Touch OK.
16 Touch Source criteria.
17 Touch Barcode input.
18 Touch All decoders enabled to disable all decoders.
19 Touch Code 39.
20 Touch three times.
21 Touch and hold on the Send remaining rule until a menu appears.
22 Touch Delete action.
23 Touch .
24 Touch New action.
25 Select Pad with zeros.
26 Touch the Pad with zeros rule.
27 Touch How many.
28 Change value to 8 and then touch OK.
29 Touch three times.
30 Touch .
31 Touch New action.
32 Select Send up to.
33 Touch Send up to rule.
34 Touch String.
35 In the Enter a string text box, enter X.
36 Touch OK.
37 Touch three times.
38 Touch .
39 Touch New action.
40 Select Send char.
41 Touch Send char rule.
42 Touch Character code.
43 In the Enter character code text box, enter 32.
44 Touch OK.
45 Touch .
46 Ensure that an application is open on the device and a text field is in focus (text cursor in text field).

47 Aim the exit window at the bar code.

48 Press and hold the scan button.

The red laser aiming pattern turns on to assist in aiming. Ensure that the bar code is within the area formed by the aiming pattern. The LED light red to indicate that data capture is in process.

49 The LED lights green, a beep sounds and the device vibrates, by default, to indicate the bar code was decoded successfully. The formatted data 00129X<space>appears in the text field.

Scanning a Code 39 bar code of 1299X15598 does not transmit data (rule is ignored) because the bar code data did not meet the length criteria.
The DataWedge Settings screen provides access to general, non-profile related options. Touch ☰ > Settings.

**Figure 53: DataWedge Settings Window**

- **DataWedge enabled** - Enables or disables DataWedge. To disable DataWedge uncheck this option.
- **Enable logging** - Enables or disables debug output file to logcat. To enable logging check this option.
- **Import** - allows import of a DataWedge configuration file. The imported configuration replaces the current configuration.
- **Export** - allows export of the current DataWedge configuration to the microSD card.
- **Import Profile** - allows import of a DataWedge profile file.
- **Export Profile** - allows export of a DataWedge profile.
• **Restore** - return the current configuration back to factory defaults.

**Importing a Configuration File**

**Procedure:**

1. Copy the configuration file to the root of the microSD card.
2. Touch 📡.
3. Touch 📡.
4. Touch 📡.
5. Touch Settings.
6. Touch Import.
7. Touch SD Card.
8. Touch Import. The configuration file (datawedge.db) is imported and replaces the current configuration.

**Exporting a Configuration File**

**Procedure:**

1. Touch 📡.
2. Touch 📡.
3. Touch 📡.
4. Touch Settings.
5. Touch Export.
6. Touch SD Card.
7. Touch Export. The configuration file (datawedge.db) is saved to the root of the microSD card.

**Importing a Profile File**

**Note:** Do not change the filename of the profile file. If the filename is changed, the file will not be imported.

**Procedure:**

1. Copy the profile file to the root of the microSD card.
2. Touch 📡.
3. Touch 📡.
4. Touch 📡.
5. Touch Settings.
6. Touch Import Profile.
7. Touch the profile file to import.
8. Touch Import. The profile file (dwprofile_x.db, where x = the name of the profile) is imported and appears in the profile list.

**Exporting a Profile**

**Procedure:**

1. Touch 📡.
2 Touch .
3 Touch .
4 Touch Settings.
5 Touch Export Profile.
6 Touch the profile to export.
7 Touch Export.
8 Touch Export. The profile file (dwprofile_x.db, where x = name of the profile) is saved to the root of the microSD card.

Restoring DataWedge
To restore DataWedge to the factory default configuration:

Procedure:
1 Touch .
2 Touch .
3 Touch .
4 Touch Settings.
5 Touch Restore.
6 Touch Yes.

Configuration and Profile File Management
The configuration or profile settings for DataWedge can be saved to a file for distribution to other devices.

After making configuration or profile changes, export the new configuration or profile to the root of the microSD card. The configuration file created is automatically named datawedge.db. The profile file created is automatically named dwprofile_x.db, where x is the profile name. The files can then be copied to the microSD card of other devices and imported into DataWedge on those devices. Importing a configuration or profile replaces the existing settings.

Enterprise Folder
Internal storage contains the Enterprise folder (/enterprise). The Enterprise folder is persistent and maintains data after an Enterprise reset. After an Enterprise Reset, DataWedge checks folder /enterprise/device/settings/datawedge/enterprisereset/ for a configuration file, datawedge.db or a profile file, dwprofile_x.db. If the file is found, it imports the file to replace any existing configuration or profile.

Note: A Factory Reset deletes all files in the Enterprise folder.

Auto Import
DataWedge supports remote deployment of a configuration to a device, using tools such as MSP. DataWedge monitors the /enterprise/device/settings/datawedge/autoimport folder for the DataWedge configuration file (datawedge.db) or a profile file (dwprofile_x.db). When DataWedge launches it checks the folder. If a configuration or profile file is found, it imports the file to replace any existing configuration or profile. Once the file has been imported it is deleted from the folder.
While DataWedge is running it receives a notification from the system that a file has been placed into the /enterprise/device/settings/datawedge/autoimport folder. When this occurs, DataWedge imports this new configuration or profile, replacing the existing one and delete the file. DataWedge begins using the imported configuration immediately.

Note:

A Factory Reset deletes all files in the Enterprise folder.

It is strongly recommended that the user exits DataWedge before remotely deploying any configuration or profile. It is required that the file permissions are set to 666.

Programming Notes

The following paragraphs provide specific programming information when using DataWedge.

Overriding Trigger Key in an Application

To override the trigger key in an application, create a profile for the application that disables the Barcode input. In the application, use standard APIs, such as onKeyDown() to listen for the KEYCODE_BUTTON_L1 and KEYCODE_BUTTON_R1 presses.

Capture Data and Taking a Photo in the Same Application

To be able to capture bar code data and take a photo in the same application:

• Create a Datawedge profile pertaining to the picture taking Activity in your application that disables scanning and use standard Android SDK APIs to control the Camera.
• The default Datawedge profile takes care of the scanning in the application. You might want to create another DataWedge profile that caters to any specific scanning needs, associated to your Application's Activity pertaining to scanning.

Disable DataWedge on TC55 and Mass Deploy

To disable DataWedge and deploy onto multiple TC55 devices:

Procedure:

1  Touch 😌.
2  Touch DataWedge.
3  Touch 📋.
4  Touch Settings.
5  Unselect the DataWedge enabled check box.
6  Export the DataWedge configuration. See Exporting a Configuration File on page 67 for instructions. See Configuration and Profile File Management on page 68 for instructions for using the auto import feature.

Soft Scan Feature

DataWedge allows a native Android application to programmatically start, stop, or toggle the scan trigger state. The application can issue an Android Broadcast Intent, to control the scanner, without requiring the scan button to be pressed. The active DataWedge profile is required to control all the parameters during a scan operation.

The structure of the broadcast intent that resolves to the soft scan is:

action: “com.motorolasolutions.emdk.datawedge.api.ACTION_SOFTSCANTRIGGER”

extras: This is a String name/value pair that contains trigger state details.
**name:** “com.motorolasolutions.emdk.datawedge.api.EXTRA_PARAMETER”  
**value:** “START_SCANNING” or “STOP_SCANNING” or “TOGGLE_SCANNING”  

**Sample**

```java
Intent sendIntent = new Intent();
sendIntent.setAction("com.motorolasolutions.emdk.datawedge.api.ACTION_SOFTSCANTRIGGER");
sendIntent.putExtra("com.motorolasolutions.emdk.datawedge.api.EXTRA_PARAMETER", "TOGGLE_SCANNING");
sendBroadcast(sendIntent);
```
Chapter 5

Administrator Utilities

We provide a suite of utilities that allow an administrator to manage the following features:

- Multi-user Login - The Multi-user Login feature allows an administrator to set up the device to be used by multiple users. The users have access to specific applications and features depending upon the user settings.
- Application Lock - The Application Lock feature allows an administrator to restrict application access for specific applications by user or groups of users. The permitted applications are managed using groups of user accounts from Multi-user Login feature.
- Secure Storage - Secure Storage Administrator application allows installation and deletion of encrypted keys and creation, mounting, un-mounting and deletion of the encrypted file systems.

The following applications help the administrator configure these features.

- On-device applications - reside on the device.
  - MultiUser Administrator
  - AppLock Administrator
  - Secure Storage Administrator.
- Host computer application - reside on a host computer.
  - Enterprise Administrator.

**Required Software**

These tools are available on the Support Central web site at [Support Central](#). Download the required files from the Support Central web site and follow the installation instruction provided.

**On-device Application Installation**

See [Application Installation on page 101](#) for instruction on installing applications onto the device.

**Multi-user/AppLock Configuration**

To use the Multi-user Login and Application Lock features, the administrator must create user and group account information using the Enterprise Administrator application.

**Note:** The administrator can also create the account information manually. See [Manual File Configuration on page 81](#) for more information.
Enterprise Administrator Application

Note: .Net Compact Framework 4 or later is required to run the Enterprise Administrator. To download, go to www.microsoft.com.

Use the Enterprise Administrator application to setup user and group accounts and create the required (Password, Group and White List) files for using the Multi-user and Application Lock features.

On the host computer launch the Enterprise Administrator application.

Figure 54: Enterprise Administrator Window

Creating Users

Each person that uses the device has to have a user name and password. To create a user:

Procedure:

1. Click + above the Users list box.
In the **Username** text box, enter a user name. The text is case sensitive and required.

In the **Password** text box, enter a password for the user. The text is case sensitive and required.

In the **Retype Password** text box, re-enter the user password.

Select the **Admin** checkbox to set the user to have administrator rights.

Select the **Enabled** checkbox to enable the user.

Click **OK**.

Repeat steps 1 through 7 for each additional user.

---

**Adding Packages**

*Note: All system applications that are on the default image are available to all users.*

Create a list of installed applications (packages) on the device that are available for use by all the users.

**Procedure:**

1. Click + next to **Packages**.

   *Note: To get a list of all the applications (packages) on the device see *Determining Applications Installed on the Device on page 83.*

---

In the **Package name** text box, enter the name of an application.

Click **OK**.
4 Repeat steps 1 through 3 for each additional package.

**Creating Groups**

Create groups of users that have access to specific applications.

**Procedure:**

1 Click + above the **Groups** list. The **Group Manager** window appears with a list of users and packages.

**Figure 57: Group Manager Window**

2 In the **Group name** text box, enter a name for the group. This field is required.

3 Select a user in the **Available Users** list box and then click the **Add** button to add the user to the **Users in Group** list box or click the **Add All** button to add all the users in the **Available Users** list box to the **Users in Group** list box.

4 Select a package in the **Available Packages** list box and then click the **Add** button to add the package to the **Packages in Group** list box or click the **Add All** button to add all the packages in the **Available Packages** list box to the **Packages in Group** list box.

5 Click **OK**.

6 Click **Save**.

**Creating Remote Authentication**

Use the Remote Authentication feature to set a remote server for authentication.

