

# CS3000 SERIES SCANNER PRODUCT REFERENCE GUIDE





# **CS3000 SERIES SCANNER PRODUCT REFERENCE GUIDE**

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Revision A

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## Warranty

For the complete Motorola hardware product warranty statement, go to:  
<http://www.motorolasolutions.com/warranty>.

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## Revision History

Changes to the original manual are listed below:

Change	Date	Description
-01 Rev A	07/2010	Initial release
-02 Rev A	10/2010	Added Motorola Droid Bluetooth connection example.
-03 Rev A	2/2012	Replaced specifications with link to specification/data sheet, added battery replacement note, add information for connecting to an iPad.
-04 Rev A	2/2013	Updated out of range behavior description.



# TABLE OF CONTENTS

## About This Guide

Introduction .....	xi
Product Reference Guide – Start Here .....	xi
Chapter Descriptions .....	xi
Notational Conventions .....	xii
Related Documents .....	xiii
Service Information .....	xiii

## Chapter 1: Getting Started

Introduction .....	1-1
Unpacking the Scanner .....	1-2
The Cradle .....	1-2
Connecting the Cradle .....	1-2
Charging the Scanner Battery .....	1-3
Charging via USB Host Cable .....	1-3
Charging via Charging Cradle .....	1-4
Scanner Charging LED .....	1-5
Connecting to the Host Computer .....	1-5
Batch Connection .....	1-5
Bluetooth Connection: Development Options .....	1-5
Bluetooth Connection Examples .....	1-6
Numeric Bar Codes for PIN Entry .....	1-24
Configuring the Scanner .....	1-25
Staging Multiple Scanners .....	1-25
Editing the Configuration File .....	1-26

**Chapter 2: Scanning**

Introduction .....	2-1
Scanning .....	2-1
Deleting Bar Codes .....	2-2
Transmitting Bar Code Data to Host .....	2-2
Transferring Data from a Batch Scanner .....	2-2
Transferring Data from an RF Scanner .....	2-2
User Interface Definitions .....	2-3
LED Indications .....	2-3
Beeper Indications .....	2-5

**Chapter 3: User Preferences**

Introduction .....	3-1
Scanning Sequence Examples .....	3-1
Errors While Scanning .....	3-1
User Preferences Default Parameters .....	3-2
Reset .....	3-4
Reset Factory Defaults .....	3-4
Set Date and Time .....	3-5
Set Date .....	3-5
Set Time .....	3-5
Cancel Date and Time Setting .....	3-5
Numeric Bar Codes for Date and Time Settings .....	3-6
Clear Data .....	3-7
Beeper Settings .....	3-8
Beeper Volume .....	3-8
Beeper Tone .....	3-9
Mute Beeper .....	3-10
Scanner Options .....	3-11
Scan Angle .....	3-11
Transmit “No Read” Message .....	3-12
Bluetooth Options .....	3-13
Bluetooth Unpair .....	3-13
Bluetooth HID Profile .....	3-13
Bluetooth Serial Port Profile (SPP) .....	3-13
Disable All Symbolologies .....	3-14
Linear Code Type Security Level .....	3-15
Bi-directional Redundancy .....	3-16
Data Options .....	3-17
Transmit Code ID Character .....	3-17
Prefix/Suffix Values .....	3-18
Scan Data Transmission Format .....	3-19
Send Versions .....	3-21
Firmware Version .....	3-21
Bluetooth Version .....	3-21
Scan Engine Version .....	3-21
Save Configuration .....	3-22



**Chapter 4: Symbolologies**

Introduction .....	4-1
Scanning Sequence Examples .....	4-1
Errors While Scanning .....	4-1
Symbology Default Parameters .....	4-2
UPC/EAN .....	4-5
Enable/Disable UPC-A .....	4-5
Enable/Disable UPC-E .....	4-5
Enable/Disable UPC-E1 .....	4-6
Enable/Disable EAN-8 .....	4-6
Enable/Disable EAN-13 .....	4-7
Enable/Disable Bookland EAN .....	4-7
Decode UPC/EAN Supplementals .....	4-8
User-Programmable Supplementals .....	4-12
Decode UPC/EAN Supplemental Redundancy .....	4-12
Transmit UPC-A Check Digit .....	4-13
Transmit UPC-E Check Digit .....	4-13
Transmit UPC-E1 Check Digit .....	4-14
UPC-A Preamble .....	4-14
UPC-E Preamble .....	4-15
UPC-E1 Preamble .....	4-16
Convert UPC-E to UPC-A .....	4-17
Convert UPC-E1 to UPC-A .....	4-17
EAN Zero Extend .....	4-18
Bookland ISBN Format .....	4-19
UPC/EAN Security Level .....	4-20
UCC Coupon Extended Code .....	4-21
Code 128 .....	4-21
Enable/Disable Code 128 .....	4-21
Enable/Disable GS1-128 (formerly UCC/EAN-128) .....	4-22
Enable/Disable ISBT 128 .....	4-22
Lengths for Code 128 .....	4-22
Code 39 .....	4-23
Enable/Disable Code 39 .....	4-23
Enable/Disable Trioptic Code 39 .....	4-23
Convert Code 39 to Code 32 (Italian Pharma Code) .....	4-24
Code 32 Prefix .....	4-24
Set Lengths for Code 39 .....	4-25
Code 39 Check Digit Verification .....	4-26
Transmit Code 39 Check Digit .....	4-26
Enable/Disable Code 39 Full ASCII .....	4-27
Code 93 .....	4-28
Enable/Disable Code 93 .....	4-28
Set Lengths for Code 93 .....	4-28
Code 11 .....	4-30
Enable/Disable Code 11 .....	4-30
Set Lengths for Code 11 .....	4-30
Code 11 Check Digit Verification .....	4-32
Transmit Code 11 Check Digits .....	4-33
Interleaved 2 of 5 .....	4-33
Enable/Disable Interleaved 2 of 5 .....	4-33

Set Lengths for Interleaved 2 of 5 .....	4-34
I 2 of 5 Check Digit Verification .....	4-36
Transmit I 2 of 5 Check Digit .....	4-36
Convert I 2 of 5 to EAN-13 .....	4-37
Discrete 2 of 5 .....	4-37
Enable/Disable Discrete 2 of 5 .....	4-37
Set Lengths for Discrete 2 of 5 .....	4-38
Chinese 2 of 5 .....	4-39
Enable/Disable Chinese 2 of 5 .....	4-39
Codabar .....	4-39
Enable/Disable Codabar .....	4-39
Set Lengths for Codabar .....	4-40
CLSI Editing .....	4-41
NOTIS Editing .....	4-41
MSI .....	4-42
Enable/Disable MSI .....	4-42
Set Lengths for MSI .....	4-43
MSI Check Digits .....	4-44
Transmit MSI Check Digit .....	4-44
MSI Check Digit Algorithm .....	4-45
GS1 DataBar .....	4-45
Enable/Disable GS1 DataBar-14 .....	4-45
Enable/Disable GS1 DataBar Limited .....	4-46
Enable/Disable GS1 DataBar Expanded .....	4-46
Convert GS1 DataBar to UPC/EAN .....	4-47
Numeric Bar Codes .....	4-48
Cancel .....	4-50

## Chapter 5: Maintenance and Technical Specifications

Introduction .....	5-1
Maintenance .....	5-1
Troubleshooting .....	5-2
Technical Specifications .....	5-3
Decode Zone .....	5-3

## Appendix A: Standard Default Parameters

## Appendix B: Programming Reference

Code Type IDs .....	B-1
Symbol Code Identifiers .....	B-2
AIM Code Identifiers .....	B-3
GS1-128 (formerly UCC/EAN-128) .....	B-6
Setting Prefixes and Suffixes .....	B-7

**Appendix C: Sample Bar Codes**

UPC-A .....	C-1
UPC-E .....	C-1
UPC-E1 .....	C-2
EAN-13 .....	C-2
EAN-8 .....	C-2
Code 39 .....	C-2
Trioptic Code 39 .....	C-3
Code 93 .....	C-3
Code 11 .....	C-3
Codabar .....	C-4
MSI .....	C-4
Interleaved 2 of 5 .....	C-4

**Index**



# ABOUT THIS GUIDE

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## Introduction

The *CS3000 Series Scanner Product Reference Guide* provides general instructions for setting up, operating, maintaining, and troubleshooting the scanner. The CS3000 series scanner is available in the following configurations:

- CS3000 - USB (batch), 0.5 GB Flash
- CS3070 - USB (batch) and Bluetooth, 0.5 GB Flash

Each scanner includes a USB host cable. A charging cradle is also available for mounting, charging, and host connection.

## Product Reference Guide – Start Here

Go to the last page of this electronic manual and print it out. This is the Quick Start Instructions. This single page provides links within the document to technical support for 99% of all customer questions.

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## Chapter Descriptions

Topics covered in this guide are as follows:

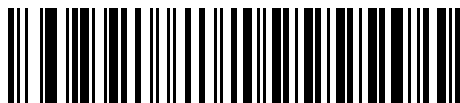
- [Chapter 1, Getting Started](#) provides a product overview and describes how to charge, connect, and configure the scanner.
- [Chapter 2, Scanning](#) provides instructions for how to scan bar codes and send the data to a host, as well as beeper and LED definitions.
- [Chapter 3, User Preferences](#) describes each user preference feature and provides the programming bar codes for selecting these features for the scanner. It also includes wireless communication parameters and commonly used bar codes to customize how data is transmitted to the host device.
- [Chapter 4, Symbolologies](#) describes all symbology features and provides the programming bar codes for selecting these features.
- [Chapter 5, Maintenance and Technical Specifications](#) provides information on how to care for the scanner, troubleshooting, and technical specifications.

- [Appendix A, Standard Default Parameters](#) provides a table of all host devices and miscellaneous scanner defaults.
- [Appendix B, Programming Reference](#) provides a table of AIM code identifiers, ASCII character conversions, and keyboard maps.
- [Appendix C, Sample Bar Codes](#) includes sample bar codes.

## 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
- **Bold** text is used to highlight the following:
  - Key names on a keypad
  - Button names on a screen or window.
- bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.
- Throughout the programming bar code menus, asterisks (\*) are used to denote default parameter settings.



\* Indicates Default — \* **Baud Rate 9600** — Feature/Option



**NOTE** This symbol indicates something of special interest or importance to the reader. Failure to read the note will not result in physical harm to the reader, equipment or data.



**CAUTION** This symbol indicates that if this information is ignored, the possibility of data or material damage may occur.



**WARNING!** This symbol indicates that if this information is ignored the possibility that serious personal injury may occur.

---

## Related Documents

- *CS3000 Series Scanner Quick Reference Guide* (p/n 72-136598-xx) provides general information to help the user get started with the scanner, including basic setup and operation instructions.

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

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## Service Information

If you have a problem using the equipment, contact your facility's technical or systems support. If there is a problem with the equipment, they will contact the Motorola Solutions Global Customer Support Center at: <http://www.motorolasolutions.com/support>.

When contacting Motorola Solutions support, please have the following information available:

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

Motorola responds to calls by e-mail, telephone or fax within the time limits set forth in service agreements.

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

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

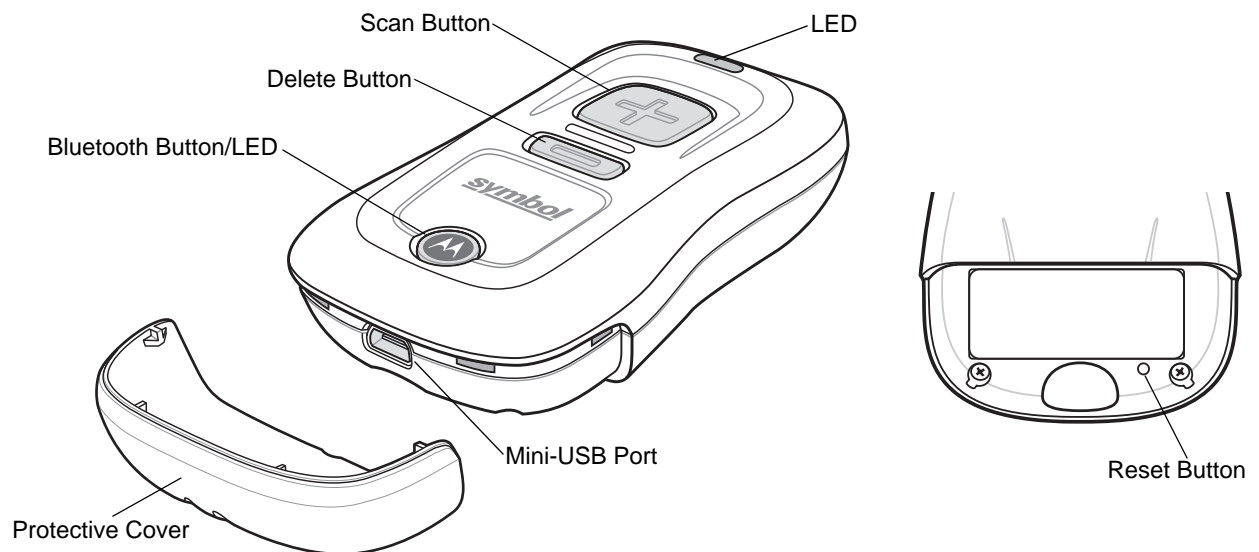




# CHAPTER 1 GETTING STARTED

## Introduction

The CS3000 Series Scanner captures and stores bar codes for a variety of uses, and transmits bar code data to a host via USB connection or Bluetooth.



**Figure 1-1** CS3000 Series Scanner

This scanner supports the following host interfaces:

- USB - The scanner connects to a USB host as a removable storage device, via a cradle or USB cable.
- Bluetooth - The scanner supports Bluetooth HID connection to a host (the default) where the scanner emulates a keyboard, as well as Serial Port Profile (SPP) connection where the scanner behaves as if there is a serial connection.

---

## Unpacking the Scanner

Remove the scanner from its packing and inspect it for damage. If the scanner was damaged in transit, contact Motorola Solutions support. See [page xiii](#) for contact information. **KEEP THE PACKING.** It is the approved shipping container and should be used if the equipment ever needs to be returned for servicing.

---

## The Cradle

The cradle sits on a desktop and serves as a stand, charger, and USB communication device for the CS3000 series scanner. The cradle does not require a separate power supply to charge the scanner.

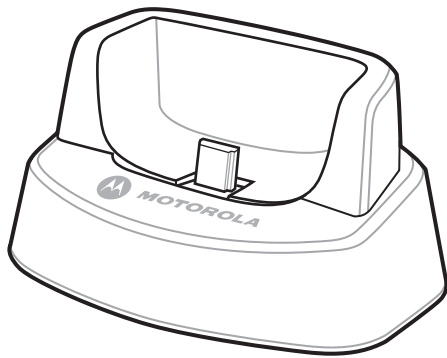


Figure 1-2 Cradle

## Connecting the Cradle

Insert the cradle's interface cable into a USB port on the host.

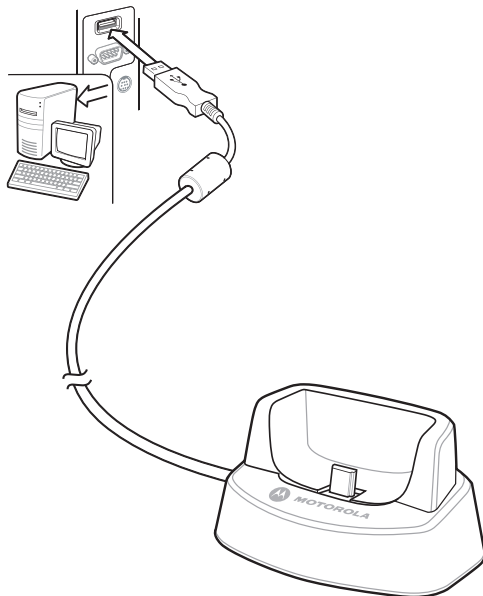


Figure 1-3 Connecting the Cables to the Cradle

## Charging the Scanner Battery

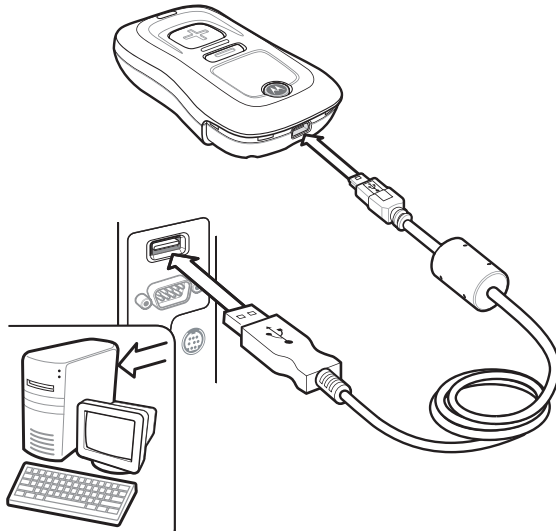
To charge the CS3000 series scanner, connect it to a host PC via the USB host cable or charging cradle. No power supply is necessary. Charge time is approximately three hours for a fully discharged battery.

✓ **NOTE** To check the battery charge status, hold the scan (+) button for 15 seconds. See [Battery charge status](#) in [Table 2-1 on page 2-3](#).

✓ **NOTE** An authorized Motorola Solutions repair facility can replace the CS3000 battery. Changing the battery does not affect bar code data which is stored in non-volatile memory, however the date and time is lost upon changing the battery or if the battery completely loses charge.

### Charging via USB Host Cable

1. Insert the mini-USB connector on the host cable in the interface port on the scanner.
2. Connect the other end of the host cable to a USB port on the host PC.

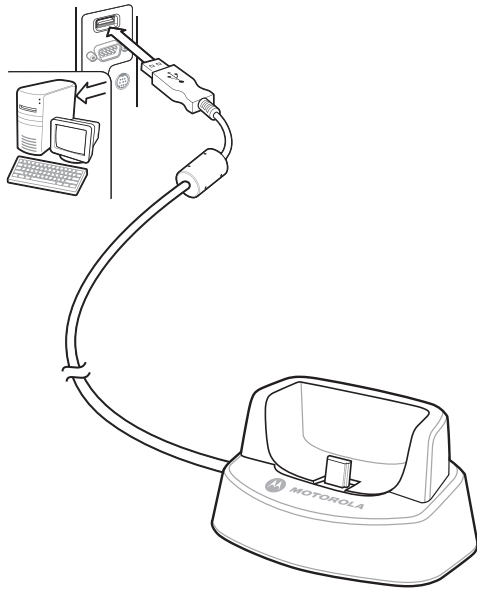


**Figure 1-4** Connecting Scanner to Host PC

The scanner begins charging. A complete charge of a fully discharged battery takes approximately three hours. Charge within the recommended temperature of 32° to 104° F (0° to 40° C).

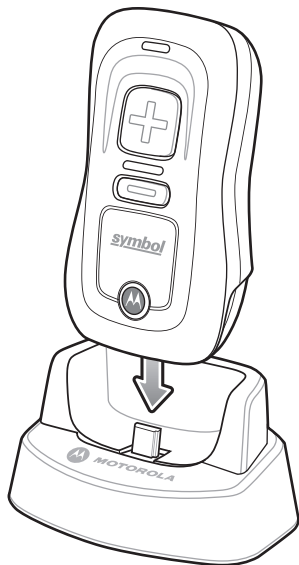
## Charging via Charging Cradle

1. Insert the cradle's USB connector into a USB port on the host PC.



**Figure 1-5** *Connecting Cradle to Host PC*

2. Remove the protective cover from the scanner.
3. Place the scanner in the cradle, ensuring the mini-USB connector in the cradle inserts into the interface port on the scanner.



**Figure 1-6** *Inserting Scanner in Cradle*

The scanner begins charging. A complete charge of a fully discharged battery takes approximately three hours. Charge within the recommended temperature of 32° to 104° F (0° to 40° C).

## Scanner Charging LED

The scanner's LED indicates charging activity (see [Table 2-1 on page 2-3](#)). The amber LED blinks slowly during charging. The scanner's LED turns solid green when the battery is fully charged.

---

## Connecting to the Host Computer

### Batch Connection

See [Charging the Scanner Battery on page 1-3](#) for instructions on connecting the scanner to a host PC via USB.



**NOTE** To enter batch scanning mode, the scanner cannot be paired to a Bluetooth host (applies to CS3070 model only).

### Bluetooth Connection: Development Options

#### Serial Port Profile

This Bluetooth profile emulates a serial cable to provide a simply implemented wireless replacement for existing RS-232 based serial communications applications, including familiar control signals. It is the preferred communication profile implementation because accidental key strokes from the keyboard or touch screen on the host are not entered into the bar code data stream.

#### Human Interface Device Emulation

This Bluetooth profile is a lightweight wrapper of the Human Interface Device protocol defined for USB. Data transmitted from the Bluetooth scanner appears as keyboard entries to the Bluetooth host (Smartphone, PC, etc).



**NOTE** Wedge data appears within whichever application has input focus.

## Bluetooth Connection Examples

This section provides the following connection examples:

- [Motorola Droid X HID Pairing Example](#)
- [PC HID Pairing Example on page 1-7](#)
- [PC SPP Pairing Example on page 1-10](#)
- [Windows Mobile Device \(Motorola ES400\) HID Pairing Example on page 1-13](#)
- [Windows Mobile Device \(Motorola ES400\) SPP Pairing Example on page 1-17](#)
- [iPad Pairing Example on page 1-21](#)

### Overview

Pairing the CS3070 with a host device typically requires entering a pairing PIN on both the CS3070 and the host device. To enter the PIN on the CS3070, use the [Numeric Bar Codes for PIN Entry on page 1-24](#). For the host device, use the data entry method required for that device to enter the PIN.

### Motorola Droid X HID Pairing Example

For CS3070 scanners, to pair to a Motorola Droid X via HID:

1. Press the scan button (+) to wake the scanner.
2. Press and hold the Bluetooth button (round button with Motorola logo) for five seconds. The scanner beeps and the Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the host.



**NOTE** HID is the default profile for the CS3070. If this was changed, scan [Bluetooth HID Profile on page 3-13](#).

3. On the Droid X, press the Settings button (bottom left hard button).
4. Tap **Settings** from the list of options that appears.
5. Tap **Wireless & networks**.
6. Tap **Bluetooth** to enable Bluetooth.
7. Tap the **Bluetooth settings** option.
8. Tap **Scan for devices**. The CS3070 appears in the **Bluetooth devices** list, indicated by its model name and serial number.
9. Select the CS3070 from the list. A window prompts for the PIN.
10. Tap the text box to open the soft keyboard. Enter the PIN using the keyboard and tap **Ok**.
11. With the CS3070, scan the PIN using the [Numeric Bar Codes for PIN Entry on page 1-24](#) and scan **Enter**. The scanner beeps to indicate it has paired with the Droid, and the Droid displays **Connected to hid** below the CS3070 device name.

To display scanned data on the Droid:

1. Tap and hold the screen to display the **Add to Home screen** menu.
2. Select **Motorola widgets**.
3. Scroll down the menu and select **Sticky Note**.

4. Tap **Sticky Note** to display the text entry screen.
5. Tap in the text entry field and scan a bar code. The bar code contents appear in the text entry field.

### PC HID Pairing Example

For CS3070 scanners, to pair to a Bluetooth-enabled PC or laptop via HID:

✓ **NOTE** If the host does not support Bluetooth communication, a third-party Bluetooth adapter is required.

1. Press the scan button (+) to wake the scanner.
2. Press and hold the Bluetooth button (round button with Motorola logo) for five seconds. The scanner beeps and the Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the host.

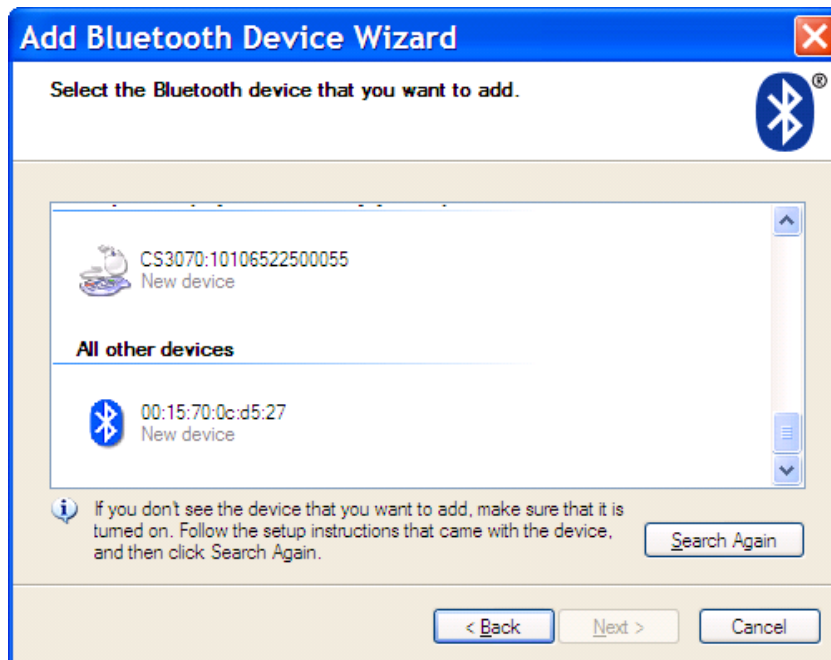
✓ **NOTE** HID is the default profile for the CS3070. If this was changed, scan [Bluetooth HID Profile on page 3-13](#).

3. On the host PC, launch the third party Bluetooth pairing application. Following is a sample window of such an application.



**Figure 1-7** Sample Bluetooth Application Window

4. Place the application into discover Bluetooth device mode (in this example, select the check box), and click **Next**.



**Figure 1-8** Sample Device Discovery Window

5. Select the CS3070 device from the discovered device list. The Bluetooth application may prompt you to scan a passkey it generated, or for you to create and then scan a passkey (PIN).



**Figure 1-9** Sample Passkey Option Window

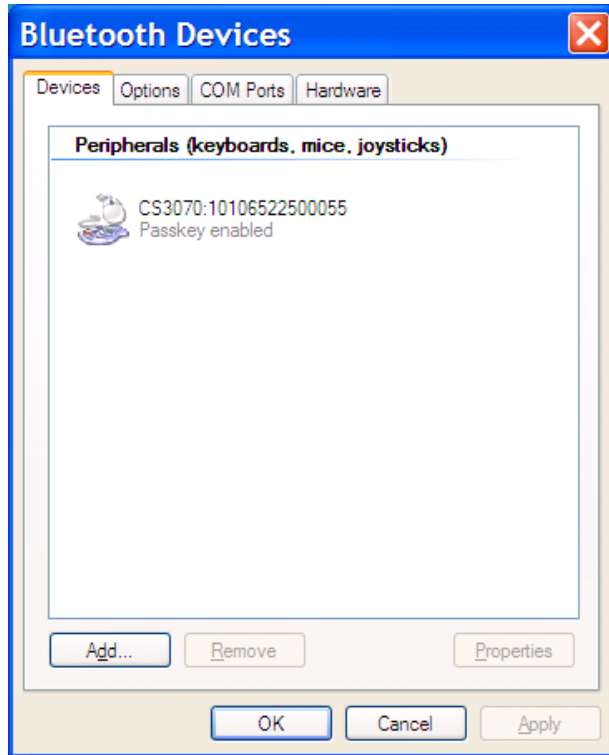


6. Select an option, then click **Next**:
  - If you select **Choose a passkey for me**, the host generates and displays a passkey.
  - If you select **Use the passkey found in the documentation**, enter the default **1234**.
  - If you select **Let me choose my own passkey**, enter any passkey.
7. Scan [Numeric Bar Codes for PIN Entry on page 1-24](#) corresponding to the passkey, then scan the **Enter** bar code.