**Procedure:**

1 Click the **Auth** button. The **Authentication** window appears.
Figure 58: Authentication Window

2 Select the Remote radio button.
3 In the Server IP text box, enter the address of the remote server.
4 In the Port text box, enter the port number of the remote server.
5 Select the use SSL Encryption check box if SSL encryption is required.
6 Click OK.

Save Data

At any time, the administrator can save the current data. The application creates two files in the <user>_APP_DATA folder: database and passwd.

Exporting File

In order to use the features on the device, export the required files and then copy them to the device. The following files are created by the Enterprise Administrator application:

- Password File - Filename: passwd. Lists the user names, encrypted passwords, administrator and enable flags.
- Group File - Filename: groups. Lists each group and users associated to each group.
- White List Files - Filename: the filenames are the names of the group created in the Group file. Lists the user installed applications that the group is allowed to access.
- Remote Server - Filename: server. Lists the remote server IP address and port number.

Procedure:
1 Click Export.
2 In the Browse For Folder window, select a folder and then click OK.
3 Click OK.
4 Click File → Export → Server Information.
   The server file is saved in the <user>_APP_DATA folder.
5 Copy all the files to the root of the microSD card. See USB Communication on page 39 for information on copying files to the device.

Importing User List

Procedure:
1 Click File → Import → User List.
2 Navigate to the location when the passwd file is stored.
3 Select the passwd file.
4 Click Open.
   The user information is populated into the Users list.

**Importing Group List**

**Procedure:**
1 Click File → Import → Group List.
2 Navigate to the location when the group file is stored.
3 Select the group file.
4 Click Open.
   The group and package information is populated into the Groups and Packages list.

**Importing Package List**

To import a package list (see Package List File on page 82 for instructions for creating a Package List file):

**Procedure:**
1 Click File → Import → Package List.
2 Navigate to the location when the package file is stored.
3 Select the package text file.
4 Click Open.
   The package information is populated into the Packages list.

**Editing a User**

**Procedure:**
1 Select a user in the Users list.
2 Click Edit User.
3 Make changes and then click OK.

**Deleting a User**

**Procedure:**
1 Select a user in the Users list.
2 Click -. The user name is removed from the list.

**Editing a Group**

**Procedure:**
1 Select a user in the Groups list.
2 Click Edit Group.
3 Make changes and then click OK.

**Deleting a Group**

**Procedure:**
1 Select a group in the Groups list.
2 Click -.  
3 Click Yes. The group name is removed from the list.

**Editing a Package**

**Procedure:**
1 Select a package in the **Packages** list.  
2 Click **Edit Package**.  
3 Make changes and then click **OK**.

**Deleting a Package**

**Procedure:**
1 Select a package in the **Packages** list.  
2 Click -. The package name is removed from the list.

---

**MultiUser Administrator**

Use the MultiUser Administrator application to allow an administrator to enable, disable and configure the Multiuser Login feature.

**Importing a Password**

When the MultiUser Administrator is used for the first time, the password file must be imported.

**Procedure:**
1 Touch 😊.  
2 Touch 🤝.  

**Figure 59: MultiUser Administrator Screen**

![MultiUser Administrator Screen](image-url)
3 Touch Load User List. The application reads the data from the `passwd` file and configures the Multi-user Login feature.

4 Touch Enable Multiuser to enable the feature.

**Figure 60: MultiUser Login Screen**

5 In the Login text box, enter the username.

6 In the Password text box, enter the password.

7 Touch OK.

### Disabling the Multi-user Feature

**Note:** To disable the Multi-user Login feature, the user must have administrator rights. A message displays at the bottom of the screen notifying the user.

**Procedure:**

1. Touch 🔄.
2. Touch 🔄.
3. Touch Disable MultiUser. The Multi-user feature is disabled immediately.

### Enabling Remote Authentication

**Caution:** When Remote Authentication is enabled, the device searches for the remote server during the login procedure. If the remote server is not available or the address is incorrect, the user would not be able to login and an Enterprise reset is required to access the device.

**Procedure:**

1. Touch 🔄.
2. Touch 🔄.
3. Touch Load Server Info. The application reads the data from the `server` file and configures the Multi-user Login feature.
4 Touch 

5 Touch **Enable Remote Authentication**.
The device accesses the remote server and then Login screen appears.

**Disabling Remote Authentication**

⚠️ **Caution:** When Remote Authentication is enable, the device searches for the remote server during the login procedure. If the remote server is not available or the address is incorrect, the user would not be able to login and an Enterprise reset is required to access the device.

**Procedure:**

1 Touch 

2 Touch 

3 Touch 

4 Touch **Disable Remote Authentication**.
The remote authentication feature is disabled immediately. The device suspends. When resumed, the login screen appears.

**Enabling Data Separation**

⚠️ **Note:** To enable Data Separation, the user must have administrator rights. A message displays at the bottom of the screen notifying the user.

Data Separation feature allows each user of the device to have separate isolated data area for installed application. To enable data separation:

**Procedure:**

1 Touch 

2 Touch 

3 Touch 

4 Touch **Enable Data Separation**. The current user is logged out to prepare the data space for each user as they log in.

**Disabling Data Separation**

⚠️ **Note:** To disable Data Separation, the user must have administrator rights. A message displays at the bottom of the screen notifying the user.

**Procedure:**

1 Touch 

2 Touch 

3 Touch 

4 Touch **Disable Data Separation**. The current user is logged out to restore the system to common data space for all users.
Delete User Data

Note: To delete user data, the user must have administrator rights. A message displays at the bottom of the screen notifying the user.

Procedure:
1. Touch 📝.
2. Touch 📖.
3. Touch 📖.
4. Touch Delete Individual User Data. A dialog box displays with all of the users that currently have data associated with their log in.
5. Select each user to delete or Select All to delete all user data.
6. Touch Delete to delete the data.

Capturing a Log File

Procedure:
1. Touch 📝.
2. Touch 📖.
3. Touch Export Log to copy the log file to the microSD card. The log file can be captured when the multi-user feature is in either the enabled or disabled mode.
4. The log file and a backup log file are named multiuser.log and multiuser.log.bak, respectively.

AppLock Administrator

The Application Lock feature allows the system administrator to restrict application access for specific applications by user or groups of users. The permitted applications are managed using groups of user accounts from Multi-user feature.

The permitted application names are built into an application White List that is used to know which applications are managed by the system.

The Application Lock feature does not prevent execution of native code or plug-ins and it does not prevent applications from accessing public classes within non-permitted applications. The AppLock Administrator application takes advantage of the Application Lock feature allowing an administrator to enable, disable and install White Lists and Groups files.

Note: To use the AppLock Administrator application, the user must have administrator rights. A message displays at the bottom of the screen notifying the user.

Installing Groups and White Lists

Procedure:
1. Touch 📝.
2. Touch 📖.
Note:
When the application launches the current status of the Application Lock feature displays (enabled or disabled).
Log off and then log in again for the feature to take affect.

3 Touch **Install Groups and White Lists** to read the contents of the Groups and White List files from the root of the microSD card and push its contents into the AppLock framework.

Once the Group and White List files are imported and the feature enabled, the next time a user logs in, the device will be configured accordingly.

### Enabling Application Lock

**Procedure:**

1. Touch 📱.
2. Touch 📊.
3. Touch **Enable Application Lock**.

### Disabling Application Lock

**Procedure:**

1. Touch 📱.
2. Touch 📊.
3. Touch **Disable Application Lock**.

### Manual File Configuration

#### Groups File

A Groups file is a text file that provides a list of groups and assigns users to each group. The text file contains one line for each group. Each line is formatted as follows:

```plaintext
<groupname>:<user1>,<user2>,...<userN>
```

where:

- `<groupname>` = the name for a group. This is also the name of the White List file for this group. This field uses any alphanumeric character.
- `<user1>` through `<userN>` = the name of the user assigned to this group. The user name is the same as that defined for the MultiUser feature. See **MultiUser Administrator on page 77** for more information.

**Note:**

If the same user is assigned to multiple groups, then that user’s White List will be a logical union of the White Lists for all of the groups that user is assigned.

A line starting with the # character is considered a comment and is ignored.

Examples:

- **AdminGroup:alpha**
  - The Group name is AdminGroup and assigns user alpha to the group.
- **ManagersGroup:beta, gamma**
- The Group name is ManagerGroup and assigns users beta and gamma to the group.

**White List File**

A White List file is a text file that provides a list of allowed packages from that group. The text file contains one line for each allowed package for that user group. Each line is formatted as follows:

```
<package1name>
.
.
.
<packageNname>
```

where:

```
<package1Name> = the package name allowed for this group. Wild cards are allowed for this field.
```

**Example:**

Refer to the example of the Groups file above. A White List file of the name AdminGroup could have the following lines:

```
com.companyname.application
com.motorolasolutions.*
```

where:

```
com.companyname.application = the specific application with the package name
com.motorolasolutions.* will be permitted for this group.
```

To assure that administrative users have access to all device functionality, the White List for the administrative users group should use the wildcard.

At a minimum, the White List for the administrative users group should contain `com.motorolasolutions.fusion` to allow administrative users the ability to configure Wi-Fi advanced settings.

**Package List File**

A Package List file is a text file that lists package names that can be imported into the Packages list. The file makes it easier to enter package name into the application. The text file contains one line for each package name.

**Example:**

```
com.motorolasolutions.example1
com.motorolasolutions.example2
com.motorolasolutions.example3
com.motorolasolutions.example4
```
Determining Applications Installed on the Device

To determine the names of applications installed on the device for use with the Enterprise Administrator application:

Procedure:

1. Connect the device to the host computer.

   Note: See Development Tools on page 100 for information on installing the USB driver for use with adb.

2. On the host computer, open a command prompt (or a terminal in Ubuntu) and run the following:
   adb devices. This returns the device id.
   adb shell
   $pm list packages -f > sdcard/pkglist.txt
   $exit

3. A pkglist.txt file is created in the root of the microSD card. The file lists all the .apk files installed with their package names.

Secure Storage

Secure Storage Administrator application allows:

- installation and deletion of encrypted keys
- creation, mounting, un-mounting and deletion of the encrypted file systems.

Installing a Key

Procedure:

1. Touch 🌟.

2. Touch 📡.

3. Touch Install Key.


5. Touch OK.
6 In the **Enter key** text box, enter the key name followed by the key value obtained in step 1, using the following format:

```
<Key Name> <Key value in Hex String>
```

Example: `key2 1234567890abcdef01234567890abcdef01234567890abcdef01234567890abcdef`

The key value must be a 64 hexadecimal character string.

7 Touch **OK**. The key is imported into the device. The message **successfully installed the key** appears on the screen.

### Viewing Key List

**Procedure:**

1. Touch **Key List**.
2. Touch **OK**.

### Deleting a Key

**Procedure:**

1. Touch **Revoke Key**.
2. Touch the key to deleted.
3. Touch **OK**.

**Note:** If a key is deleted then all the volumes created using that key are un-mounted. The same key is required to re-mount the volume.

### Volumes

Creates an encrypted file system (volume) on the device. The user must have Administrative privileges to create a volume.
Creating Volume Using EFS File

Procedure:
2. Copy the keyfile and efsfile files to root of the microSD card. See USB Communication on page 39.
3. Touch Create Volume.
4. Touch Import.
5. Touch OK. The message Successfully Created the Volume appears briefly.