**Figure 1-10** Sample Bluetooth Pairing Completion Window

8. Click **Finish** to complete the pairing. The device appears in the **Bluetooth Devices** window.



**Figure 1-11** Bluetooth Devices Window

9. Select the device, then click **Add...** The CS3070 issues a two-tone beep and the Bluetooth button blinks slowly to indicate that the scanner paired with the host.

✓ **NOTE** Bluetooth pairing suspends temporarily while charging via a USB cable. Disconnecting the cable automatically re-establishes the Bluetooth pairing.

### PC SPP Pairing Example

For CS3070 scanners, to pair to a Bluetooth-enabled PC or laptop via SPP:

✓ **NOTE** If the host does not support Bluetooth communication, a third-party Bluetooth adapter is required.

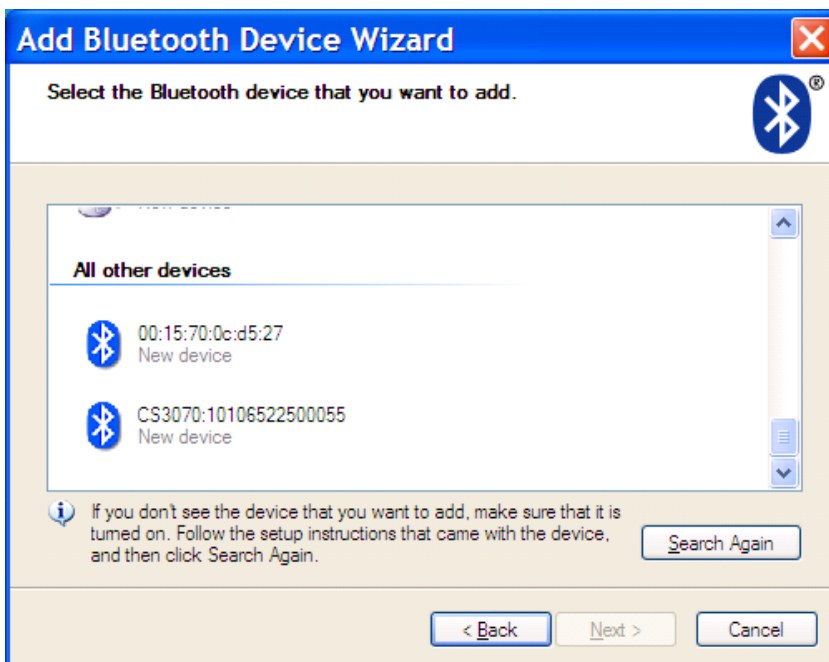
1. Press the scan button (+) to wake the scanner.
2. Scan [Bluetooth Serial Port Profile \(SPP\) on page 3-13](#). The Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the host.

- On the host PC, launch the third party Bluetooth pairing application. Following is a sample window of such an application.



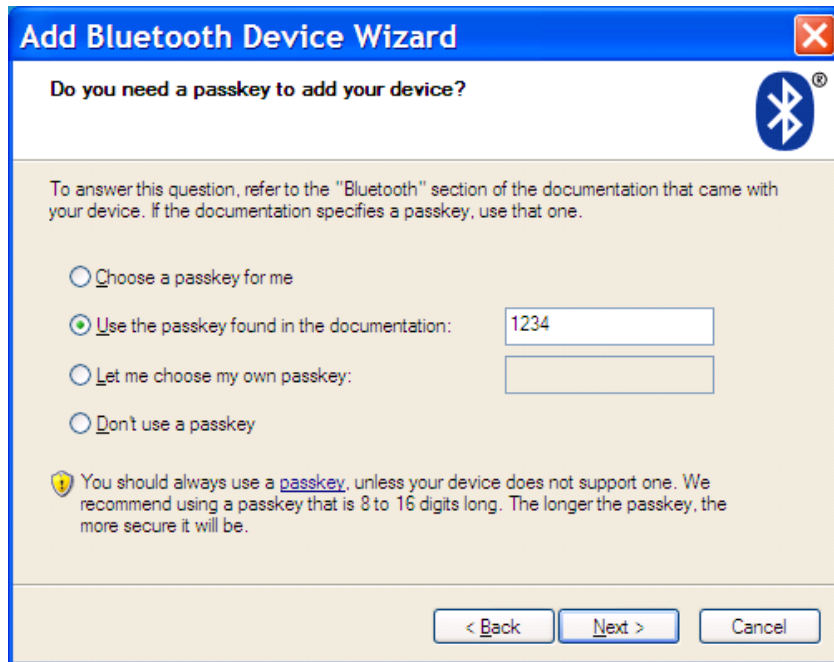
**Figure 1-12** Sample Bluetooth Application Window

- Place the application into discover Bluetooth device mode (in this example, select the check box), and click **Next**.



**Figure 1-13** Sample Device Discovery Window

5. Select the CS3070 device from the discovered device list. The Bluetooth application may prompt you to scan a passkey it generated, or for you to create and then scan a passkey (PIN).



**Figure 1-14** Sample Passkey Option Window

6. For SPP, select **Use the passkey found in the documentation**, then enter the default passkey **1234** in the text box. Click **Next**.



**Figure 1-15** Sample Bluetooth Pairing Completion Window



**NOTE** For SPP, the host requires entering a PIN, but no PIN entry is required for the CS3070.

7. Click **Finish**. In order to complete the pairing, open a serial input application such as HyperTerminal. The CS3070 issues a two-tone beep and the Bluetooth button blinks slowly to indicate that the scanner paired with the host.

✓ **NOTE** Bluetooth pairing suspends temporarily while charging via a USB cable. Disconnecting the cable automatically re-establishes the Bluetooth pairing.

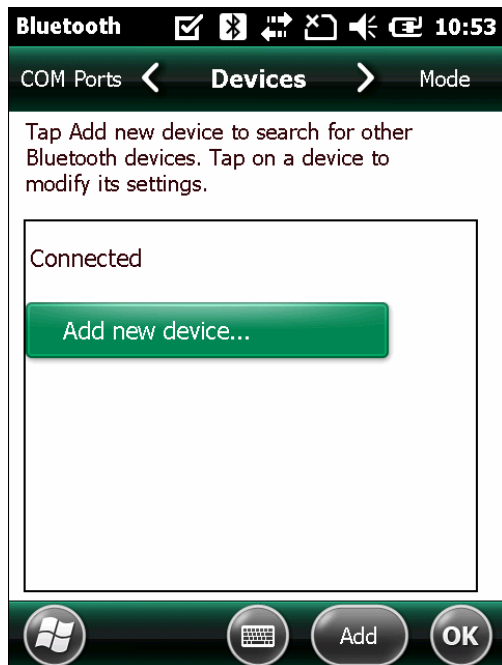
### Windows Mobile Device (Motorola ES400) HID Pairing Example

To pair to a Motorola ES400 Windows Mobile 6.5 device via HID:

1. Press the scan button (+) to wake the scanner.
2. Press and hold the Bluetooth button (round button with Motorola logo) for five seconds. The scanner beeps and the Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the Motorola ES400.

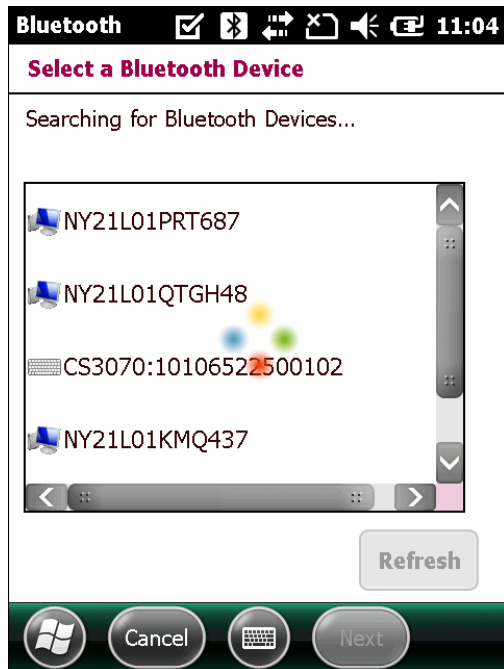
✓ **NOTE** HID is the default profile for the CS3070. If this was changed, scan [Bluetooth HID Profile on page 3-13](#).

3. On the ES400, launch the third party Bluetooth pairing application. Following is a sample window of such an application.



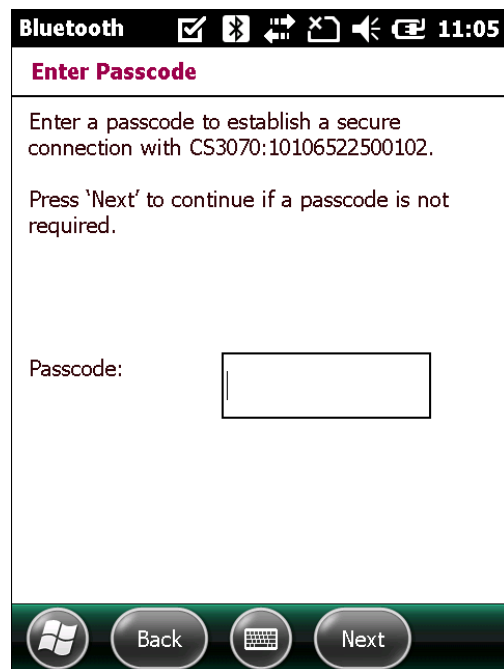
**Figure 1-16** Sample Bluetooth Application - Add Device Window

4. Tap **Add new device....** The ES400 searches for Bluetooth devices.



**Figure 1-17** Sample Device Discovery Window

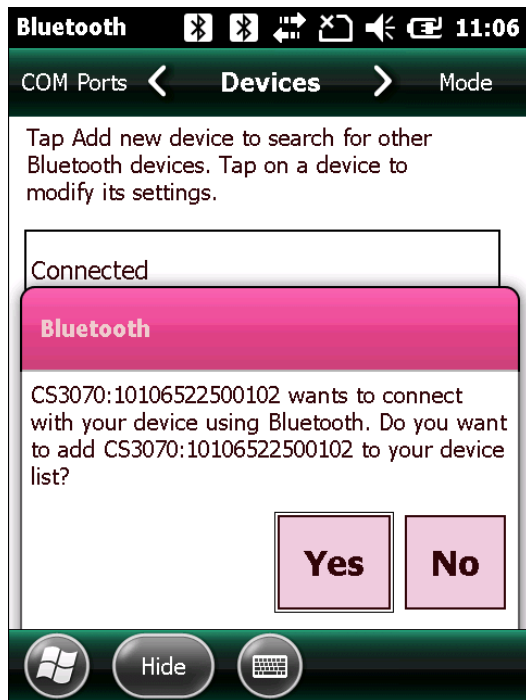
5. Select the CS3070 device from the discovered device list and tap **Next**. The device prompts you to enter a passcode.



**Figure 1-18** Enter Passcode Window

6. Tap **Next** if you don't require a passcode, or enter any passcode and then tap **Next**.

7. If you entered a passcode in Step 6, scan [Numeric Bar Codes for PIN Entry on page 1-24](#) corresponding to that code, then scan the **Enter** bar code.



**Figure 1-19** Connection Verification Window

8. Select **Yes** on the pop-up window to add the device to the device list.



**Figure 1-20** Discovered Devices List

9. Select the device and tap **Connect** to complete the pairing. The device appears in the **Connected** list, and the CS3070 issues a two-tone beep and the Bluetooth button blinks slowly to indicate that the scanner paired with the host.



**Figure 1-21** *Discovered Devices List*

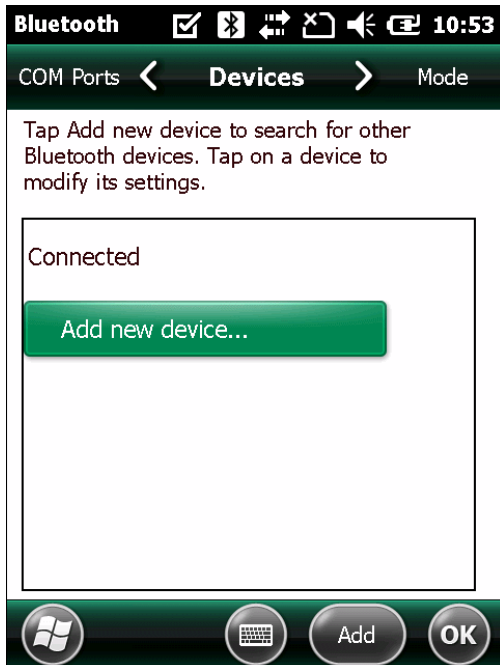
- ✓ **NOTE** Bluetooth pairing suspends temporarily while charging via a USB cable. Disconnecting the cable automatically re-establishes the Bluetooth pairing.



### Windows Mobile Device (Motorola ES400) SPP Pairing Example

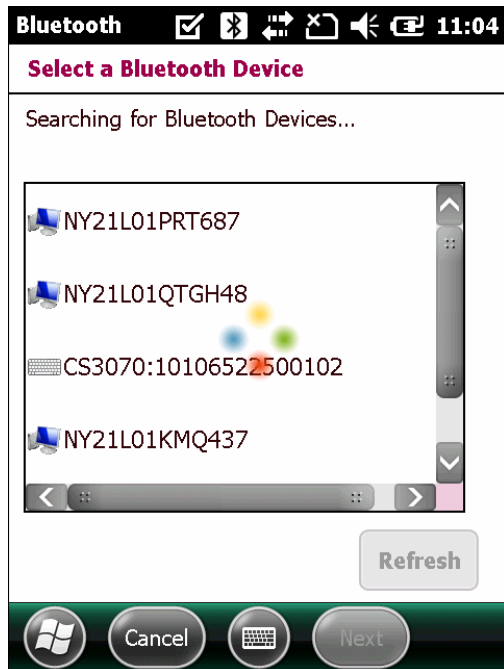
For CS3070 scanners, to pair to a Motorola ES400 Windows Mobile 6.5 device via SPP:

1. Press the scan button (+) to wake the scanner.
2. Scan [Bluetooth Serial Port Profile \(SPP\) on page 3-13](#). The Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the ES400.
3. On the ES400, launch the third party Bluetooth pairing application. Following is a sample window of such an application.



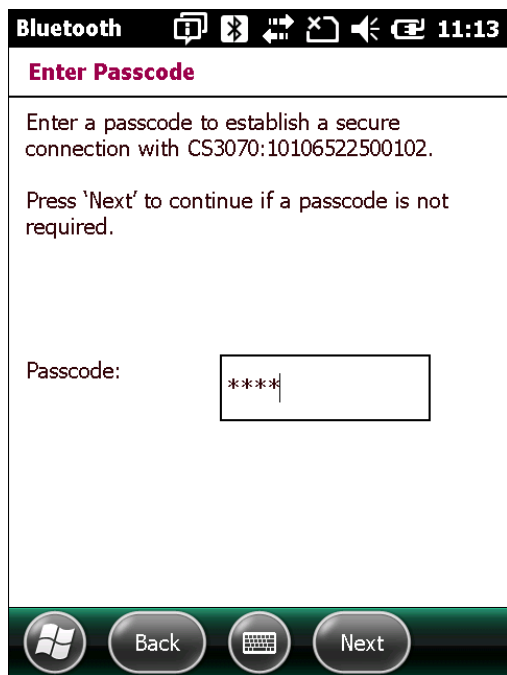
**Figure 1-22** Sample Bluetooth Application Window - Add Device Window

4. Tap **Add new device....** The ES400 searches for Bluetooth devices.



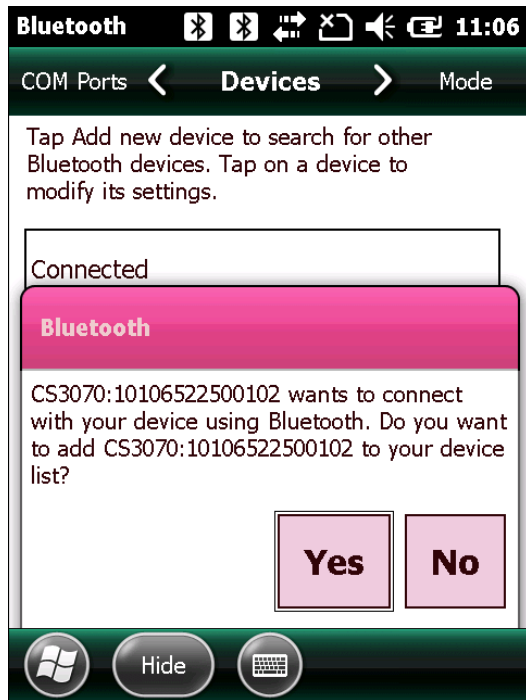
**Figure 1-23** Sample Device Discovery Window

5. Select the CS3070 device from the discovered device list and tap **Next**. The device prompts you to enter a passcode.



**Figure 1-24** Sample Enter Passcode Window

6. Enter the CS3070 default PIN (1234) and tap **Next**.



**Figure 1-25** Connection Verification Window



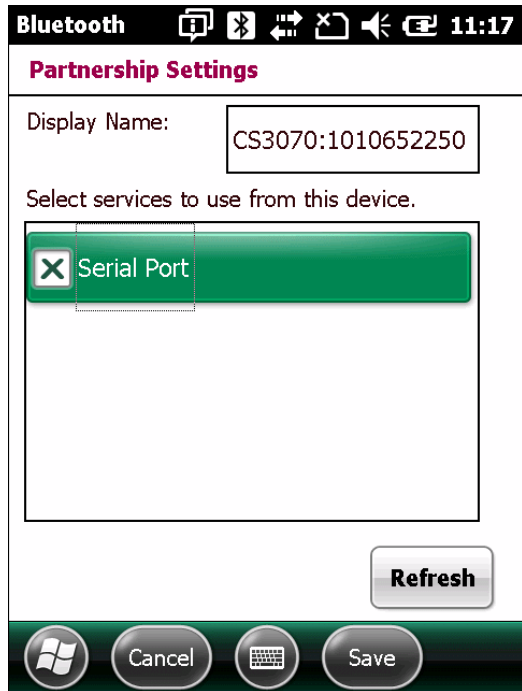
**NOTE** For SPP, on the host PC a PIN entry is required, but no PIN entry is required on the CS3070 device side.

7. Select **Yes** on the pop-up window to add the device to the device list.



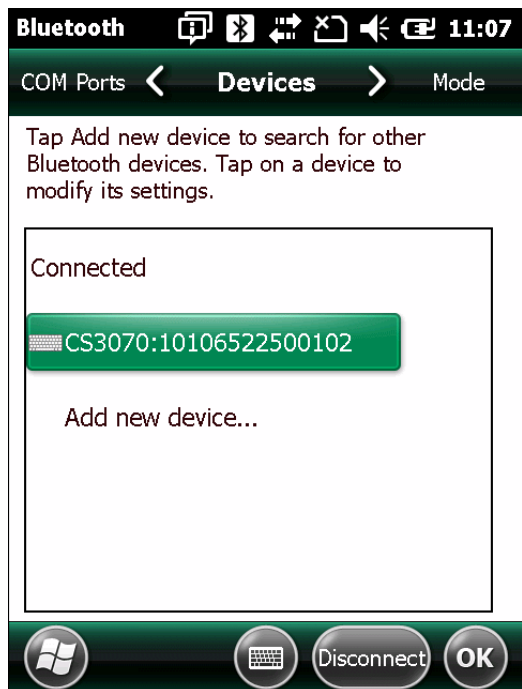
**Figure 1-26** Discovered Devices List

8. Select the device and tap **Connect**. The **Partnership Settings** window appears.



**Figure 1-27** Partnership Settings Window

9. Tap **Serial Port** and then **Save** to complete the pairing. The device appears in the **Connected** list, and the CS3070 issues a two-tone beep and the Bluetooth button blinks slowly to indicate that the scanner paired with the ES400.



**Figure 1-28** Discovered Devices List

✓ **NOTE** Bluetooth pairing suspends temporarily while charging via a USB cable. Disconnecting the cable automatically re-establishes the Bluetooth pairing.

## iPad Pairing Example

For CS3070 scanners, to pair to an iPad:

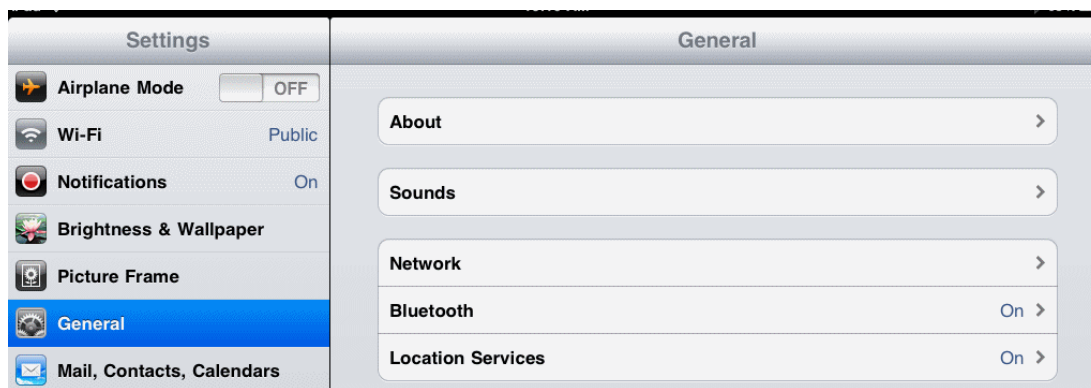
1. Press the scan button (+) to wake the scanner.
2. Press and hold the Bluetooth button (round button with Motorola logo) for five seconds. The scanner beeps and the Bluetooth button starts blinking quickly to indicate that the scanner is discoverable by the host.

✓ **NOTE** HID is the default profile for the CS3070. If this was changed, scan [Bluetooth HID Profile on page 3-13](#).

3. On the iPad, tap the **Settings** icon.



4. Tap **General** from the list of options that appears.



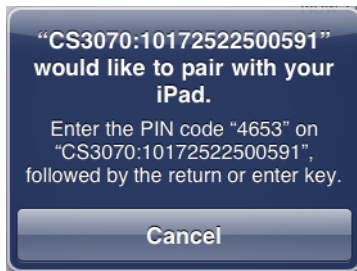
**Figure 1-29** General Menu

5. Tap **Bluetooth**. If Bluetooth is not enabled, swipe to enable it. The CS3070 appears in the **Devices** list, indicated by its model name and serial number.



**Figure 1-30** Bluetooth Devices

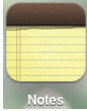
6. Select the CS3070 from the list. A window prompts for a PIN generated by the iPad.



**Figure 1-31** Pin Prompt

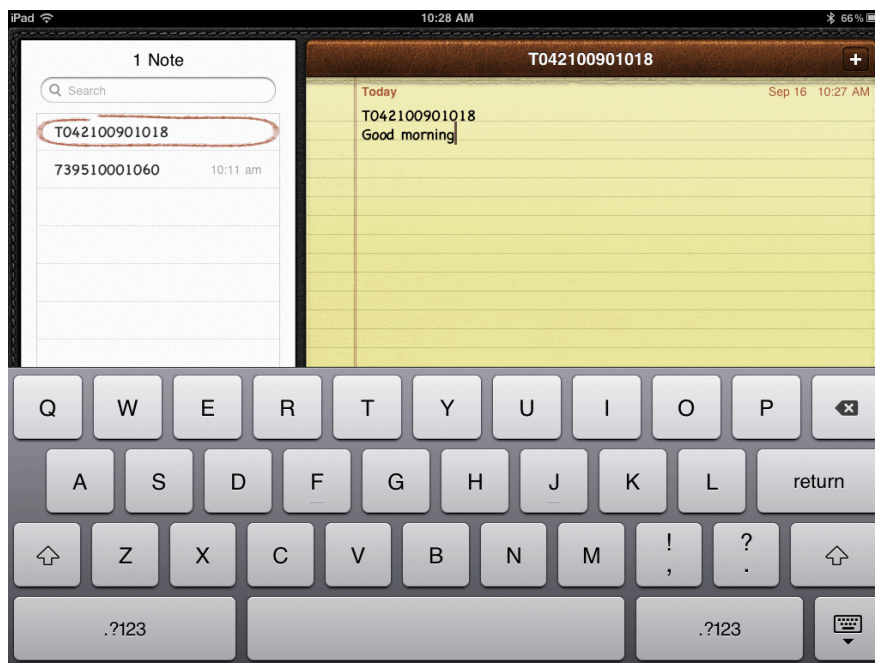
7. With the CS3070, scan the PIN using the [Numeric Bar Codes for PIN Entry on page 1-24](#) and scan **Enter**. The scanner beeps to indicate it has paired with the iPad, and the iPad displays **Connected** next to the CS3070 device name.

To display scanned data on the iPad:

1. Tap the **Notes** icon  to display the **Notes** text entry screen.

2. Scan a bar code. The bar code contents appear in the **Note**.

✓ **NOTE** To enter keypad data with the scanned data, press the delete key ( - ) on the CS3070 to invoke the keyboard on the iPad. Press this key again to toggle off the keyboard.



**Figure 1-32** Note with Keyboard

## Unpairing

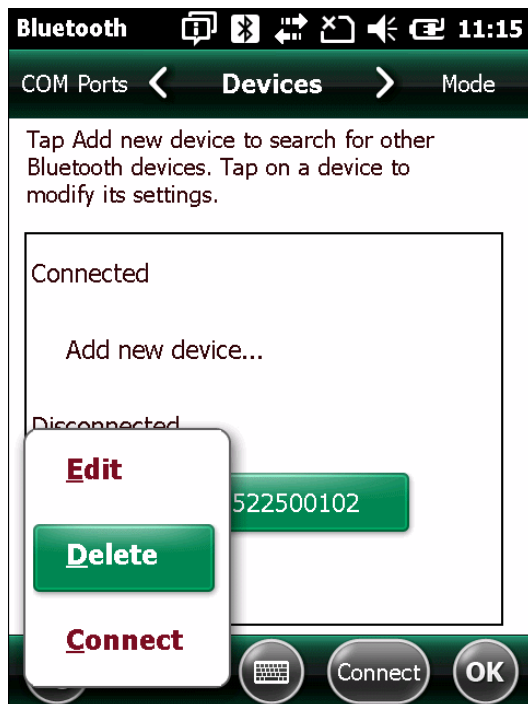
To temporarily unpair the scanner and host, press the Bluetooth button. This disables Bluetooth and the Bluetooth button stops blinking. Pressing the Bluetooth button again re-pairs the scanner with the host.

To permanently unpair the scanner and host, scan [Unpair on page 3-13](#). This allows the scanner to pair to a different host device.

✓ **NOTE** To enter batch scanning mode, the scanner cannot be paired to a Bluetooth host (applies to CS3070 model only).

## Deleting the CS3070 from the Device List

To delete the device from the discovered devices list, tap and hold the device and select **Delete**.



**Figure 1-33** *Deleting Device*

## Numeric Bar Codes for PIN Entry

Use the following bar codes for pin entry for Bluetooth connection.