Creating a Volume Manually

Procedure:
1. Touch Create Volume.
3. Touch OK.
4. In the Enter Parameters To Create Volume text box, enter the parameters in the follow format:
   
   <Volume Name> <Volume Storage Type> Key Name> <Mount Path> <Auto Mount> <Volume size>
   
   where:
   
   • <Volume Name> = name of the volume.
   • <Volume Storage Type> = storage location. Options: internal or sdcrad.
   • <Key Name> = name of the key to use when creating the volume.
   • <Mount Path> = path where the volume will be located.
   • <Auto Mount> = Options: 1 = yes, 0 = no.
   • <Volume size> = size of the volume in Megabytes.

5. Touch OK. The message Successfully Created the Volume appears briefly. If the size of the volume is very large, a progress bar displays.
Mounting a Volume

Procedure:
1. Touch Mount Volume.
2. Touch sdcard or internal.
3. Touch OK.
4. Select a volume.
5. Touch OK.

Listing Volumes

Procedure:
1. Touch Volume List.
2. Touch sdcard to list volumes on the microSD card or internal to list volumes on internal storage.
3. Touch OK. The List of EFS Volumes dialog box appears with all the volumes of the selected storage location.
4. Touch OK.

Unmounting a Volume

Procedure:
1. Touch Unmount Volume.
2. Touch sdcard to list the mounted volumes on the microSD card or internal to list the mounted volumes on internal storage.
3. Touch OK.
4. Select the volume to un-mount.
5. Touch OK.

Deleting a Volume

Procedure:
1. If the encrypted volume is mounted, unmount it.
2. Touch Delete Volume.
3. Touch sdcard to list the unmounted volumes on the microSD card or internal to list the unmounted volumes on internal storage.
4. Select the volume to delete.
5. Touch OK.

Encrypting an SD Card

Caution: All data will be erased from the microSD card when this is performed.

Procedure:
1. Touch Encrypt SD card. A warning message appears.
2. Touch Yes. The Key List dialog box appears.
3. Select a key from the list and then touch OK.
   The encryption process begins and when completed, displays a successfully completed message.

Creating an EFS File
When creating an encrypted volume, the parameter information can be imported from a file instead of entering manually.

Procedure:
1. On a host computer, create a text file.
2. In the text file enter the following:
   
   `<Volume Name> <Volume Storage Type> <Key Name> <Mount Path> <Auto Mount> <Volume size>`
   
   where:
   
   `<Volume Name>` = name of the volume
   `<Volume Storage Type>` = storage location. Options: internal or sdcard.
   `<Key Name>` = name of the key to use when creating the volume.
   `<Mount Path>` = path where the volume will be located.
   `<Auto Mount>` = Options: 1 = yes, 0 = no.
   `<Volume size>` = size of the volume in Megabytes.
   
   Example:
   
   `MyVolume sdcard key1 /mnt/sdcard/efsfolder 1 1`
3. Save the text file as `efsfile`.

Off-line Extraction Tool

The Secure Storage feature allows for the usage of an encrypted file system. The off-line extraction tool allows encrypted file systems to be used on an Ubuntu version number 10.04LTS desktop. The off-line extraction tool is a shell script used to create, mount and unmount an encrypted file system used with the Secure Storage feature.

Connect the device to the host computer.

Usage

On a Ubuntu desktop, at a terminal prompt, type: `offline_extraction.sh`.

The following Main Menu appears:

```plaintext
[ Offline-extraction tool ]
1) Create an image
2) Mount an existing EFS image
3) Unmount final mount location, device mapper and loop device
4) Quit
Please, choose one from the list and press ENTER:
```

Creating an Image

Procedure:
1. From the Main Menu, select item 1. The following appears:
   
   Please enter EFS file name (e.g. /tmp/1.efsmot): <volume name>
   Please enter encryption key (64-bytes hex value):
   Please enter the EFS image size (in MB): <volume size in MB>
   Please enter EFS image filesystem type (e.g. ext4, vfat...): ext4
   
   DONE - OK
2. The utility first prompts for the name of the volume to create. Any ASCII string that meets standard Linux file naming rules is valid. Enter the image name and then press Enter.
3. The utility then prompts for the encryption key. This is a 64 byte hexadecimal value. Enter a string of 64 hexadecimal digits and then press Enter.
4 The utility then prompts for the image size. Enter the size of the volume in MB. A number must be entered without the units. It is understood that MB. A value of 2000, is 2 GB. Note that 4 GB is the largest volume that is supported on the device.

5 The utility lastly prompts for the filesystem type. Enter ext4 and then press Enter.
   The utility then creates the volume in the current working directory.
   The utility then finishes the creation process and then prompts to whether the volume should be mounted.
   Press [1] if you want to mount or press [2] if you want to exit

6 Press 1 will prompt for the mount point. For example, /mnt is prompted. Press Enter to mount the encrypted volume at the selected point. After mounting, an option to return to the Main Menu or Exit is provided.
   Press 2 to exit the utility without mounting.

7 If the volume is mounted on the desktop, then that volume can be provisioned with files for deployment.

8 Unmounted volumes can then be copied to the device and subsequently mounted using the Secure Storage Administrator by providing the encryption key used.

Mounting an Image

Procedure:

1 From the Main Menu, select item 2. The following appears:
   Please enter EFS file name (e.g. /tmp/1.efsmot): <volume name>
   Please enter encryption key (64-bytes hex value):
   Please enter mount path (e.g. /mnt): <existing mount point>
   DONE - OK

2 Enter the name of the volume and then press Enter.

3 The utility then prompts for the encryption key. This is a 64 byte hexadecimal value. Enter a string of 64 hexadecimal digits and then press Enter.

4 Enter the mount point where to connect the volume into the file system and then press Enter. The example of /mnt is provided.

Unmounting an Image

Procedure:

1 From the Main Menu, select item 3. The following appears:
   Please enter EFS file name (e.g. /tmp/1.efsmot): <volume name>
   DONE - OK

2 Enter the name of the volume to unmount.

3 Press Enter.
Chapter 6

Settings

This chapter describes settings available for configuring the device.

Location Settings

Use the Location access settings to set preferences for using and sharing location information. Touch > > Location access.

Figure 63: Location Access Screen

- **Access to my location** - Set to ON to ensure that applications request access to your location information.
- **Location Sources**
  - **GPS satellites** - Check to allow application to use the TC55 to pinpoint your location.
  - **GPS Xtra** - Check to allow applications to use GPS Xtra on the TC55.

  **Note:** The TC55 can access GPS information from an eXTended Receiver Assistance (Xtra) server using an Internet connection. This technology provides enhanced operation for Stand-alone GPS operation.

- **GPS Xtra load** - Select to load GPS Xtra data to the TC55.
- **Reset GPS** - Touch to reset the GPS data to factory default settings.
Screen Unlock Settings

Use the Security settings to set preferences for locking the screen. Touch > Security.

Note: Options vary depending upon the application’s policy, for example, email.

- **Screen lock** - Touch to configure the device to require a slide, pattern, PIN, or password to unlock the screen.
  - **None** - Disable screen unlock security.
  - **Slide** - Slide the lock icon to unlock the screen.
  - **Pattern** - Draw a pattern to unlock screen. See Set Screen Unlock Using Pattern on page 92 for more information.
  - **PIN** - Enter a numeric PIN to unlock screen. See Set Screen Unlock Using PIN on page 90 for more information.
  - **Password** - Enter a password to unlock screen. See Set Screen Unlock Using Password on page 91 for more information.

Lock the screen to protect access to data on the device. Some email accounts require locking the screen. The Locking feature functions differently in Single-user versus Multiple-user mode.

Single User Mode

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

Press and release the Power button to wake the device. The Lock screen displays.

Slide up to unlock the screen. If the Pattern screen unlock feature is enabled, the Pattern screen appears instead of the Lock screen.

If the PIN or Password screen unlock feature is enabled, enter the PIN or password after unlocking the screen.

Set Screen Unlock Using PIN

Procedure:

1. Touch 🎁.
2. Touch 🎁.
4. Touch Screen lock.
5. Touch PIN.
6. Touch in the text field.
7. Enter a PIN (between 4 and 16 characters) then touch Next.
8. Re-enter PIN and then touch Next.
9. Touch 🎁. The next time the device goes into suspend mode a PIN is required upon waking.
Figure 64: PIN Screen

Set Screen Unlock Using Password

Procedure:

1. Touch 
2. Touch 
4. Touch Screen lock.
5. Touch Password.
6. Touch in the text field.
7. Enter a password (between 4 and 16 characters) then touch Next.
8. Re-enter the password and then touch Next.
9. Touch . The next time the device goes into suspend mode a PIN is required upon waking.
Set Screen Unlock Using Pattern

Procedure:

1. Touch 🎤.
2. Touch 🕰.
4. Touch Screen lock.
5. Touch Pattern.
6. Watch pattern example and then touch Next.
7. Draw a pattern connecting at least four dots.
Figure 66: Choose Your Pattern Screen

8 Touch Continue.
9 Re-draw the pattern.
10 Touch Confirm.
11 On the Security screen, touch Make pattern visible to show pattern when you draw the pattern.
12 Touch Vibrate on touch to enable vibration when drawing the pattern.
13 Touch.

The next time the device goes into suspend mode a Pattern is required upon waking.

Figure 67: Pattern Screen

Multiple User Mode

For Multi-user Mode configuration, see Administrator Utilities on page 71.
Passwords

To set the device to briefly show password characters as the user types, set this option. Touch Security. Touch Make passwords visible. A check in the checkbox indicates that the option is enabled.

Button Programming

Two of the TC55’s buttons can be programmed to perform different functions or shortcuts to installed applications.

• Programmable button - Side Programmable button set to scanning by default.
• Search button - Oval button below display.

Programming a Button

Procedure:
1. Touch.
2. Touch.
3. Touch Programmable keys.

Figure 68: Programmable Keys Screen

4. Select the button to remap.
   • Programmable Side Key - Side Programmable button set to scanning by default.
   • Programmable Front Key - Oval button below display.
5. Touch the KEYS tab or the APPS tab that lists the available functions and applications.
6. Touch a function or application shortcut to map to the button.
Note: If you select an application shortcut, the application icon appears next to the button on the Key Programmer screen.

Figure 69: Remapped Button

If setting the Programmable Side Key, check the Enable wakeup checkbox to wake the TC55 if the Programmable key is pressed.

Touch Apply to set the new key function.

Exporting a Programmable Key Configuration File

The Programmable Key configuration can be exported to an xml file and imported into other TC55 devices.

Procedure:
1 Touch.
2 Touch.
3 Touch Programmable Keys.
4 Touch.
5 Touch Export.

The configuration file (key_config.xml) is saved in the folder: /enterprise/device/settings/keyboard.

Copy the xml file from the folder to a host computer. See USB Communication on page 39 for more information.

Importing a Programmable Key Configuration File

Procedure:
1 Copy the configuration file (key_config.xml) from a host computer to the TC55. See USB Communication on page 39 for more information.
2 On the TC55, use File Browser to move the file to the folder: /enterprise/device/settings/keyboard.
3 Touch 📢.
4 Touch 📷.
5 Touch 📚 Programmable Keys.
6 Touch 📱.
7 Touch Import.
8 Touch /enterprise/device/settings/keyboard/keys_config.xml to import the configuration file or touch Factory Settings to reset the key settings back to the factory default.
9 Touch 🍊.