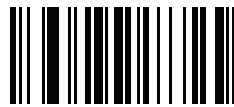
## Configuring the Scanner

To configure the scanner for initial use:

1. Scan the parameter bar codes in [Chapter 3, User Preferences](#) and [Chapter 4, Symbolologies](#) to customize scanner operation.
2. Scan the [Save Configuration bar code on page 3-22](#) (also provided below).



**NOTE** When scanning parameter bar codes, scan each bar code within two minutes of the previous one. The scanner enters sleep mode after two minutes of inactivity, and any parameter bar codes scanned and not saved are ignored.



**Save Configuration**

3. For additional customization, edit the **Config.ini** file on the scanner using the options in [Editing the Configuration File on page 1-26](#).
4. CS3070 only: When deploying the new configuration to multiple scanners, to ensure unique CS3070 serial numbers appear in the host's discovery window, edit the **Config.ini** file to either remove the **BTName** entry or set it to blank ("BTName=") to ensure that each scanner uses the default BT name of **CS3070:<serial number>**.

## Staging Multiple Scanners

After creating a **config.ini** file for one "golden" scanner with all desired settings, create a copy of the file from this scanner and copy it to other scanners via USB connection. Set the time and date on the "cloned" scanners by scanning bar codes from [Set Date and Time on page 3-5](#).



**NOTE** CS3070 only: When deploying the new configuration to multiple scanners, to ensure unique CS3070 serial numbers appear in the host's discovery window, edit the **Config.ini** file to either remove the **BTName** entry or set it to blank ("BTName=") to ensure that each scanner uses the default BT name of **CS3070:<serial number>**.

**NOTE** Before deploying the **Config.ini** file to multiple scanners, make the file read only to prevent users from overwriting the file when scanning **Save Configuration** or [Reset Factory Defaults on page 3-4](#).

## Editing the Configuration File

Use a text editor such as Notepad to set configuration values in the **Config.ini** editable text file in the **\Parameters** folder on the CS30XX. [Table 1-1](#) lists the programmable contents of the file.

✓ **NOTE** If you make errors while editing the **Config.ini** file, the file LOG.TXT is created in the **\Parameters** folder. Consult this log file to determine the errors and make corrections.

**Table 1-1** *Config.ini File Content*

Parameter	Values	Description	Default
BarcodeFile	String	In batch mode, the name of the batch file containing bar codes scanned.	BARCODES.TXT
BarcodeDB	String	Bar code database filename. If the database file exists scanned bar codes are checked against its content. If the bar code exists within the database, the scanner issues a positive beep, if not a negative beep. To engage this mode, create the BarcodeDB.txt file on the CS30XX. Note that if this mode is engaged, no bar code data is saved to the scanner.	DBASE.TXT
BTPin	String	Default SPP PIN.	1234
BTName	String	Bluetooth device name (address) used during discovery.	CS3070:<serial number>
BTProfile	HID SPP	Selected BT profile.	HID
Mute	On Off	Mute the beeper.	Off
Prefix	Character	Prefix character.	<none>
Suffix	Character	Suffix character.	0x0D (CR)
Separator	Character	Separator character.	','
DateFormat	MM/DD/YY DD/MM/YY MM/DD/YYYY DD/MM/YYYY	Date format for batch data. Set to enable <b>date stamp</b> . See <a href="#">Set Date on page 3-5</a> to set the date. Enter no value to disable the date stamp, for example: " <b>DateFormat =</b> "	MM/DD/YY (Enabled)
TimeFormat	12h 24h	Time format for batch data. Set to enable <b>time stamp</b> . See <a href="#">Set Time on page 3-5</a> to set the time. Enter no value to disable the time stamp, for example: " <b>TimeFormat =</b> "	24h (Enabled)

**Table 1-1** *Config.ini File Content (Continued)*

Parameter	Values	Description	Default
ScanParam	Variable	Any scan engine parameter. Multiple entries are allowed. Sent after reset or when engine is powered. For example: ScanParam=0xf0,0x00,0x01 ScanParam=0xee,0x01 ScanParam=0x38,0x00	<none>
Sleep	Integer	Time in seconds before the scanner enters sleep mode when no activity is detected.	120 (2 minutes)
BTSleep	Integer	Time in seconds before the scanner enters sleep mode while paired to another Bluetooth device when no activity is detected.	600 (10 minutes)
ButtonPlus	Enabled Disabled	Enable or disable the Plus button.	Enabled
ButtonMinus	Enabled Disabled	Enable or disable the Minus button.	Enabled
ButtonBT	Enabled Disabled	Enable or disable the BT button.	Enabled
WakeUpLED	Enabled Disabled	Enable or disable the wake-up LEDs.	Enabled
LEDBlue	Enabled Disabled	Enable or disable the blue LED for normal operation and wake up.	Enabled
LEDGreen	Enabled Disabled	Enable or disable the green LED for normal operation and wake up	Enabled
LEDRed	Enabled Disabled	Enable or disable the red LED for normal operation and wake up.	Enabled
LEDAmber	Enabled Disabled	Enable or disable the amber LED for normal operation and wake up.	Enabled
CodeID	Enabled Disabled	Enable or disable saving CodeID in the scanned bar codes file. See <a href="#">Code Type IDs on page B-1</a> .	Enabled
ScanLED	Enabled Disabled	Enable or disable the LEDs that illuminate while the laser scanner is active.	Enabled



# CHAPTER 2 SCANNING

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## Introduction

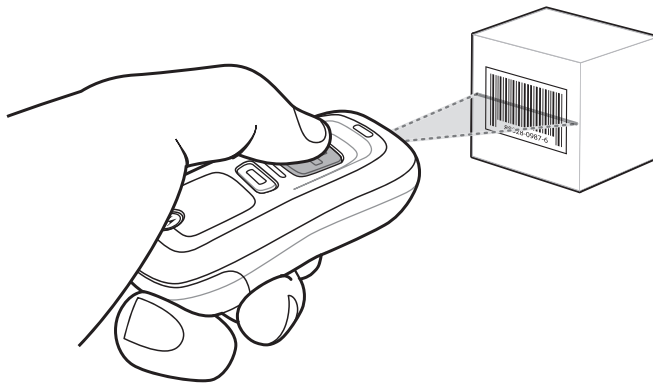
This chapter provides instructions for how to scan bar codes and send the data to a host. Beeper and LED definitions are also included.

---

## Scanning

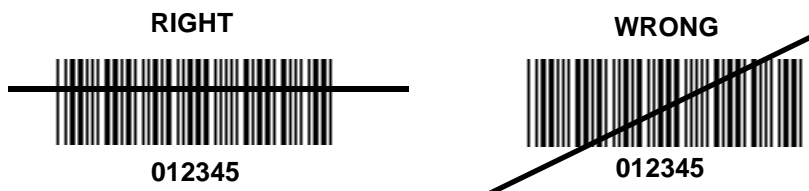
See [Chapter 1, Getting Started](#) to install and program the scanner. To scan:

1. Aim the scanner at the bar code.
2. Press the scan (+) button.



**Figure 2-1** Scanning

3. Ensure the scan line crosses every bar and space of the symbol.

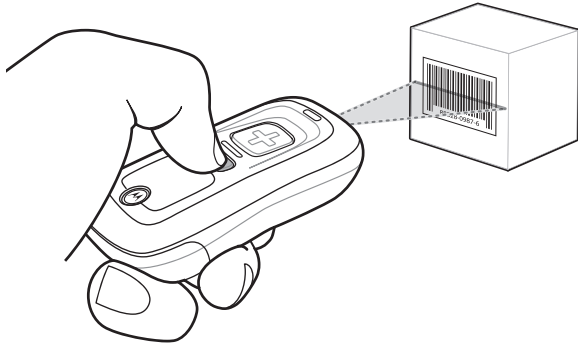


4. The scanner beeps and the LED turns green to indicate a successful decode. See [Table 2-1](#) and [Table 2-2](#) for beeper and LED definitions.

✓ **NOTE** The scanner cannot scan bar codes when it is connected to the host via the USB host cable.

## Deleting Bar Codes

In batch mode, to delete a bar code aim the scanner at the bar code and press the delete ( - ) button.



**Figure 2-2** *Deleting a Bar Code in Batch Mode*

✓ **NOTE** Bar codes cannot be deleted in Bluetooth mode.

---

## Transmitting Bar Code Data to Host

### Transferring Data from a Batch Scanner

The BarcodeFile.txt file within the **Scanned Barcodes** directory on the scanner stores scanned bar code data. Connect the scanner to the host PC via USB host cable or the charging cradle and use Windows Explorer to navigate to the scanner. Copy the bar code data file to the host

To clear the bar code data, delete the BarcodeFile.txt file from the scanner, or scan the **Clear Data** bar code on [page 3-7](#).

### Autorun Feature

The scanner supports an autorun feature where you can build an autorun.inf file to automatically copy the data to the host upon connection. Autorun.inf is a text-based configuration file that defines, upon connecting the scanner, which executable or application to run on the host, which icon represents the scanner, and which menu commands appear when you right-click the scanner icon from Windows Explorer. For more information, search **autorun.inf** on any search engine.

### Transferring Data from an RF Scanner

When the scanner is paired to a host via Bluetooth, data transmits to the host after each scan and is not stored on the device.

## Out of Range Behavior

If the scanner moves out of range of the host, and does not re-pair with the host within the timeout period, scanned data is lost and the scanner emits a 3-beep error tone.

When the radio loses connection, the Bluetooth LED stops its slow, consistent blinking and the beeper emits a short high low beep. The Bluetooth LED blinks at a faster rate for a period of time while the device attempts to reestablish pairing with the host, and when it returns within range the device repairs. If repairing is unsuccessful the Bluetooth LED stops blinking.

To manually reestablish pairing when the device returns to range, press the Bluetooth LED button. Upon Bluetooth pairing, the beeper emits a short low high beep and the Bluetooth LED starts its slow, consistent blinking again.

## User Interface Definitions

The scanner uses beeper and LED sequences to indicate various system events. [Table 2-1](#) and [Table 2-2](#) define these sequences and events.

### LED Indications

**Table 2-1** LED Indications

Function Performed	User Action	LED Feedback	Other
Scan attempt	Press scan (+) button	Flashing green	Laser on
Successful bar code scan		Solid green	Laser off
Battery charge status	Hold scan (+) button 15 seconds	Flashing green	Full charge (for 8 hours at 6 scans per minute)
		Flashing amber	Less than 8 hours but more than one of operating time
		Flashing red	Less than 1 hour of operating time
Delete bar code (when in batch mode)	Press & hold delete (-) button	Flashing amber	Laser on
Successful bar code deletion		Solid amber	Laser off
Unsuccessful deletion - item doesn't exist (when in batch mode)		Solid red	Laser off
Clear all bar code data (when delete (-) button enabled)	Press & hold delete (-) button 3 seconds past scan time	Flashing amber	Laser on
Successful clear all		Solid amber	Laser off

**Table 2-1** LED Indications (Continued)

Function Performed	User Action	LED Feedback	Other
Charge scanner	Connect scanner to a host PC USB port	Flashing amber	Scanner connects in mass storage mode, auto-run application on PC launches
Charge complete		Solid green	
Toggle data protection on or off (when enabled)	Press & hold both scan (+) and delete (-) buttons for 6 seconds	None	
Successful data protection setting		Solid amber	
Enable Bluetooth radio	Hold Bluetooth button for 5 seconds	Rapidly flashing blue LED	Bluetooth is enabled but has not paired with a host
Bluetooth radio pairing	Press Bluetooth button	Slowly flashing blue LED	
Bluetooth radio paired with host and in range		Very slowly flashing blue LED	
Bluetooth radio out of range of host		Blue LED is off	Stops transmitting beacons
Bluetooth radio returns to communication range of host	Press any button	Very slowly flashing blue LED	Re-pairs device with host
<b>Special Conditions</b>			
Memory low scan	Press & hold scan (+) button	Flashing red, then normal operation	
Delete/Clear All	Press & hold delete (-) button	Normal operation	
Memory Full Scan	Press & hold scan (+) button	Solid red	
Memory Full Delete/Clear All	Press & hold delete (-) button	Normal operation	
Battery low indication - Scan Delete/Clear All			
When enabled	Normal operation	Solid red, then normal operation	
When enabled and performance disabled	Normal operation	Solid red for 3 seconds	No decode or upload
When disabled and performance enabled	Normal operation	Normal operation	
When disabled and performance disabled	Normal operation	None	No decode or upload



**Table 2-1** *LED Indications (Continued)*

Function Performed	User Action	LED Feedback	Other
Data protection (enabled and on)	Scan/function/host com	Rapidly flashing red	
Unexpected failure	Scan/function/dock	Flashing red, green and amber for 5 seconds	Contact support
Battery depleted	Scan/function/dock	None	

## Beeper Indications

**Table 2-2** *Beeper Indications*

Function Performed	Beeper Feedback	Other
Successful bar code scan	Short high tone	Laser off
Successful bar code deletion	Short medium tone	Laser off
Unsuccessful deletion - item doesn't exist (when in batch mode)	Long short short	Laser off
Successful clear all	2 long medium tones	Laser off
Successful data protection setting	Short long short	
Connect scanner to a host PC USB port to charge scanner	Low high	
Enable Bluetooth radio	Short beep	Hold Bluetooth button for 5 seconds
Bluetooth radio pairing	Short low high	
Bluetooth radio out of range of host	Short high low	Stops transmitting beacons
Bluetooth radio returns to communication range of host	Short low high	Re-pairs device with host
Attempt to scan when out of Bluetooth radio range	4 high tones	No Bluetooth transmission
Memory Full Scan	Long tones for 5 seconds or until scan button released	



# CHAPTER 3 USER PREFERENCES

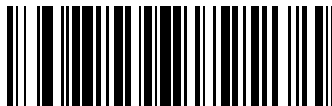
---

## Introduction

This chapter describes each user preference feature and provides the programming bar codes for selecting these features for the scanner.