Accounts

Use the Accounts 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.

- General sync settings
  - Background data - Check to permit applications to synchronize data in the background. Unchecking this setting can save battery power.
  - Auto-sync - Check to permit applications to synchronize data on their own schedule. If unchecked, ⏳ > Sync now to synchronize data for that account. Synchronizing data automatically is disabled if Background data is unchecked. In that case, the Auto-sync checkbox is dimmed.

- Manage accounts - Lists accounts added to the device. Touch an account to open its account screen.

Language Usage

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

Changing the Language Setting

Procedure:
1 Touch Language.
2 In the Language screen, select a language from the list of available languages.

The operating system text changes to the selected language.

Adding Words to the Dictionary

Procedure:
1 In the Language & input screen, touch Personal dictionary.
2 Touch + to add a new word or phrase to the dictionary.
3 In the Phrase text box, enter the word or phrase.
4 In the Shortcut text box, enter a shortcut for the word or phrase.
5 In the Language drop-down list, select the language that this word or phrase is stored.
6 Touch **Add to dictionary** in the top left corner of the screen to add the new word.

## Keyboard Settings

Use the **Language & input** settings for configuring the on-screen keyboards. The device contains the following keyboard settings:

- Android Keyboard
- Chinese keyboard

## About Phone

Use **About phone** settings to view information about the TC55. Touch > > **About device**.

- **Status** - Touch to display the following:
  - **Battery status** - Indicates if the battery is charging (on AC power) or discharging (on battery power).
  - **Battery level** - Indicates the battery charge level.
  - **Network** - Indicates the current network carrier.
  - **Signal strength** - Indicates the radio signal strength.
  - **Mobile network type** - Indicates the mobile network type.
  - **Service state** - Indicates the state of service.
  - **Roaming** - Indicates if the device is roaming outside the network.
  - **Mobile network state** - Indicates the mobile network state.
  - **My phone number** - Displays the phone number associated with the device.
  - **MIN** - Displays the phone number assigned to the device.
  - **PRL Version** - Displays the Preferred Roaming List (PRL) version.
  - **ESN** - Displays the Electronic Serial Number (ESN) of the device.
  - **IMEID** - Displays the Mobile Equipment Identifier (IMEID) for the device.
  - **IMEI** - Displays the IMEI number for the device.
  - **IMEI SV** - Displays the IMEI SV number for the device.
  - **ICCID** - Displays the ICCID number.
  - **IP address** - Displays the IP address of the device.
  - **Wi-Fi MAC address** - Displays the Wi-Fi radio MAC address.
  - **Bluetooth address** - Displays the Bluetooth radio Bluetooth address.
  - **Serial number** - Displays the serial number of the device.
  - **Up time** - Displays the time that the TC55 has been running since being turned on.
- **SW components** - Lists filenames and versions for various software on the TC55.
- **Legal information** - Opens a screen to view legal information about the software included on the TC55.
- **Battery Management** - Displays information about the battery.
- **SE 13 version** - Displays date of SE13 table.
- **QCN version** - Displays the QCN version number.
- **HW version** - Displays the hardware version.
- **TP FW Version** - Displays the touch panel firmware version.
- **WCNSS INI Version** - Displays the version number of the WCNSS INI file.
- **S/N** - Displays the device serial number.
- **Model number** - Displays the device model number.
- **Android version** - Displays the operating system version.
- **Baseband version** - Displays WAN radio firmware version.
• **Kernel version** - Displays the kernel version.
• **Build number** - Displays the software build number.
Chapter 7

Application Deployment

This chapter describes features in Android including new security features, how to package applications, and procedures for deploying applications onto the device.

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).

Secure Certificates

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 X.509 certificates saved in PKCS#12 key store files with a .p12 extension (if key store has a .pfx or other extension, change to .p12).

The device also installs any accompanying private key or certificate authority certificates contained in the key store.

Installing a Secure Certificate

Procedure:

1. Copy the certificate from the host computer to the root of the microSD card. See USB Communication on page 39 for information about connecting the device to a host computer and copying files.
2. Touch ☐.
3. Touch .
5. Touch Install from SD card.
6. Navigate to the location of the certificate file.
7. Touch the filename of the certificate to install. Only the names of certificates not already installed display.
8. If prompted, enter the certificate’s password and touch OK.
9. Enter a name for the certificate and touch OK. If a password has not been set for the credential storage, enter a password for it twice and then touch OK.

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

Procedure:

1. Touch 🎉.
2. Touch 🎉.
   - **Trusted credentials** - Touch to display the trusted system and user credentials.
   - **Install from SD card** - Touch to install a secure certificate from the microSD card.
   - **Clear credentials** - Deletes all secure certificates and related credentials.

Development Tools


To start developing applications for the device, download the development SDK and the Eclipse IDE. Development can take place on a Microsoft® Windows®, Mac® OS X®, or Linux® operating system.

Applications are written in the Java language, but compiled and executed in the Dalvik VM (a non-Java virtual machine). Once the Java code is compiled cleanly, the developer tools make sure the application is packaged properly, including the AndroidManifest.xml file.

The development SDK is distributed as a ZIP file that unpacks to a directory on the host computer hard drive. The SDK includes:

- **android.jar**
  - Java archive file containing all of the development SDK classes necessary to build an application.
- **documentation.html and docs directory**
  - The SDK documentation is provided locally and on the Web. It's largely in the form of JavaDocs, making it easy to navigate the many packages in the SDK. The documentation also includes a high-level Development Guide and links to the broader community.
- **Samples directory**
  - The samples subdirectory contains full source code for a variety of applications, including ApiDemo, which exercises many APIs. The sample application is a great place to explore when starting application development.
- **Tools directory**
  - Contains all of the command-line tools to build applications. The most commonly employed and useful tool is the adb utility.
- **usb_driver**
  - Directory containing the necessary drivers to connect the development environment to an enabled device. These files are only required for developers using the Windows platform.

Open the **Developer options** screen to set development related settings.

On the Home screen, touch 🍎 > 🎉 >  { } **Developer options**. Slide the switch to the ON position to enable developer options.
ADB USB Setup

To use the ADB, install the USB driver. This assumes that the development SDK has been installed on the host computer. Go to http://developer.android.com/sdk/index.html for details on setting up the development SDK.

ADB driver for Windows and Linux are available on the Zebra Support Central web site at http://www.zebra.com/support. Download the ADB and USB Driver Setup package. Following the instructions with the package to install the ADB and USB drivers for Windows and Linux.

Application Installation

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

- USB connection, see Installing Applications Using the USB Connection on page 101.
- Android Debug Bridge, see Installing Applications Using the Android Debug Bridge on page 102.
- Mobile device management (MDM) platforms that have application provisioning. Refer to the MDM software documentation for details.

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.

Procedure:

1. Connect the device to a host computer using USB. See USB Communication on page 39.
2. On the host computer, copy the application .apk file from the host computer to the device.
3. Disconnect the device from the host computer. See USB Communication on page 39.
4. On the device, touch 📦.
5. Touch 📜 to view files on a microSD card or Internal Storage.
7. Touch the application file to begin the installation process.
8. To confirm installation and accept what the application affects, touch Install otherwise touch Cancel.
Installing Applications Using the Android Debug Bridge

Use ADB commands to install application onto the device.

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.

Prerequisites: Ensure that the ADB drivers are installed on the host computer. See ADB USB Setup on page 101.

Procedure:

1. Connect the device to a host computer using USB. See USB Communication on page 39.
2. Touch .
3. Touch .

4. Touch Developer options.
5. Slide the switch to the ON position.
7. Touch OK.
8. On the host computer, open a command prompt window and use the adb command:

   adb install <application>

   where: <application> = the path and filename of the apk file.
9. Disconnect the device from the host computer. See USB Communication on page 39.

Uninstalling an Application

Procedure:

1. Touch .
2 Touch Apps.
3 Touch Apps.
4 Swipe left or right until the **Downloaded** screen displays.

**Figure 71: Downloaded Screen**

5 Touch the application to uninstall.
6 Touch **Uninstall**.
7 Touch **OK** to confirm.

### Updating the System

System Update packages can contain either partial or complete updates for the operating system. Zebra distributes the System Update packages on the Support Central web site.

**Note:**

A TC55 Professional Configuration can be upgraded to a TC55 Standard Configuration. Go to the Zebra Support web site for information on upgrading information.

**Procedure:**

1 Download the system update package:
   a Go to the Zebra Support Central web site, [http://www.zebra.com/support](http://www.zebra.com/support).
   b Download the appropriate System Update package to a host computer.
2 Copy the **TC55N0JxxVRUyyyyyyyy.zip** file to the root directory of the microSD card or Internal Storage. See *USB Communication on page 39* for more information.
3 Press and hold the Power button until the menu appears.
4 Touch **Reset**.
5 Press and hold the Volume Up button.
6 When the System Recovery screen appears, release the button.
Figure 72: System Recovery Screen

7 Press the Volume Up and Volume Down buttons to navigate to apply from SD card or apply from internal.
8 Press the Scan button.
9 Press the Volume Up and Volume Down buttons to navigate to the TC55N0JxxVRUyxxxxx.zip file.
10 Press the Scan button. The System Update installs and then the TC55 resets.

Enterprise Enable

TC55 Standard Configuration does not support some Zebra Enterprise features to ensure compliance with Google. The Enterprise Enable software:

- Changes /enterprise permissions to 777 throughout the directory tree.
- Changes the directory permission for /data/tmp to read/writeable.
- Sets the SUID bit for /system/bin/super.
- Removes the Factory Reset option from the Settings > Backup and Restore UI.
- Enables the Unknown Sources option in Developer Options but it will not gray out the selection.
- Adds Enterprise Enabled to the SW Components list in the About phone settings.

The Enterprise Enable software is available on the Zebra Support Central web site (http://www.zebra.com/support). On the TC55 page, select the Enterprise Enable package and follow the instructions provided. The Enterprise Enable software can also be installed from the App Gallery application on the TC55.

The Enterprise Enable feature can be enabled on the TC55 Standard Configuration by one of the following methods:

- **USB** – Install the Enterprise Enable application on the TC55 and use the application to enable the Enterprise features.
- **ADB** – Use ADB to install the Enterprise Enable application on the TC55 and use the application to enable the Enterprise features.
- **MDM** – Use a third-party MDM to install the Enterprise features without user intervention (silent mode).
- **AppGalley** – Download the Enterprise Enable application to the TC55 and use the application to enable the Enterprise features.
Storage

The device contains four types of file storage:

- Random Access Memory (RAM)
- External storage (microSD card)
- Internal storage
- Enterprise folder.

Random Access Memory

Executing programs use RAM to store data. Data stored in RAM is lost upon a reset.

The operating system manages how applications use RAM. It only allows applications and component processes and services to use RAM when required. It may cache recently used processes in RAM, so they restart more quickly when opened again, but it will erase the cache if it needs the RAM for new activities.

To view the amount of free and used memory, touch > Apps. Swipe the screen until the Running screen appears.

**Figure 73: Running Screen**

![Running Screen](image)

The bar at the bottom of the screen displays the amount of used and free RAM.