The scanner ships with the settings shown in the [User Preferences Default Table on page 3-2](#) (also see [Appendix A, Standard Default Parameters](#) for all host device and miscellaneous scanner defaults). If the default values suit the requirements, programming is not necessary. To change these values, scan a single bar code or a short bar code sequence. After scanning [Save Configuration on page 3-22](#), the new settings are stored in non-volatile memory and are preserved when the scanner powers down.

To return all features to their default values, scan the [Reset Factory Defaults](#) bar code on [page 3-4](#). Throughout the programming bar code menus, default values are indicated with asterisks (\*).



\* Indicates Default — \*High Frequency — Feature/Option

---

## Scanning Sequence Examples

In most cases, scan only one bar code to set a parameter value. For example, to set the beeper tone to high, scan the **High Frequency** (beeper tone) bar code under [Beeper Tone on page 3-9](#). The scanner issues a fast warble beep and the LED turns green, indicating a successful parameter entry.

Other parameters, such as **Data Transmission Formats**, require scanning several bar codes. See the parameter description for this procedure.

---

## Errors While Scanning

Unless otherwise specified, if an error is made during a scanning sequence, re-scan the correct parameter.

## User Preferences Default Parameters

[Table 3-1](#) lists the defaults for user preference parameters. To change any option, scan the appropriate bar code(s) provided in this chapter.



**NOTE** See [Appendix A, Standard Default Parameters](#) for all default parameters.

**Table 3-1** User Preferences Default Table

Parameter	Parameter Number (Hex)	Factory Default	Page Number
Reset	N/A		<a href="#">3-4</a>
Reset Factory Defaults	N/A		<a href="#">3-4</a>
Set Date	N/A		<a href="#">3-5</a>
Set Time	N/A		<a href="#">3-5</a>
Cancel Date and Time Settings	N/A		<a href="#">3-5</a>
Clear Data	N/A		<a href="#">3-7</a>
Beeper Volume	0x8C	Medium	<a href="#">3-8</a>
Beeper Tone	0x91	Medium Frequency	<a href="#">3-9</a>
Mute Beeper	N/A	Do Not Mute	<a href="#">3-10</a>
Scan Angle	0xBF	Wide (47°)	<a href="#">3-11</a>
Transmit “No Read” Message	0x5E	Disable	<a href="#">3-12</a>
Bluetooth Unpair	N/A		<a href="#">3-13</a>
Bluetooth HID Profile	N/A		<a href="#">3-13</a>
Bluetooth Serial Port Profile (SPP)	N/A		<a href="#">3-13</a>
Disable All Symbologies	N/A		<a href="#">3-14</a>
Linear Code Type Security Levels	0x4E	1	<a href="#">3-15</a>
Bi-directional Redundancy	0x43	Disable	<a href="#">3-16</a>
<b>Data Options</b>			
Transmit Code ID Character	0x2D	None	<a href="#">3-17</a>
Prefix/Suffix Values			<a href="#">3-18</a>
Prefix	0x69	NULL	
Suffix 1	0x68	LF	
Suffix 2	0x6A	CR	
Scan Data Transmission Format	0xEB	Data as is	<a href="#">3-19</a>
Send Firmware Version	N/A		<a href="#">3-21</a>

**Table 3-1** *User Preferences Default Table (Continued)*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
Send Bluetooth Version	N/A		3-21
Send Scan Engine Version	N/A		3-21
<b>Save Configuration</b>	N/A		3-22

---

## Reset

To reset the scanner and apply parameters from the configuration file, scan the following bar code.



**Reset**

---

## Reset Factory Defaults

To reset the scanner to factory defaults, scan the following bar code. This rebuilds the configuration file from program memory.



**Reset Factory Defaults**

---

## Set Date and Time

- ✓ **NOTE** You must scan the configuration bar codes to set the time and date stamp on the scanner. The time and date can not be set or edited in the **config.ini** file. This setting persists for three months if the scanner is not used.

### Set Date

Scan the **Set Date** bar code, then scan six numeric digits in the format **mmddyy** from [Numeric Bar Codes for Date and Time Settings on page 3-6](#) (first two for the month, second two for the day, third two for the year).

- ✓ **NOTE** To change the date format from **mmddyy**, see [DateFormat on page 1-26](#).



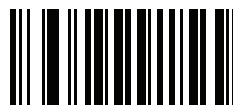
Set Date

### Set Time

Scan the **Set Time** bar code, then scan four numeric digits in the format **hhmm** from [Numeric Bar Codes for Date and Time Settings on page 3-6](#) representing the time according to the 24 hour clock (first two for the hour, second two for the minute).

For example, to set the time to 8:45 in the morning, scan the following bar code, then scan 0, 8, 4, 5. To set the time to 3:07 in the afternoon, scan 1, 5, 0, 7.

- ✓ **NOTE** To change the time format between **12h** and **24h**, see [TimeFormat on page 1-26](#).



Set Time

### Cancel Date and Time Setting

Scan the **Cancel Set Date/Time** bar code to cancel the date and time settings.

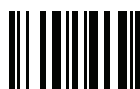


Cancel Set Date/Time

## Numeric Bar Codes for Date and Time Settings



0



2



4



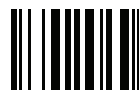
6



8



Enter



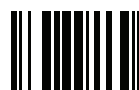
1



3



5



7



9



---

## Clear Data

Scan the following bar code to clear all batch bar code data on the scanner. This deletes the BarcodeFile.txt from the scanner.



**Clear Data**

---

## Beeper Settings

### Beeper Volume

#### Parameter # 0x8C

To select a decode beep volume, scan the appropriate bar code.



**Low**  
**(0x02)**



**\*Medium**  
**(0x01)**

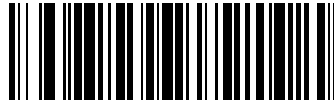


**High**  
**(0x00)**

## Beeper Tone

### Parameter # 0x91

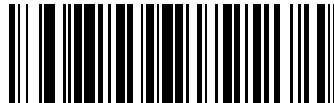
To select a decode beep frequency (tone), scan the appropriate bar code.



**Low Frequency**  
(0x02)



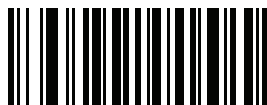
**\*Medium Frequency**  
(0x01)



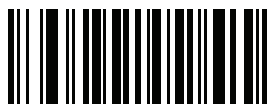
**High Frequency**  
(0x00)

## Mute Beeper

Scan the **Mute Beeper** bar code to mute the beeper.



**Mute Beeper  
(0x01)**



**\*Do Not Mute Beeper  
(0x00)**

# Scanner Options

## Scan Angle

### Parameter # 0xBF

This parameter sets the scan angle to narrow or wide.



Narrow Angle (35°)  
(0x05)



\*Wide Angle (47°)  
(0x06)

✓ **NOTE** The allowed values for this setting are different for some legacy models of scanners. These old values can still be used and are interpreted by the scanner as follows.

0x00 - 0x05	0x06 - 0x2C	0x2D - 0x4A	0x4B - 0xFF
Narrow (0x05)	Wide (0x06)	Narrow (0x05)	Wide (0x06)

## **Transmit “No Read” Message**

### **Parameter # 0x5E**

Enable this option to transmit “NR” if a symbol does not decode during the timeout period or before the trigger is released. Any enabled prefix or suffixes are appended around this message.

Disable this to send no message to the host if a symbol does not decode.



**Enable No Read  
(0x01)**



**\*Disable No Read  
(0x00)**

---

## Bluetooth Options

### Bluetooth Unpair

Scan the following bar code to unpair the scanner from the host.



Unpair

### Bluetooth HID Profile

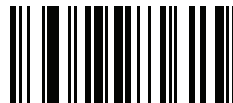
Scan **Bluetooth HID Profile** to cause the scanner to emulate a keyboard.



Bluetooth HID Profile

### Bluetooth Serial Port Profile (SPP)

Scan **Bluetooth SPP** to cause the scanner to emulate a serial connection.



Bluetooth SPP

---

## Disable All Symbologies

Scan the bar code below to disable the decoding of all symbologies. Use this to simplify selecting a single symbology to decode by scanning this, then scanning the desired enable code type bar code. Note that the scanner can still decode parameter bar codes.



**Disable All Symbologies**



---

## Linear Code Type Security Level

### Parameter # 0x4E

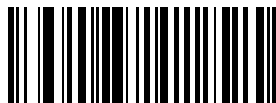
The scanner offers four levels of decode security for linear code types (e.g., Code 39, Interleaved 2 of 5). Select higher security levels for decreasing levels of bar code quality. As security levels increase, the scanner's aggressiveness decreases.

Select the security level appropriate for your bar code quality.

### Linear Security Level 1

The scanner must read the following code types twice before decoding:

Code Type	Length
Codabar	All
MSI	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less



**\*Linear Security Level 1**  
**(0x01)**

### Linear Security Level 2

The scanner must read all code types twice before decoding.



**Linear Security Level 2**  
**(0x02)**

### Linear Security Level 3

The scanner must read code types other than the following twice before decoding. It must read the following codes three times:

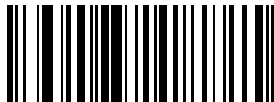
Code Type	Length
MSI	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less



**Linear Security Level 3**  
(0x03)

### Linear Security Level 4

The scanner must read all code types three times before decoding.



**Linear Security Level 4**  
(0x04)

---

## Bi-directional Redundancy

### Parameter # 0x43

This parameter is only valid when a [Linear Code Type Security Level](#) is enabled. When this parameter is enabled, the scanner must scan a bar code successfully in both directions (forward and reverse) before decoding.



**Enable Bi-directional Redundancy**  
(0x01)



**\*Disable Bi-directional Redundancy**  
(0x00)

---

## Data Options

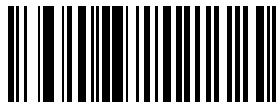
### Transmit Code ID Character

#### Parameter # 0x2D

A code ID character identifies the code type of a scanned bar code. This can be useful when decoding more than one code type. The code ID character is inserted between the prefix character (if selected) and the decoded symbol.

Select no code ID character, a Symbol Code ID character, or an AIM Code ID character. The Symbol Code ID characters are listed below. See [Appendix B, Programming Reference](#) for [AIM Code Identifiers](#).

- A = UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
- B = Code 39, Code 32
- C = Codabar
- D = Code 128, ISBT 128
- E = Code 93
- F = Interleaved 2 of 5
- G = Discrete 2 of 5
- J = MSI
- K = GS1-DataBar
- L = Bookland EAN
- M = Trioptic Code 39
- N = Coupon Code
- R = GS1 DataBar-14, GS1 DataBar Limited, GS1 DataBar Expanded.



**Symbol Code ID Character**  
(0x02)



**Aim Code ID Character**  
(0x01)



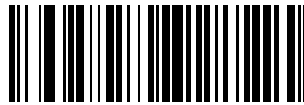
**\*None**  
(0x00)

## Prefix/Suffix Values

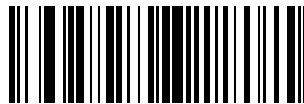
### Parameter # P = 0x69, S1 = 0x68, S2 = 0x6A

Append a prefix and/or one or two suffixes to scan data for data editing. To set these values, scan a four-digit number (i.e., four bar codes) that corresponds to ASCII values. See [Table B-6 on page B-7](#) and [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#). To set the Prefix/Suffix values via serial commands, see [Setting Prefixes and Suffixes on page B-7](#).

- ✓ **NOTE** In order to use Prefix/Suffix values, set the [Scan Data Transmission Format on page 3-19](#).
- ✓ **NOTE** The CS3000 series scanner does not support ADF, however it does allow setting prefix and suffix values via parameter bar codes.



Scan Prefix



Scan Suffix 1



Scan Suffix 2



Data Format Cancel

## Scan Data Transmission Format

### Parameter # 0xEB

To change the Scan Data Transmission Format, scan one of the following bar codes corresponding to the desired format.



**\*Data As Is  
(0x00)**



**<DATA> <SUFFIX 1>  
(0x01)**



**<DATA> <SUFFIX 2>  
(0x02)**



**<DATA> <SUFFIX 1> <SUFFIX 2>  
(0x03)**

## Scan Data Transmission Format (continued)



<PREFIX> <DATA >  
(0x04)



<PREFIX> <DATA> <SUFFIX 1>  
(0x05)



<PREFIX> <DATA> <SUFFIX 2>  
(0x06)



<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>  
(0x07)

---

## Send Versions

### Firmware Version

Scan the following bar code to send the firmware version to the host.



**Firmware Version**

### Bluetooth Version

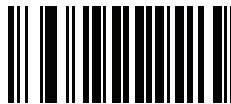
Scan the following bar code to send the Bluetooth version to the host.



**Bluetooth Version**

### Scan Engine Version

Scan the following bar code to send the scan engine version to the host.



**Scan Engine Version**

---

## Save Configuration

Scan the following bar code after setting parameters to save the new configuration selections.



**Save Configuration**



# CHAPTER 4 SYMBOLOGIES

---

## Introduction

This chapter describes symbology features and provides the programming bar codes for selecting these features for the scanner. Before programming, follow the instructions in [Chapter 1, Getting Started](#).

The scanner ships with the settings in [Table 4-1 on page 4-2](#) (also see [Appendix A, Standard Default Parameters](#) for all scanner defaults). If the default values suit requirements, programming is not necessary. Set a feature value by scanning a single bar code or a short bar code sequences. To return all features to default values, scan [Reset on page 3-4](#).

---

## Scanning Sequence Examples

In most cases, scan only one bar code to set a parameter value. For example, to transmit bar code data without the UPC-A check digit, scan the **Do Not Transmit UPC-A Check Digit** bar code under [Transmit UPC-A Check Digit on page 4-13](#). The scanner issues a fast warble beep and the LED turns green, indicating a successful parameter entry.

Other parameters, such as **Set Length(s) for D 2 of 5** require scanning several bar codes in sequence. See the parameter description for this procedure.

---

## Errors While Scanning

Unless otherwise specified, to correct an error during a scanning sequence, re-scan the correct parameter.

## Symbology Default Parameters

[Table 4-1](#) lists the defaults for all symbologies parameters. To change any option, scan the appropriate bar code(s) in this chapter.



**NOTE** See [Appendix A, Standard Default Parameters](#) for all default parameters.

**Table 4-1** *Factory Default Table*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
<b>UPC/EAN</b>			
UPC-A	0x01	Enable	<a href="#">4-5</a>
UPC-E	0x02	Enable	<a href="#">4-5</a>
UPC-E1	0x0C	Disable	<a href="#">4-6</a>
EAN-8	0x04	Enable	<a href="#">4-6</a>
EAN-13	0x03	Enable	<a href="#">4-7</a>
Bookland EAN	0x53	Disable	<a href="#">4-7</a>
Decode UPC/EAN Supplementals	0x10	Ignore	<a href="#">4-8</a>
User-Programmable Supplementals Supplemental 1: Supplemental 2:	0xF1 0x43 0xF1 0x44		<a href="#">4-12</a>
Decode UPC/EAN Supplemental Redundancy	0x50	7	<a href="#">4-12</a>
Transmit UPC-A Check Digit	0x28	Enable	<a href="#">4-13</a>
Transmit UPC-E Check Digit	0x29	Enable	<a href="#">4-13</a>
Transmit UPC-E1 Check Digit	0x2A	Enable	<a href="#">4-14</a>
UPC-A Preamble	0x22	System Character	<a href="#">4-14</a>
UPC-E Preamble	0x23	System Character	<a href="#">4-15</a>
UPC-E1 Preamble	0x24	System Character	<a href="#">4-16</a>
Convert UPC-E to A	0x25	Disable	<a href="#">4-17</a>
Convert UPC-E1 to A	0x26	Disable	<a href="#">4-17</a>
EAN-8 Zero Extend	0x27	Disable	<a href="#">4-18</a>
Bookland ISBN Format	F1h 40h	ISBN-10	<a href="#">4-19</a>
UPC/EAN Security Level	0x4D	0	<a href="#">4-20</a>
UCC Coupon Extended Code	0x55	Disable	<a href="#">4-21</a>
<b>Code 128</b>			
Code 128	0x08	Enable	<a href="#">4-21</a>

**Table 4-1** Factory Default Table (Continued)

Parameter	Parameter Number (Hex)	Factory Default	Page Number
GS1-128 (formerly UCC/EAN-128)	0x0E	Enable	<a href="#">4-22</a>
ISBT 128	0x54	Enable	<a href="#">4-22</a>
<b>Code 39</b>			
Code 39	0x00	Enable	<a href="#">4-23</a>
Trioptic Code 39	0x0D	Disable	<a href="#">4-23</a>
Convert Code 39 to Code 32	0x56	Disable	<a href="#">4-24</a>
Code 32 Prefix	0xE7	Disable	<a href="#">4-24</a>
Set Length(s) for Code 39	0x12 0x13	2-55	<a href="#">4-25</a>
Code 39 Check Digit Verification	0x30	Disable	<a href="#">4-26</a>
Transmit Code 39 Check Digit	0x2B	Disable	<a href="#">4-26</a>
Code 39 Full ASCII Conversion	0x11	Disable	<a href="#">4-27</a>
<b>Code 93</b>			
Code 93	0x09	Disable	<a href="#">4-28</a>
Set Length(s) for Code 93	0x1A 0x1B	4-55	<a href="#">4-28</a>
<b>Code 11</b>			
Code 11	0x0A	Disable	<a href="#">4-30</a>
Set Lengths for Code 11	0x1C 0x1D	4 to 55	<a href="#">4-30</a>
Code 11 Check Digit Verification	0x34	Disable	<a href="#">4-32</a>
Transmit Code 11 Check Digit(s)	0x2F	Disable	<a href="#">4-33</a>
<b>Interleaved 2 of 5</b>			
Interleaved 2 of 5	0x06	Enable	<a href="#">4-33</a>
Set Length(s) for I 2 of 5	0x16 0x17	14	<a href="#">4-34</a>
I 2 of 5 Check Digit Verification	0x31	Disable	<a href="#">4-36</a>
Transmit I 2 of 5 Check Digit	0x2C	Disable	<a href="#">4-36</a>
Convert I 2 of 5 to EAN 13	0x52	Disable	<a href="#">4-37</a>

**Table 4-1** *Factory Default Table (Continued)*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
<b>Discrete 2 of 5</b>			
Discrete 2 of 5	0x05	Disable	<a href="#">4-37</a>
Set Length(s) for D 2 of 5	0x14 0x15	12	<a href="#">4-38</a>
<b>Chinese 2 of 5</b>			
Chinese 2 of 5	0xF0 0x98	Disable	<a href="#">4-39</a>
<b>Codabar</b>			
Codabar	0x07	Disable	<a href="#">4-39</a>
Set Lengths for Codabar	0x18 0x19	5-55	<a href="#">4-40</a>
CLSI Editing	0x36	Disable	<a href="#">4-41</a>
NOTIS Editing	0x37	Disable	<a href="#">4-41</a>
<b>MSI</b>			
MSI	0x0B	Disable	<a href="#">4-42</a>
Set Length(s) for MSI	0x1E 0x1F	6-55	<a href="#">4-43</a>
MSI Check Digits	0x32	One	<a href="#">4-44</a>
Transmit MSI Check Digit	0x2E	Disable	<a href="#">4-44</a>
MSI Check Digit Algorithm	0x33	Mod 10/Mod 10	<a href="#">4-45</a>
<b>GS1 DataBar</b>			
GS1 DataBar-14	0xF0 0x52	Disable	<a href="#">4-45</a>
GS1 DataBar Limited	0xF0 0x53	Disable	<a href="#">4-46</a>
GS1 DataBar Expanded	0xF0 0x54	Disable	<a href="#">4-46</a>
Convert GS1 DataBar to UPC/EAN	0xF0 0x8D	Disable	<a href="#">4-47</a>
<b>Numeric Bar Codes</b>			<a href="#">4-48</a>
<b>Cancel</b>			<a href="#">4-50</a>

---

## UPC/EAN

### Enable/Disable UPC-A

#### Parameter # 0x01

To enable or disable UPC-A, scan the appropriate bar code below.



**\*Enable UPC-A  
(0x01)**



**Disable UPC-A  
(0x00)**

### Enable/Disable UPC-E

#### Parameter # 0x02

To enable or disable UPC-E, scan the appropriate bar code below.



**\*Enable UPC-E  
(0x01)**



**Disable UPC-E  
(0x00)**

## Enable/Disable UPC-E1

### Parameter # 0x0C

To enable or disable UPC-E1, scan the appropriate bar code below.



**NOTE** UPC-E1 is not a UCC (Uniform Code Council) approved symbology.



**Enable UPC-E1  
(0x01)**



**\*Disable UPC-E1  
(0x00)**

## Enable/Disable EAN-8

### Parameter # 0x04

To enable or disable EAN-8, scan the appropriate bar code below.



**\*Enable EAN-8  
(0x01)**

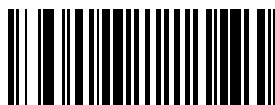


**Disable EAN-8  
(0x00)**

## Enable/Disable EAN-13

### Parameter # 0x03

To enable or disable EAN-13, scan the appropriate bar code below.



**\*Enable EAN-13  
(0x01)**



**Disable EAN-13  
(0x00)**

## Enable/Disable Bookland EAN

### Parameter # 0x53

To enable or disable EAN Bookland, scan the appropriate bar code below.



**Enable Bookland EAN  
(0x01)**



**\*Disable Bookland EAN  
(0x00)**



**NOTE** If you enable Bookland EAN, select a [Bookland ISBN Format on page 4-19](#). Also select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in [Decode UPC/EAN Supplementals on page 4-8](#).

## Decode UPC/EAN Supplementals

### Parameter # 0x10

Supplementals are bar codes appended according to specific format conventions (e.g., UPC A+2, UPC E+2, EAN 13+2). The following options are available:

- If you select **Ignore UPC/EAN Supplementals**, and the scanner is presented with a UPC/EAN plus supplemental symbol, the scanner decodes UPC/EAN and ignores the supplemental characters.
- If you select **Decode UPC/EAN with Supplementals**, the scanner only decodes UPC/EAN symbols with supplemental characters, and ignores symbols without supplementals.
- If you select **Autodiscriminate UPC/EAN Supplementals**, 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 [Decode UPC/EAN Supplemental Redundancy on page 4-12](#) before transmitting its data to confirm that there is no supplemental.
- If you select one of the following **Supplemental Mode** options, the scanner immediately transmits EAN-13 bar codes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times set via [Decode UPC/EAN Supplemental Redundancy on page 4-12](#) before transmitting its data to confirm that there is no supplemental. The scanner transmits UPC/EAN bar codes that do not have that prefix immediately.
  - **Enable 378/379 Supplemental Mode.**
  - **Enable 978/979 Supplemental Mode.**



**NOTE** If you select 978/979 Supplemental Mode and are scanning Bookland EAN bar codes, see [Enable/Disable Bookland EAN on page 4-7](#) to enable Bookland EAN, and select a format using [Bookland ISBN Format on page 4-19](#).

- **Enable 977 Supplemental Mode.**
- **Enable 414/419/434/439 Supplemental Mode.**
- **Enable 491 Supplemental Mode.**
- **Enable Smart Supplemental Mode** - applies to EAN-13 bar codes starting with any prefix listed previously.
- **Supplemental User-Programmable Type 1** - applies to EAN-13 bar codes starting with a 3-digit user-defined prefix. Set this 3-digit prefix using [User-Programmable Supplementals on page 4-12](#).
- **Supplemental User-Programmable Type 1 and 2** - applies to EAN-13 bar codes starting with either of two 3-digit user-defined prefixes. Set the 3-digit prefixes using [User-Programmable Supplementals on page 4-12](#).
- **Smart Supplemental Plus User-Programmable 1** - applies to EAN-13 bar codes starting with any prefix listed previously or the user-defined prefix set using [User-Programmable Supplementals on page 4-12](#).
- **Smart Supplemental Plus User-Programmable 1 and 2** - applies to EAN-13 bar codes starting with any prefix listed previously or one of the two user-defined prefixes set using [User-Programmable Supplementals on page 4-12](#).

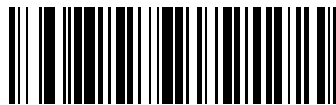


**NOTE** To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.

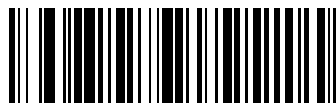


## Decode UPC/EAN Supplementals (continued)

Select the desired option by scanning one of the following bar codes.



**Decode UPC/EAN Supplementals  
(0x01)**



**\*Ignore UPC/EAN With Supplementals  
(0x00)**



**Autodiscriminate UPC/EAN Supplementals  
(0x02)**



**Enable 378/379 Supplemental Mode  
(0x04)**



**Enable 978/979 Supplemental Mode  
(0x05)**

## Decode UPC/EAN Supplementals (continued)



**Enable 977 Supplemental Mode  
(0x07)**



**Enable 414/419/434/439 Supplemental Mode  
(0x06)**



**Enable 491 Supplemental Mode  
(0x08)**



**Enable Smart Supplemental Mode  
(0x03)**

**Decode UPC/EAN Supplementals (continued)**

**Supplemental User-Programmable Type 1  
(0x09)**



**Supplemental User-Programmable Type 1 and 2  
(0x0A)**



**Smart Supplemental Plus User-Programmable 1  
(0x0B)**



**Smart Supplemental Plus User-Programmable 1 and 2  
(0x0C)**

## User-Programmable Supplementals

### Supplemental 1: Parameter # 0xF1 0x43

### Supplemental 2: Parameter # 0xF1 0x44

If you selected a Supplemental User-Programmable option from [Decode UPC/EAN Supplementals on page 4-8](#), select **User-Programmable Supplemental 1** to set the 3-digit prefix. Then select the 3 digits using the [Numeric Bar Codes on page 4-48](#). Select **User-Programmable Supplemental 2** to set a second 3-digit prefix. Then select the 3 digits using the [Numeric Bar Codes on page 4-48](#).



User-Programmable Supplemental 1



User-Programmable Supplemental 2

## Decode UPC/EAN Supplemental Redundancy

### Parameter # 0x50

With **Autodiscriminate UPC/EAN Supplementals** selected, this option adjusts the number of times a symbol without supplementals are decoded before transmission. The range is from 2 to 30 times. Five or above is recommended when decoding a mix of UPC/EAN symbols with and without supplementals, and the autodiscriminate option is selected.

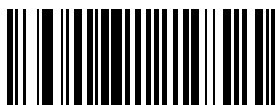
Scan the bar code below to select a decode redundancy value. Next scan two bar codes from [Numeric Bar Codes on page 4-48](#). Single digit numbers must have a leading zero. To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



Decode UPC/EAN  
Supplemental Redundancy  
(Default: 7)

**Transmit UPC-A Check Digit****Parameter # 0x28**

Scan the appropriate bar code below to transmit the symbol with or without the UPC-A check digit.



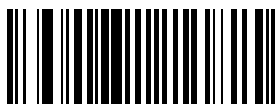
**\*Transmit UPC-A Check Digit  
(0x01)**



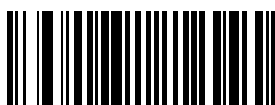
**Do Not Transmit UPC-A Check Digit  
(0x00)**

**Transmit UPC-E Check Digit****Parameter # 0x29**

Scan the appropriate bar code below to transmit the symbol with or without the UPC-E check digit.