Internal Storage

There are two types of Internal Storage. The first type, is the memory where most applications and data are stored.

The operating system protects all data and applications from power-related loss. Because the operating system mounts the entire file system in persistent storage, TC55 devices provide a reliable storage platform even in the absence of battery power. Internal Storage provides application developers with a reliable storage system available through the standard ext4 file system. Data in Internal storage is lost upon a Factory or Enterprise reset.

Internal Storage is approximately 4.6 GB (formatted). To view the available internal storage, touch > Storage.
Figure 74: Storage Settings - Internal Storage

- **Total space** - Displays the total amount of space.
  - **Apps** - Displays the available space used for applications and media content.
  - **Available** - Displays the available space on the internal storage.

The second type acts like an internal SD card where pictures, videos and data files are stored. This memory can be accessed from a host computer using a USB connection.

This Internal Storage is approximately 1.0 GB (formatted). To view the available internal storage, touch 📷 > 📦 > Storage.

Figure 75: Storage Settings - Internal Storage

- **Total space** - Displays the total amount of space.
- **Pictures, videos** - Displays the available space used for pictures and videos.
External Storage

The TC55 can have a removable microSD card. The microSD card content can be viewed and files copied to and from when the TC55 is connected to a host computer. Some applications are designed to be stored on the microSD card rather than in internal memory.

To view the used and available space on the microSD card, touch 📠 > 📥 > Storage.

Figure 76: Storage Settings

- **Available** - Displays the available space on the internal storage.
- **Unmount SD card** - Unmounts the internal SD card.
- **Erase internal SD card** - Permanently erases everything on the Internal Storage (internal SD card).

Enterprise Folder

The Enterprise folder (within internal flash) is a super-persistent storage that is persistent after a reset and an Enterprise Reset. The Enterprise folder is erased during a Factory Reset. The Enterprise folder is used for deployment and device-unique data. The Enterprise folder is approximately 128 MB (formatted). Applications can persist data after an Enterprise Reset by saving data to the enterprise/user folder. The folder is ext4 formatted and is only accessible from a host computer using ADB or from an MDM.

- **Total space** - Displays the total amount of space on the installed microSD card.
- **Apps** - Displays the available space used for applications and media content on the installed microSD card.
- **Pictures, videos** - Displays the available space used for pictures and videos on the installed microSD card.
- **Available** - Displays the available space on the installed microSD card.
- **Unmount SD card** - Unmounts the installed microSD card from the TC55 so that it can be safely removed. This setting is dimmed if there is no microSD card installed, if it has already been unmounted or if it has been mounted on a host computer.
- **Erase external SD card** - Permanently erases everything on the installed microSD card.
Application Management

Applications use two kinds of memory: storage memory and RAM. Applications use storage memory for themselves and any files, settings, and other data they use. They also use RAM when they are running.

From the Home screen touch 📲 > Manage apps.

Figure 77: Manage Applications Screen

The Manage Applications screen has four tabs, with lists of applications and their components in each. At the bottom of each tab is a graph of the memory used by the items in the list and amount of free memory.

Touch an application, process, or service in a list to open a screen with details about it and, depending on the item, to change its settings, stop it or uninstall it

- Slide the screen to the Downloaded tab to view the applications downloaded to the device.
- Slide the screen to the All tab to view all the applications installed on the device, including factory installed applications and downloaded applications.
- Slide the screen to the On SD card tab to view the applications installed on the microSD card. A check mark indicates that the application is installed on the microSD card. Unchecked items are installed in internal storage and can be moved to the microSD card.
- Touch the Running tab to view the applications and their processes and services that are running or cached

When on the Downloaded, All, or On SD card tab, touch 📛 > Sort by size to switch the order of the list.

Viewing Application Details

Applications have different kinds of information and controls, but commonly include:

- Touch Force stop to stop an application.
- Touch Uninstall to remove the application and all of its data and settings from the device. See Uninstalling an Application on page 102 for information about uninstalling applications.
- Touch Clear data to delete an application’s settings and associated data.
- Touch Move to USB storage or Move to SD card to change where some applications are stored.
- Cache If the application stores data in a temporary area, lists how much information is stored, and includes a button for clearing it.
• **Launch by default** clears If you have configured an application to launch certain file types by default, you can clear that setting here.

• **Permissions** lists the areas on the device that the application has access to.

**Procedure:**

1. Touch 📲 > Manage apps.
2. Touch an application, process, or service.
   
The App Info screen lists the application name and version number, and details about the application. Depending on the application and where it came from, it may also include buttons for managing the application’s data, forcing the application to stop, and uninstalling the application. It also lists details about the kinds of information about your phone and data that the application has access to.

### Stopping an Application

To monitor how much RAM running applications and cached processes are using and if necessary, stop them.

**Procedure:**

1. Touch 📲 > Manage apps.
2. Swipe the screen to display the Running tab.
3. Touch Show cached processes or Show running services to switch back and forth. The Running tab lists the applications, processes, and services that are currently running or that have cached processes and how much RAM they are using.

![Figure 78: Running Applications](image)

4. The graph at the bottom of the screen displays the total RAM in use and the amount free. Touch an application, process, or service.

5. **Note:** Stopping an application or operating system processes and services disables one or more dependant functions on the device. The device may need to be reset to restore full functionality. Touch Stop.

### Changing Application Location

Some applications are designed to be stored on a microSD card, rather than in internal storage. Others are designed so you can change where they are stored. You may find it helpful to move large applications off of your internal storage,
to make more room for other applications that don’t offer the option. Many large applications are designed this way for exactly this reason.

Procedure:
1. Touch > Manage apps.
2. Swipe the screen to display the On SD card tab.
   - The tab lists the applications that must be or can be stored on the microSD card. Each application lists the amount of storage it uses on internal storage (even when not stored there, all applications use at least a small amount of internal storage).
   - Applications that are stored on the microSD card are checked.
   - The graph at the bottom shows the amount of memory used and free of the microSD card: the total includes files and other data, not just the applications in the list.
3. Touch an application in the list.
   - The Storage section of the application’s details screen shows details about the memory used by the application. If the application can be moved, the Move button is active.
4. Touch Move to SD card to move the bulk of the application from the device’s internal storage to the microSD card.
5. Touch Move to phone to move the application back to the device’s internal storage.

Managing Downloads

Files and applications downloaded using the Browser or Email are stored on the microSD card in the Download directory. Use the Downloads application to view, open, or delete downloaded items.

Procedure:
1. Touch .
2. Touch .
3. Touch an item to open it.
4. Touch headings for earlier downloads to view them.
5. Check items to delete; then touch . The item is deleted from storage.
6. Touch Sort by size or Sort by time to switch back and forth.
   - When an application is opened, the other applications being used do not stop. The operating system and applications work together to ensure that applications not being used do not consume resources unnecessarily, stopping and starting them as needed. For this reason, there’s no need to stop applications unless it is not functioning properly.

RxLogger

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

RxLogger Configuration

RxLogger is built with an extensible plug-in architecture and comes packaged with a number of plugins already built-in. The included plug-ins are described below. Touch Settings to open the configuration screen.
Main Log Plug-in

The Main log presents a high level timeline view of the device health in an easy to read comma-separated values (CSV) format. The log contains many of the key parameters of various subsystems and is meant to be used as a first level triage that can potentially point to a range of specific detailed logs to look at. The two rightmost columns in the CSV file allow the log modules and plug-ins to insert asynchronous event based messages into the log. This is useful so that by looking at the CSV log you can see when snapshots have been created or when the tool has detected an application to be unresponsive. It is also used to show power events such as AC/DC power transitions.

- **Log Interval** - Specifies the interval, in milliseconds, to poll the collected parameters and write the data to the CSV log file.
- **Log path** - Specifies the base log path to store the CSV log file. The default to use the default external storage directory which is queried from the Android system.
- **Log base filename** - The base filename to use for the CSV file before appending the index number of that particular log file. For example, if the base filename is Resource and we are rotating through two log files, the actual filename will be `Resource0.csv` and `Resource1.csv`.
- **Log file count** - Specifies the number of files to rotate through. Each file is constrained by the Log max size option.
- **Log max size** - Specifies the maximum size, in kilobytes, of each log file for the main CSV log.
- **Power** - Enables logging of power related parameters and events. These include battery stats (capacity, current, voltage, etc) and AC/DC power notification events.
- **System resources** - Enables logging of CPU and memory related items (Avg/current CPU load, program memory, storage memory, process count, etc).
- **Wifi** - Enables logging of wireless LAN items (WLAN power, signal strength, essid, connected AP, etc).
- **Cellular** - Enables logging of wireless WAN items (WAN power, network type, signal strength, connected cell tower, etc).
- **Network** - Enables logging of network items (IP address, default gateway, etc).
- **Bluetooth** - Enables logging of Bluetooth items (Bluetooth power, discoverable, connected, etc).
- **GPS** - Enables logging of GPS data (position, speed, etc).
- **GPS update frequency** - Specifies the frequency of GPS updates requested from the system. This setting can greatly affect battery life when using the tool. Frequent GPS updates will use a lot of power and the effects are greater if the device is indoors where a position cannot be obtained.
- **Output** - The output is a set of comma separated files containing the requested data. The number of files and the file size is determined by the configuration. These files can be viewed using Microsoft Excel.

Snapshot Plug-in

- **Log path** - Specifies the base path to use to store the snapshot files
- **Log filename** - Specifies the base filename for all the snapshot files. This file number will be appended to this base filename when saving the snapshot.
- **Log interval** - Specifies the interval, in milliseconds, on which to invoke a detailed snapshot.
- **Log file count** - The number of snapshot files to keep on the filesystem. Once the maximum number of files is reached, the existing files will start to be overwritten.
- **Log CPU usage** - Enables detailed per process CPU logging in the snapshot.
- **Log memory usage** - Enables logging of detailed per process memory usage in the snapshot.
- **Log power info** - Enables logging of detailed power information including battery life, on time, charging, and wake locks.
- **Log processes** - Enables dumping the complete process list in the snapshot.
- **Log threads** - Enables dumping all processes and their threads in the snapshot.
- **Log system properties** - Enables dumping of all system properties on the device. This includes build/version information as well as state information.
- **Log network info** - Enables dumping of all available network interfaces and the routing table.
- **Log filesystem info** - Enables dumping of the available volumes on the file system and the free storage space for each.
• **Log usage stats** - Enables dumping of detailed usage information for each package on the device. This includes the number of starts and duration of each run.

• **Output** - The snapshot plug-in outputs a series of individual snapshot files. Every snapshot creates a new file and each file is not limited in size. The disk usage is managed by keeping a pool of log files with a configurable size.

**Logcat Plug-in**

Logcat is an essential debugging tool on Android devices. RxLogger provides the ability to record data from all four of the available logcat buffers. The Logcat plug-in has the ability to collect data from multiple logcat buffers provided by the system. Currently these are the main, event, radio, and system buffers. Each of the settings are available for each buffer independently unless otherwise noted.

• **Log path** - Specifies the high level log path for storage of all logcat logs. This setting applies globally to all logcat buffers.

• **Enable logcat** - Enables logging for this logcat buffer.

• **Log interval** - Sets the interval, in milliseconds, on which to flush the log buffer to the file.

• **Log filename** - Specifies the base log filename for this logcat buffer. The current file count is appended to this name.

• **Log file count** - Specifies the number of log files to keep and rotate through. Each log file is subject to the max log size option.

• **Max log size** - Specifies the maximum size, in kilobytes, of an individual log file.

• **Output** - The logcat plug-in outputs a series of text files in accordance with the configuration. The files contain the output of the logcat buffer flushed at the specified interval.

**PushPullClient Plug-in**

The PushPullClient plug-in is designed to automatically push log files to a remote FTP server on a regular basis. It also has the capability to pull a remote file from the FTP server to a local directory on the device to automatically pull down a new configuration file so that the configuration of the tool can be set and updated remotely. The tool uses a flag file on the FTP site (based on device serial number) to ensure the file is only pulled once. By removing the flag file for a particular device you can force it to download the file again.

• **Hostname** - Specifies the ftp server to connect to.

• **Username** - Specifies the username to use to log onto the FTP server.

• **Password** - Specifies the password to use to log onto the FTP server.

• **Enable push** - Enables pushing of file to the specified FTP server.

• **Push interval** - Specifies the amount of time, in milliseconds, in between pushes to the FTP server.

• **Local push directory** - Specifies the local directory to push files from.

• **Remote push directory** - Specifies the remote directory to push files to. A separate folder will be created for each device using the device serial number.

• **Wakeup for push time** - If the pull interval is set to 0, this will specify a specific time to initiate an FTP push.

• **Do push on start** - Enable an FTP push upon startup of the plug-in.

• **Enable pull** - Enable FTP pull functionality.

• **Pull interval** - Specifies the amount of time, in milliseconds, in between pulls from the FTP server.

• **Remote pull directory** - Specifies the directory on the FTP server where the file to be pulled will be located.

• **Remote pull filename** - Specifies the file to be pulled from the FTP server.

• **Local pull directory** - Specifies the local directory to store the file pulled from the FTP server.

**TCPDump Plug-in**

The TCPDump plug-in facilitates the capturing of network traces to be viewed in Wireshark or a similar tool that can decode .cap files.

• **Log path** - Specifies the location to store the TCPDump output log files.

• **Base filename** - Specifies the base filename to use when storing the TCPDump files. The index number of the current log file will be appended to this filename.
• **Log file count** - Specifies the number of log files to cycle through when storing the network traces.
• **Max file size** - Specifies the maximum file size, in megabytes, for each log file created.
• **Output** - The TCPDump plug-in outputs a set of .cap files according to the configurable options. These are binary files and can be opened with Wireshark tool.

### ANR Plugin

Application Not Responsive (ANR) indicates that a running application’s UI thread is not responding for a specified time period. RxLogger is able to detect this condition and trigger a copy of the call stack trace of the unresponsive application into the log directory. The event will also be indicated in the high level CSV log.

• **Log path** - Specifies the default log path to store the ANR log files.
• **Max file size** - Specifies the maximum file size, in kilobytes, of the ANR trace to be copied. If the file is too large, the copy will be skipped. On older devices that append each ANR event to the same trace file the size can get very large. In this case we will avoid expending resources to copy the large file every time.
• **Output** - The ANR plug-in creates text files in the specified log directory that contain the call stacks of application’s that have been shut down by the system due to an ANR event.

### Kernal Plug-in

• **Enable Plugin** - Enables logging for this kernal buffer.
• **Log path** - Specifies the high level log path for storage of all kernal logs. This setting applies globally to all kernal buffers.
• **Kernal Log filename** - Specifies the base log filename for this kernal buffer. The current file count is appended to this name.
• **Max Kernal log size** - Specifies the maximum size, in kilobytes, of an individual log file.
• **Kernal Log interval** - Sets the interval, in milliseconds, on which to flush the log buffer to the file.
• **Kernal Log file count** - Specifies the number of log files to keep and rotate through. Each log file is subject to the max log size option.
• **Output** - The kernal plug-in outputs a series of text files in accordance with the configuration. The files contain the output of the kernal buffer flushed at the specified interval.

### Configuration File

RxLogger configuration can be set using an XML file. The config.xml configuration file is located on the microSD card in the RxLogger\config folder. Copy the file from the device to a host computer using a USB connection. Edit the configuration file and replace the .XML file on the device. There is no need to stop and restart the RxLogger service since the file change is automatically detected.

### Enabling Logging

**Procedure:**

1. Touch 
2. Touch 
3. Touch Start. 
4. Touch 

### Disabling Logging

**Procedure:**

1. Touch 
2. Touch 

Extracting Log Files

Procedure:
1. Connect the device to a host computer using an USB connection.
2. Using a file explorer, navigate to the RxLogger folder.
3. Copy the file from the device to the host computer.
4. Disconnect the device from the host computer.

MLog Manager

The MLog Manager allows the user to export operating system and modem logs. Analyzing the exported logs can provide visibility into the system internal behavior and may help determining root causes of the system faults and issues.

Sub-systems

- **MLog Manager**
  - Built-in user interface (UI) application for users.
  - Exports logs using UI button requests.
  - Supports B2M Elemez client requests.
  - Sets MLog parameters (e.g. Persisting-Logs and Export-Logs-Upon-Boot).

- **MLog Services**
  - Built-in daemon service.
  - Synchronizes access to the MLog service functions.
  - Reads incoming logs messages from the Android (kernel/firmware) drivers and the modem sub-system.
  - Writes the Android logs circularly into a secured ‘logs’ partition (only when the ‘Persisting Logs’ mode is active).
  - Exports logs data automatically to a microSD card (only when Export Logs upon Boot mode is active).

Log Descriptions

The MLog system provides the ability to export Android and modem logs using the MLog Manager.

- **Android**
  - **Framework/Kernel Logs** - captures standard Android system messages, including errors, warnings and informational messages that have been written from Android applications, services and drivers.
  - **TombStones/ANRs Logs** - captures important information of native crashed process, which include terminated signal and fault address, CPU registers, and the crashed process call-stack.
  - **AbnormalResets/Recovery/FWL Logs**
    + captures all the abnormal resets that occur on the TC55, e.g. reset that occur to the TC55 as result of battery replacement.
    + captures all the upgrades and downgrades that are done to the TC55 via the recovery mechanism.
    + captures the Flash health values any time it changes.
  - **AppNoRespond Logs** - captures Java level stack traces of an Android crashed application.
  - **Export All Logs** - captures all of the above logs at once.

- **QXDM**
- captures baseband system messages, which include errors, warnings and informational messages. Choose the filter by what you did on the WAN function. The filter are voice call (CS), data call (PS), GPS (GNSS), network (NW), SIM card, SMS and STK issue. If you cannot recognize where the issue is, use 234G filter to capture the log before your testing.

Exporting QXDM Logs

Procedure:

1. Touch 🖱️.
2. Touch 🖱️.
3. On the QXDM tab, touch Start Qxdm Logging.
4. On the Choose log filter dialog box, select one of the options:
   - 234G
   - CS (Voice call)
   - GNSS (GPS)
   - NW (network)
   - PS (Data call)
   - SIM (SIM card)
   - SMS
   - STK
   - User Defined
5. Select a filter.
   The TC55 starts collecting the select data.
Chapter 8

Maintenance and Troubleshooting

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

Maintaining the TC55

For trouble-free service, observe the following tips when using the TC55:

- Do not scratch the screen of the TC55. When working with the TC55, use a finger, glove or approved stylus or pen intended for use with a capacitive touch-sensitive screen. Never use an actual pen or pencil or other sharp object on the surface of the TC55 screen.
- The touch-sensitive screen of the TC55 is glass. Do not drop the TC55 or subject it to strong impact.
- Protect the TC55 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 TC55 in any location that is dusty, damp, or wet.
- Use a soft lens cloth to clean the TC55. If the surface of the TC55 screen becomes soiled, clean it with a soft cloth moistened with isopropyl alcohol.
- 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 ºF and +104 ºF (0 ºC and +40 ºC)
- To charge the mobile device battery, the battery and charger temperatures must be between 0 ºC and +45 ºC (+32 ºF and +113 ºF)
- 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 rechargeable 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 Zebra 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, or mild dish soap.

Harmful Ingredients

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

Cleaning Instructions

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

Special Cleaning Notes

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

Cleaning Materials Required

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

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

Cleaning the TC55

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:

Procedure:
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 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:

Procedure:
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.

**Troubleshooting the TC55**

**Table 4: Troubleshooting the TC55**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the user presses the Power button, the TC55 does not turn on.</td>
<td>Battery is completely discharged.</td>
<td>Re-charge or replace the battery.</td>
</tr>
<tr>
<td></td>
<td>Battery not installed properly.</td>
<td>Install the battery properly. See Installing the Battery.</td>
</tr>
<tr>
<td></td>
<td>Power button not held down long enough.</td>
<td>Press the Power button until the LED lights green.</td>
</tr>
<tr>
<td></td>
<td>TC55 not responding.</td>
<td>Perform a hard reset. See Resetting the TC55.</td>
</tr>
<tr>
<td>When the user presses the Power button the TC55 does not turn on but a charge battery icon appears on the screen.</td>
<td>Battery charge level is very low.</td>
<td>Re-charge or replace the battery.</td>
</tr>
<tr>
<td>After connecting the TC55 to the Rugged Charge Cable, a battery charging icon appears on the screen.</td>
<td>Battery is depleted but is charging.</td>
<td>Press and hold the Power button to turn on the TC55.</td>
</tr>
<tr>
<td>When charging, the LED slowly blinks red.</td>
<td>The TC55 is at an extremely low power state.</td>
<td>Charge the TC55 for a few minutes. The LED will change to flashing green then press the Power button to turn on the TC55. If LED continuously blinks red, check power connections. Disconnect and reconnect connections.</td>
</tr>
<tr>
<td>Battery did not charge.</td>
<td>Battery failed.</td>
<td>Replace battery. If the TC55 still does not operate, perform a hardware reset.</td>
</tr>
</tbody>
</table>

*Table continued...*
<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC55 was removed from power while battery was charging.</td>
<td>Insert TC55 in cradle or attach Charge Cable. The 2940 mAh battery fully charges in approximately three hours and the 4410 mAh battery charges in approximately 4.5 hours.</td>
<td></td>
</tr>
<tr>
<td>Extreme battery temperature.</td>
<td>Battery does not charge if ambient temperature is below 0 °C (32 °F) or above 40 °C (104 °F).</td>
<td></td>
</tr>
<tr>
<td>TC55 was removed from USB cable or disconnected from host computer during communication.</td>
<td>Reattach the communication cable and re-transmit.</td>
<td></td>
</tr>
<tr>
<td>TC55 removed from USB cable or disconnected from host computer during communication.</td>
<td>Reattach the communication cable and re-transmit.</td>
<td></td>
</tr>
<tr>
<td>Extreme battery temperature.</td>
<td>Battery does not charge if ambient temperature is below 0 °C (32 °F) or above 40 °C (104 °F).</td>
<td></td>
</tr>
<tr>
<td>During data communication with a host computer, no data transmitted, or transmitted data was incomplete.</td>
<td>TC55 removed from USB cable or disconnected from host computer during communication.</td>
<td></td>
</tr>
<tr>
<td>Incorrect cable configuration.</td>
<td>See the system administrator.</td>
<td></td>
</tr>
<tr>
<td>During data communication over Wi-Fi, no data transmitted, or transmitted data was incomplete.</td>
<td>Wi-Fi radio is not on.</td>
<td></td>
</tr>
<tr>
<td>You moved out of range of an access point.</td>
<td>Move closed to an access point.</td>
<td></td>
</tr>
<tr>
<td>Bluetooth radio is not on.</td>
<td>Turn on the Bluetooth radio.</td>
<td></td>
</tr>
<tr>
<td>During data communication over Bluetooth, no data transmitted, or transmitted data was incomplete.</td>
<td>Bluetooth radio is not on.</td>
<td></td>
</tr>
<tr>
<td>You moved out of range of another Bluetooth device.</td>
<td>Move without 10 m (32.8 ft.) of the other device.</td>
<td></td>
</tr>
<tr>
<td>During data communication over WAN, no data transmitted, or transmitted data was incomplete.</td>
<td>You are in an area of poor cellular service.</td>
<td></td>
</tr>
<tr>
<td>APN is not set up correctly.</td>
<td>Move into an area that has better service.</td>
<td></td>
</tr>
<tr>
<td>SIM card not installed properly.</td>
<td>See system administrator for APN setup information.</td>
<td></td>
</tr>
<tr>
<td>Data plan not activated.</td>
<td>Remove and re-install the SIM card. See Installing the SIM Card on page 15.</td>
<td></td>
</tr>
<tr>
<td>No sound.</td>
<td>Volume setting is low or turned off.</td>
<td>Adjust the volume.</td>
</tr>
<tr>
<td>TC55 turns off.</td>
<td>TC55 is inactive.</td>
<td>The display turns off after a period of inactivity. Set this period to 15 seconds, 30 seconds, 1, 2, 5, 10, or 30 minutes.</td>
</tr>
<tr>
<td>Battery is depleted.</td>
<td>Recharge or replace the battery.</td>
<td></td>
</tr>
<tr>
<td>Extreme battery temperature.</td>
<td>Move device to an area where the ambient temperature is between -10 °C (+14 °F) and +60 °C (+140 °F).</td>
<td></td>
</tr>
</tbody>
</table>

Table continued...
### Problem 1: A message appears stating not enough storage memory.

**Cause:** Too many applications installed on the TC55.

**Solution:** Remove user-installed applications on the TC55 to recover memory. Select > Apps > Downloaded. Select the unused programs and touch Uninstall.

### Problem 2: The TC55 does not decode when reading bar code.

**Cause:** DataWedge is not enabled.

**Solution:** Ensure that DataWedge is enabled and configured properly. See DataWedge Configuration on page 41 for more information.

<table>
<thead>
<tr>
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<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Too many applications installed on the TC55.</td>
<td>Remove user-installed applications on the TC55 to recover memory. Select &gt; Apps &gt; Downloaded. Select the unused programs and touch Uninstall.</td>
</tr>
<tr>
<td>The TC55 does not decode when reading bar code.</td>
<td>DataWedge is not enable.</td>
<td>Ensure that DataWedge is enabled and configured properly. See DataWedge Configuration on page 41 for more information.</td>
</tr>
<tr>
<td></td>
<td>Unreadable bar code.</td>
<td>Ensure the symbol is not defaced.</td>
</tr>
<tr>
<td></td>
<td>Distance between the TC55 and bar code is incorrect.</td>
<td>Place the TC55 within proper scanning range.</td>
</tr>
<tr>
<td></td>
<td>TC55 is not programmed for the bar code type.</td>
<td>Program the TC55 to accept the type of bar code being scanned. See DataWedge Configuration on page 41 for DataWedge configuration.</td>
</tr>
<tr>
<td></td>
<td>TC55 is not programmed to generate a beep.</td>
<td>If the TC55 does not beep on a good decode, set the application to generate a beep on good decode.</td>
</tr>
</tbody>
</table>

### Five-Slot Charge Only Cradle CRDUNIV-55–5000R Troubleshooting

#### Table 5: Troubleshooting the Five-Slot Charge Only Cradle

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery is not charging.</td>
<td>TC55 removed from the cradle too soon.</td>
<td>Replace the TC55 in the cradle. The 2,940 mAh battery fully charges in approximately three hours and the 4,410 mAh battery charges in approximately 4.5 hours.</td>
</tr>
<tr>
<td></td>
<td>Battery is faulty.</td>
<td>Verify that other batteries charge properly. If so, replace the faulty battery.</td>
</tr>
<tr>
<td></td>
<td>TC55 is not inserted correctly in the cradle.</td>
<td>Remove the TC55 and reinsert it correctly. Verify charging is active. Touch &gt; &gt; About device &gt; Status to view battery status.</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature of the cradle is too warm.</td>
<td>Move the cradle to an area where the ambient temperature is between -10 °C (+14 °F) and +60 °C (+140 °F).</td>
</tr>
</tbody>
</table>
Chapter 9

Technical Specifications

The following sections provide technical specification for the device.

TC55 Technical Specifications

The following table summarize the TC55’s intended operating environment and technical hardware specifications.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Height: 137 mm (5.4 in.)</td>
</tr>
<tr>
<td></td>
<td>Width: 69 mm (2.7 in.)</td>
</tr>
<tr>
<td></td>
<td>Depth (with 2,940 mAh battery): 15.9 mm (0.63 in.)</td>
</tr>
<tr>
<td></td>
<td>Depth (with 4,410 mAh battery): 22.5 mm (0.89 in.)</td>
</tr>
<tr>
<td>Weight</td>
<td>TC55 with linear imager 2,940 mAh battery: 218 g (7.7 oz)</td>
</tr>
<tr>
<td></td>
<td>TC55 with linear imager 4,410 mAh battery: 254 g (9.0 oz)</td>
</tr>
<tr>
<td></td>
<td>TC55 with 2D imager 2,940 mAh battery: 222 g (7.8 oz)</td>
</tr>
<tr>
<td></td>
<td>TC55 with 2D imager 4,410 mAh battery: 258 g (9.1 oz)</td>
</tr>
<tr>
<td>Display</td>
<td>4.3 in. color WVGA; 800 x 480, 700 NITs</td>
</tr>
<tr>
<td>Touch Panel</td>
<td>Gorilla Glass® 2</td>
</tr>
<tr>
<td>Backlight</td>
<td>LED backlight</td>
</tr>
<tr>
<td>Battery Pack</td>
<td>Rechargeable Lithium Ion 3.7V, 2,940 or 4,410 mAh Smart battery</td>
</tr>
<tr>
<td>Expansion Slot</td>
<td>User accessible microSD slot, up to 32 GB.</td>
</tr>
<tr>
<td>Connectivity</td>
<td>USB 2.0 (Host/Client)</td>
</tr>
<tr>
<td>Notification</td>
<td>LED, audio and vibration.</td>
</tr>
<tr>
<td>Keypad Options</td>
<td>On-screen keyboard and 4 capacitive front panel keys.</td>
</tr>
<tr>
<td>Audio</td>
<td>Speakers, dual noise cancelling microphones and headset connector (3.5 mm jack with microphone). Three speakers, including two front facing speakers; dual noise-cancelling microphones; high-quality speaker phone; 3.5 mm headset jack and Bluetooth wireless headset support.</td>
</tr>
</tbody>
</table>

*Table continued...*
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td>1.5 GHz Dual Core Processor</td>
</tr>
<tr>
<td>Operating System</td>
<td>Professional Configuration – Android-based, Android Open-Source Project (AOSP) 4.1.2 or 4.4.3</td>
</tr>
<tr>
<td></td>
<td>Standard Configuration – Android-based, Android Open-Source Project (AOSP) 4.1.2 with Google Mobile Services.</td>
</tr>
<tr>
<td>Memory</td>
<td>1 GB RAM, 8 GB Flash</td>
</tr>
<tr>
<td>Output Power (USB)</td>
<td>300 mA</td>
</tr>
<tr>
<td><strong>User Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10 °C to 50 °C (14 °F to 122 °F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 °C to 70 °C (-40 °F to 158 °F)</td>
</tr>
<tr>
<td>Charging Temperature</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>5% to 85% RH non-condensing</td>
</tr>
<tr>
<td>Drop Specification</td>
<td>Multiple 1.2 m (4 ft.) drops per MIL-STD 810G specifications.</td>
</tr>
<tr>
<td></td>
<td>With protective boot: Multiple 1.2 m (4 ft.) drops to concrete across the operating temperature range.</td>
</tr>
<tr>
<td>Tumble Specification</td>
<td>150 0.5 m (1.5 ft.) tumbles (300 drops);</td>
</tr>
<tr>
<td></td>
<td>With protective boot: 300 0.5 m (1.5 ft.) tumbles (600 drops); per applicable IEC tumble specifications.</td>
</tr>
<tr>
<td>Sealing</td>
<td>IP67 per applicable IEC sealing specifications.</td>
</tr>
<tr>
<td><strong>Wireless WAN Data and Voice Communications</strong></td>
<td></td>
</tr>
<tr>
<td>Wireless Wide Area Network (WWAN) radio</td>
<td>4G LTE, HSPA+, DC-HSPA, EDGE/GPRS/GSM</td>
</tr>
<tr>
<td>Frequency band</td>
<td>TC55AH:</td>
</tr>
<tr>
<td></td>
<td>GSM/EDGE: 850/900/1800/1900 MHz</td>
</tr>
<tr>
<td></td>
<td>WCDMA: FDD2, FDD4, FDD5, FDD17</td>
</tr>
<tr>
<td></td>
<td>LTE Americas: LTE Band 2, LTE Band 5, LTE Band 17</td>
</tr>
<tr>
<td></td>
<td>TC55BH:</td>
</tr>
<tr>
<td></td>
<td>GSM/EDGE: 850/900/1800/1900 MHz</td>
</tr>
<tr>
<td></td>
<td>WCDMA: FDD1, FDD2, FDD5, FDD8</td>
</tr>
<tr>
<td></td>
<td>TC55CH:</td>
</tr>
<tr>
<td></td>
<td>CDMA/EVDO: 850/1900 MHz (BC0/BC1)</td>
</tr>
<tr>
<td></td>
<td>LTE: Band 13</td>
</tr>
<tr>
<td>GPS</td>
<td>Integrated, Autonomous, Assisted-GPS (A-GPS), GLONASS</td>
</tr>
<tr>
<td><strong>Wireless LAN Data Communications</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table continued...
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Local Area Network (WLAN) radio</td>
<td>IEEE® 802.11a/b/g/n with internal antenna</td>
</tr>
<tr>
<td>Data Rates Supported</td>
<td>802.11b: 1, 2, 5.5, 11 Mbps</td>
</tr>
<tr>
<td></td>
<td>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</td>
</tr>
<tr>
<td></td>
<td>802.11n: 6.5, 13, 19.5, 26, 39, 52, 58.5, 65 Mbps</td>
</tr>
<tr>
<td></td>
<td>Note that 802.11n data rates may be higher.</td>
</tr>
<tr>
<td>Operating Channels</td>
<td>Channel 36-165 (5180 – 5825 MHz), Channel 1-13 (2412-2472 MHz); actual operating channels/frequencies depend on regulatory rules and certification agency</td>
</tr>
<tr>
<td>Security</td>
<td>Security Modes: Legacy, WPA and WPA2</td>
</tr>
<tr>
<td></td>
<td>Encryption: WEP (40 and 128 bit), TKIP and AES</td>
</tr>
<tr>
<td></td>
<td>Authentication: TLS, TTLS (MS-CHAP), TTLS (MS-CHAP v2), TTLS (PAP), PEAP (MS-CHAP v2), PEAP (GTC).</td>
</tr>
<tr>
<td>Spreading Technique</td>
<td>Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM)</td>
</tr>
<tr>
<td>Wireless PAN Data and Voice Communications</td>
<td>Bluetooth</td>
</tr>
<tr>
<td></td>
<td>Class II, v 4.0; integrated antenna.</td>
</tr>
<tr>
<td>Data Capture</td>
<td>Linear Imager (SE-655)</td>
</tr>
<tr>
<td></td>
<td>Captures 1D bar codes.</td>
</tr>
<tr>
<td></td>
<td>Camera</td>
</tr>
<tr>
<td></td>
<td>For bar code scanning and image capture: 8 MP auto-focus camera; captures 1D and 2D bar codes, photographs, video, signatures and documents.</td>
</tr>
<tr>
<td></td>
<td>CS3070 Bluetooth Scanner (optional)</td>
</tr>
<tr>
<td></td>
<td>Captures 1D bar codes.</td>
</tr>
<tr>
<td></td>
<td>RS507 Hands-free Imager (optional)</td>
</tr>
<tr>
<td></td>
<td>Captures 1D and 2D bar codes.</td>
</tr>
<tr>
<td>Sensors</td>
<td>Motion Sensor</td>
</tr>
<tr>
<td></td>
<td>3-axis accelerometer that enables motion sensing applications for dynamic screen orientation and power management.</td>
</tr>
<tr>
<td></td>
<td>Ambient Light Sensor</td>
</tr>
<tr>
<td></td>
<td>Automatically adjusts required display backlight to maximize power efficiency.</td>
</tr>
<tr>
<td></td>
<td>Proximity Sensor</td>
</tr>
<tr>
<td></td>
<td>Automatically detects when the user places the handset against head during a phone call to disable display output and touch input.</td>
</tr>
<tr>
<td></td>
<td>Electronic Compass</td>
</tr>
<tr>
<td></td>
<td>Independent — does not depend on GPS.</td>
</tr>
<tr>
<td>Imager (SE655) Specifications</td>
<td>Scan Repetition Rate</td>
</tr>
<tr>
<td></td>
<td>Nominally 50 scans/second</td>
</tr>
<tr>
<td></td>
<td>Scan Angle</td>
</tr>
<tr>
<td></td>
<td>$53.3^\circ \pm 3^\circ$</td>
</tr>
<tr>
<td></td>
<td>Roll</td>
</tr>
<tr>
<td></td>
<td>$\pm 25^\circ$</td>
</tr>
<tr>
<td></td>
<td>Pitch Angle</td>
</tr>
<tr>
<td></td>
<td>$\pm 65^\circ$ from normal</td>
</tr>
<tr>
<td></td>
<td>Skew Tolerance</td>
</tr>
<tr>
<td></td>
<td>$\pm 50^\circ$ from normal</td>
</tr>
</tbody>
</table>

*Table continued...*
### Item Description

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Light</td>
<td>Fluorescent: 450 ft. candles (4845 lux)</td>
</tr>
<tr>
<td></td>
<td>High Efficiency Fluorescent: 450 ft. candles (4845 lux)</td>
</tr>
<tr>
<td></td>
<td>Incandescent: 450 ft. candles (4845 lux)</td>
</tr>
<tr>
<td></td>
<td>Mercury Vapor: 450 ft. candles (4845 lux)</td>
</tr>
<tr>
<td></td>
<td>Sodium Vapor: 450 ft. candles (4845 lux)</td>
</tr>
<tr>
<td></td>
<td>Sunlight: 900 ft. candles (9690 lux)</td>
</tr>
</tbody>
</table>

### Supported Symbologies

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2D (Camera)</td>
<td>Australian Postal, Aztec, Canadian Postal, Composite AB, Composite C, Data Matrix, Dutch Postal, Japanese Postal, Linked Aztec, Maxi Code, Micro PDF-417, microQR, PDF-417, QR Code, US Planet, UK Postal, US Postnet, USPS 4-state (US4CB)</td>
</tr>
</tbody>
</table>

### TC55 Decode Zone

#### SE655

The figure below shows the decode zone for the SE-655. Typical values appear. Table 7: SE-655 Decode Distances on page 127 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.
Figure 79: SE-655 Decode Zone

Note: Typical performance at 73.4°F (23°C) on high quality symbols.

![Depth of Field Diagram]

*Minimum distance determined by symbol length and scan angle

**SE-655 Decode Distances**

Table 7: SE-655 Decode Distances

<table>
<thead>
<tr>
<th>Symbol Density / Bar Code Type</th>
<th>Typical Working Ranges</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Near</td>
<td>Far</td>
</tr>
<tr>
<td>5.0 mil Code 128</td>
<td>2.75 in</td>
<td>8.25 in</td>
</tr>
<tr>
<td></td>
<td>7.00 cm</td>
<td>21.0 cm</td>
</tr>
<tr>
<td>5.0 mil Code 39</td>
<td>2.25 in</td>
<td>9.75 in</td>
</tr>
<tr>
<td></td>
<td>5.70 cm</td>
<td>24.8 cm</td>
</tr>
<tr>
<td>7.5 mil Code 39</td>
<td>1.5 in</td>
<td>12.75 in</td>
</tr>
<tr>
<td></td>
<td>3.80 cm</td>
<td>32.4 cm</td>
</tr>
</tbody>
</table>

*Table continued...*
<table>
<thead>
<tr>
<th>Symbol Density / Bar Code Type</th>
<th>Typical Working Ranges</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Near</td>
<td>Far</td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td>2.00 in</td>
<td>15.75 in</td>
<td></td>
</tr>
<tr>
<td>UPC-A</td>
<td>5.10 cm</td>
<td>40.0 cm</td>
<td></td>
</tr>
</tbody>
</table>

See Note 2

| 20 mil Code 39                | 1.50 in                | 24.0 in    |
|                               | 3.80 cm                | 61.0 cm    |

See Note 2

**Note:**
1. Distances measured from front edge of scan engine chassis.
2. Near distances are Field of View (FOV) limited.
3. Maximum allowable roll angle of symbols relative to the engine mounting base plane is +/- 3.0 degrees.

---

**TC55 Connector Pin-Outs**

**Headset Connector**

**Figure 80: Headset Connector**

![Headset Connector Diagram]

- Mono Headset
  - GND
  - SPKR
  - MIC
- Stereo Headphones
  - GND
  - SPKR (L)
  - SPRK (R)
- Stereo Headset
  - GND
  - SPKR (L)
  - SPKR (R)
  - MIC
Table 8: Headset Connector Pin-Outs

<table>
<thead>
<tr>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC</td>
<td>Microphone positive</td>
</tr>
<tr>
<td>SPKR</td>
<td>Speaker (mono)</td>
</tr>
<tr>
<td>SPKR (R)</td>
<td>Right Speaker</td>
</tr>
<tr>
<td>SPKR (L)</td>
<td>Left Speaker</td>
</tr>
<tr>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>

Power Connector

Figure 81: Power Connector

![Power Connector Image]

Table 9: Power Connector Pin-Outs

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5 VDC input power.</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
</tr>
</tbody>
</table>

USB Connector

Figure 82: micro-B USB Connector

![USB Connector Image]

Table 10: micro-B USB Connector Pin-Outs

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+5 VDC</td>
</tr>
</tbody>
</table>

Table continued...
<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Data -</td>
</tr>
<tr>
<td>3</td>
<td>Data +</td>
</tr>
<tr>
<td>4</td>
<td>Permits distinction of host connection from slave</td>
</tr>
<tr>
<td>5</td>
<td>Signal ground</td>
</tr>
</tbody>
</table>

**Five-Slot Charge Only Cradle CRDUNIV-55-5000R Technical Specifications**

**Table 11: Five-Slot Charge Only Cradle Technical Specifications**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>Height: 90.1 mm (3.5 in.)</td>
</tr>
<tr>
<td></td>
<td>Width: 449.6 mm (17.7 in.)</td>
</tr>
<tr>
<td></td>
<td>Depth: 120.3 mm (4.7 in.)</td>
</tr>
<tr>
<td>Weight</td>
<td>1.31 kg (2.89 lbs.)</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>12 VDC</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>37.5 watts</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 °C to 50 °C (32 °F to 122 °F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 °C to 70 °C (-40 °F to 158 °F)</td>
</tr>
<tr>
<td>Charging Temperature</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>0% to 95% non-condensing</td>
</tr>
<tr>
<td>Drop</td>
<td>76.2 cm (30.0 in.) drops to vinyl tiled concrete at room temperature.</td>
</tr>
<tr>
<td>Electrostatic Discharge (ESD)</td>
<td>+/- 15 kV air</td>
</tr>
<tr>
<td></td>
<td>+/- 8 kV contact</td>
</tr>
</tbody>
</table>
# Chapter 10

## Keypad Remap Strings

### Table 12: Remap Key Event/Scancodes

<table>
<thead>
<tr>
<th>Key Event</th>
<th>Scancode</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOFT_LEFT</td>
<td>105</td>
</tr>
<tr>
<td>SOFT_RIGHT</td>
<td>106</td>
</tr>
<tr>
<td>HOME</td>
<td>102</td>
</tr>
<tr>
<td>BACK</td>
<td>158</td>
</tr>
<tr>
<td>CALL</td>
<td>231</td>
</tr>
<tr>
<td>ENDCALL</td>
<td>107</td>
</tr>
<tr>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>STAR227</td>
<td>227</td>
</tr>
<tr>
<td>POUND</td>
<td>228</td>
</tr>
<tr>
<td>DPAD_UP</td>
<td>103</td>
</tr>
<tr>
<td>DPAD_DOWN</td>
<td>108</td>
</tr>
<tr>
<td>DPAD_LEFT</td>
<td>105</td>
</tr>
<tr>
<td>DPAD_RIGHT</td>
<td>106</td>
</tr>
<tr>
<td>DPAD_CENTER</td>
<td>232</td>
</tr>
<tr>
<td>VOLUME_UP</td>
<td>115</td>
</tr>
<tr>
<td>VOLUME_DOWN</td>
<td>114</td>
</tr>
<tr>
<td>CAMERA</td>
<td>212</td>
</tr>
</tbody>
</table>

*Table continued...*
<table>
<thead>
<tr>
<th>Key Event</th>
<th>Scancode</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>48</td>
</tr>
<tr>
<td>C</td>
<td>46</td>
</tr>
<tr>
<td>D</td>
<td>32</td>
</tr>
<tr>
<td>E</td>
<td>18</td>
</tr>
<tr>
<td>F</td>
<td>33</td>
</tr>
<tr>
<td>G</td>
<td>34</td>
</tr>
<tr>
<td>H</td>
<td>35</td>
</tr>
<tr>
<td>I</td>
<td>23</td>
</tr>
<tr>
<td>J</td>
<td>36</td>
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