**\*Transmit UPC-E Check Digit  
(0x01)**



**Do Not Transmit UPC-E Check Digit  
(0x00)**

## Transmit UPC-E1 Check Digit

### Parameter # 0x2A

Scan the appropriate bar code below to transmit the symbol with or without the UPC-E1 check digit.



**\*Transmit UPC-E1 Check Digit  
(0x01)**



**Do Not Transmit UPC-E1 Check Digit  
(0x00)**

## UPC-A Preamble

### Parameter # 0x22

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-A symbol. Select one of the following options for transmitting UPC-A preamble to the host device: transmit system character only, transmit system character and country code ("0" for USA), or transmit no preamble.



**No Preamble  
(<DATA>  
(0x00)**



**\*System Character  
(<SYSTEM CHARACTER> <DATA>  
(0x01)**

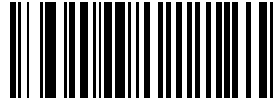


**System Character & Country Code  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>  
(0x02)**

## UPC-E Preamble

### Parameter # 0x23

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-E symbol. Select one of the following options for transmitting UPC-E preamble to the host device: transmit system character only, transmit system character and country code ("0" for USA), or transmit no preamble.



**No Preamble**  
(<DATA>)  
(0x00)



**\*System Character**  
(<SYSTEM CHARACTER> <DATA>)  
(0x01)



**System Character & Country Code**  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)  
(0x02)

## UPC-E1 Preamble

### Parameter # 0x24

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-E1 symbol. Select one of the following options for transmitting UPC-E1 preamble to the host device: transmit system character only, transmit system character and country code ("0" for USA), or transmit no preamble.



**No Preamble**  
(<DATA>)  
(0x00)



**\*System Character**  
(<SYSTEM CHARACTER> <DATA>)  
(0x01)



**System Character & Country Code**  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)  
(0x02)

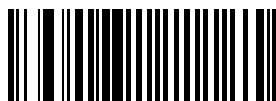


## Convert UPC-E to UPC-A

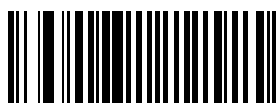
### Parameter # 0x25

Enable this parameter to convert UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Scan **DO NOT CONVERT UPC-E TO UPC-A** to transmit UPC-E (zero suppressed) decoded data.



**Convert UPC-E to UPC-A (Enable)**  
(0x01)



**\*Do Not Convert UPC-E to UPC-A (Disable)**  
(0x00)

## Convert UPC-E1 to UPC-A

### Parameter # 0x26

Enable this parameter to convert UPC-E1 (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

Scan **DO NOT CONVERT UPC-E TO UPC-A** to transmit UPC-E1 (zero suppressed) decoded data.



**Convert UPC-E1 to UPC-A (Enable)**  
(0x01)



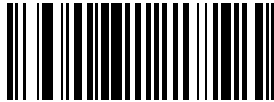
**\*Do Not Convert UPC-E1 to UPC-A (Disable)**  
(0x00)

## **EAN Zero Extend**

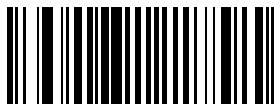
### **Parameter # 0x27**

When enabled, this parameter adds five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.

Disable this parameter to transmit EAN-8 symbols as is.



**Enable EAN Zero Extend  
(0x01)**



**\*Disable EAN Zero Extend  
(0x00)**

## Bookland ISBN Format

### Parameter # 0xF1 0x40

If you enabled Bookland EAN using [Enable/Disable Bookland EAN on page 4-7](#), select one of the following formats for Bookland data:

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



**\*Bookland ISBN-10**  
(0x00)



**Bookland ISBN-13**  
(0x01)



**NOTE** For Bookland EAN to function properly, first enable Bookland EAN using [Enable/Disable Bookland EAN on page 4-7](#), then select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in [Decode UPC/EAN Supplementals on page 4-8](#).

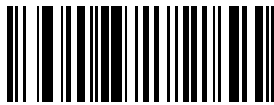
## UPC/EAN Security Level

### Parameter # 0x4D

The Symbol CS3070 offers four levels of decode security for UPC/EAN bar codes. Increasing levels of security are provided for decreasing levels of bar code quality. Select higher levels of security for decreasing levels of bar code quality. Increasing security decreases the scanner's aggressiveness, so choose only that level of security necessary for the application.

#### UPC/EAN Security Level 0

This default setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding most "in-spec" UPC/EAN bar codes.



**\*UPC/EAN Security Level 0  
(0x00)**

#### UPC/EAN Security Level 1

As bar code quality levels diminish, certain characters become prone to mis-decodes before others (i.e., 1, 2, 7, 8). If mis-decodes of poorly printed bar codes occur, and the mis-decodes are limited to these characters, select this security level.



**UPC/EAN Security Level 1  
(0x01)**

#### UPC/EAN Security Level 2

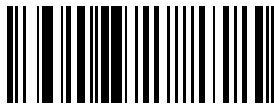
If mis-decodes of poorly printed bar codes occur, and the mis-decodes are not limited to characters 1, 2, 7, and 8, select this security level.



**UPC/EAN Security Level 2  
(0x02)**

#### UPC/EAN Security Level 3

If misdecodes still occur after selecting Security Level 2, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selection of this level of security significantly impairs the decoding ability of the scanner. If this level of security is necessary, try to improve the quality of the bar codes.



**UPC/EAN Security Level 3  
(0x03)**

## UCC Coupon Extended Code

### Parameter # 0x55

The UCC Coupon Extended Code is an additional bar code adjacent to a UCC Coupon Code. To enable or disable UCC Coupon Extended Code, scan the appropriate bar code below.



**Enable UCC Coupon Extended Code  
(0x01)**



**\*Disable UCC Coupon Extended Code  
(0x00)**

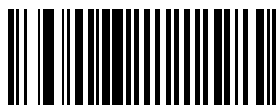
---

## Code 128

### Enable/Disable Code 128

#### Parameter # 0x08

To enable or disable Code 128, scan the appropriate bar code below.



**\*Enable Code 128  
(0x01)**

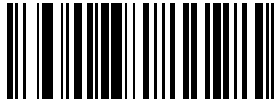


**Disable Code 128  
(0x00)**

## Enable/Disable GS1-128 (formerly UCC/EAN-128)

### Parameter # 0x0E

To enable or disable GS1-128, scan the appropriate bar code below. See [Appendix B, Programming Reference](#) for details on [GS1-128 \(formerly UCC/EAN-128\)](#).



**\*Enable GS1-128  
(0x01)**



**Disable GS1-128  
(0x00)**

## Enable/Disable ISBT 128

### Parameter # 0x54

To enable or disable ISBT 128, scan the appropriate bar code below.



**\*Enable ISBT 128  
(0x01)**



**Disable ISBT 128  
(0x00)**

## Lengths for Code 128

No length setting is required for Code 128.

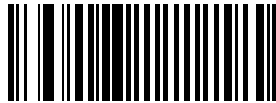
---

## Code 39

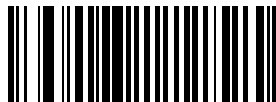
### Enable/Disable Code 39

#### Parameter # 0x00

To enable or disable Code 39, scan the appropriate bar code below.



**\*Enable Code 39  
(0x01)**



**Disable Code 39  
(0x00)**

### Enable/Disable Trioptic Code 39

#### Parameter # 0x0D

Trioptic Code 39 is a variant of Code 39 used in marking computer tape cartridges. Trioptic Code 39 symbols always contain six characters.

To enable or disable Trioptic Code 39, scan the appropriate bar code below.



**Enable Trioptic Code 39  
(0x01)**



**\*Disable Trioptic Code 39  
(0x00)**



**NOTE** Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If an error beep sounds when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again.

## Convert Code 39 to Code 32 (Italian Pharma Code)

### Parameter # 0x56

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.



**NOTE** Code 39 must be enabled in order for this parameter to function.



**Enable Convert Code 39 to Code 32  
(0x01)**



**\*Disable Convert Code 39 to Code 32  
(0x00)**

## Code 32 Prefix

### Parameter # 0xE7

Enable this parameter to add the prefix character **A** to all Code 32 bar codes. Enable **Convert Code 39 to Code 32 (Italian Pharma Code)** in order for this parameter to function.



**Enable Code 32 Prefix  
(0x01)**



**\*Disable Code 32 Prefix  
(0x00)**



## Set Lengths for Code 39

### Parameter # L1 = 0x12, L2 = 0x13

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If you enabled Code 39 Full ASCII, **Length Within a Range** or **Any Length** are the preferred options.

✓ **NOTE** When setting lengths, include a leading zero for single digit numbers.

**One Discrete Length** - This option limits decodes to Code 39 symbols containing a selected length. Select lengths using the [Numeric Bar Codes on page 4-48](#). For example, to decode only Code 39 symbols with 14 characters, scan **Code 39 - One Discrete Length**, then scan **1**, then **4**. To change the selection or cancel an incorrect entry, scan the [Cancel on page 4-50](#).



**Code 39 - One Discrete Length**

**Two Discrete Lengths** - This option limits decodes to Code 39 symbols containing either of two selected lengths. Select lengths using the [Numeric Bar Codes on page 4-48](#). For example, to decode only Code 39 symbols containing either 2 or 14 characters, select **Code 39 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Code 39 - Two Discrete Lengths**

**Length Within Range** - This option limits decodes to Code 39 symbols within a specified range. For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 - Length Within Range**. Then scan **0**, **4**, **1**, and **2**. Select lengths using the [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Code 39 - Length Within Range**

**Any Length** - Scan this option to decode Code 39 symbols containing any number of characters.

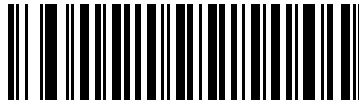


**Code 39 - Any Length**

## Code 39 Check Digit Verification

### Parameter # 0x30

Enable this feature to check the integrity of all Code 39 symbols to verify that the data complies with a specified check digit algorithm. Only Code 39 symbols that include a modulo 43 check digit are decoded, so only enable this if your Code 39 symbols contain a modulo 43 check digit.



**Verify Code 39 Check Digit  
(0x01)**



**\*Do Not Verify Code 39 Check Digit  
(0x00)**

## Transmit Code 39 Check Digit

### Parameter # 0x2B

Scan this bar code to transmit the check digit with the data.



**Transmit Code 39 Check Digit (Enable)  
(0x01)**

Scan this bar code to transmit data without the check digit.



**\*Do Not Transmit Code 39 Check Digit (Disable)  
(0x00)**

## Enable/Disable Code 39 Full ASCII

### Parameter # 0x11

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. To enable or disable Code 39 Full ASCII, scan the appropriate bar code below.

See [Table B-6 on page B-7](#) for mapping Code 39 characters to ASCII values.



**Enable Code 39 Full ASCII**  
**(0x00)**



**\*Disable Code 39 Full ASCII**  
**(0x00)**



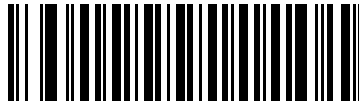
**NOTE** You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously. If the scanner issues an error beep when enabling Code 39 Full ASCII, disable Trioptic Code 39 and try again.

## Code 93

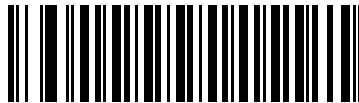
### Enable/Disable Code 93

#### Parameter # 0x09

To enable or disable Code 93, scan the appropriate bar code below.



Enable Code 93  
(0x01)



\*Disable Code 93  
(0x00)

### Set Lengths for Code 93

#### Parameter # L1 = 0x1A, L2 = 0x1B

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 93 to any length, one or two discrete lengths, or lengths within a specific range.

**One Discrete Length** - Select this option to decode only codes containing a selected length. For example, select **Code 93 One Discrete Length**, then scan the bar codes **1**, **4** from [Numeric Bar Codes on page 4-48](#) to limit the decoding to Code 93 symbols containing 14 characters. To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



Code 93 - One Discrete Length

**Two Discrete Lengths** - Select this option to decode only codes containing two selected lengths. For example, select **Code 93 Two Discrete Lengths**, then scan **0, 2, 1, 4** from [Numeric Bar Codes on page 4-48](#) to limit the decoding to Code 93 symbols containing 2 or 14 characters. To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Code 93 - Two Discrete Lengths**

**Length Within Range** - Select this option to decode a code type within a specified range. For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 Length Within Range**, then scan **0, 4, 1** and **2** (include a leading zero for single digit numbers) from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Code 93 - Length Within Range**

**Any Length** - Scan this option to decode Code 93 symbols containing any number of characters.



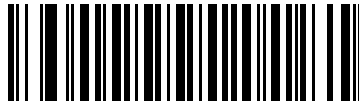
**Code 93 - Any Length**

## Code 11

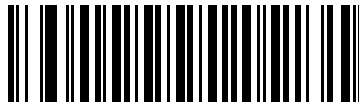
### Enable/Disable Code 11

#### Parameter # 0x0A

To enable or disable Code 11, scan the appropriate bar code below.



Enable Code 11  
(0x01)



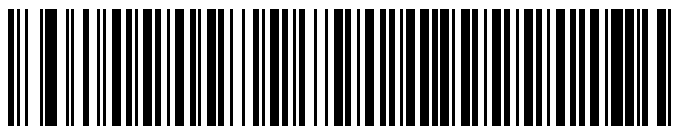
\*Disable Code 11  
(0x00)

### Set Lengths for Code 11

#### Parameter # L1 = 0x1C, L2 = 0x1D

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Code 11 symbols containing a selected length. Select the length using the bar codes from [Numeric Bar Codes on page 4-48](#). For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, then scan **1**, then **4**. To correct an error or to change the selection, scan [Cancel on page 4-50](#).
- **Two Discrete Lengths** - Select this option to decode only Code 11 symbols containing either of two selected lengths. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). For example, to decode only Code 11 symbols containing either 2 or 14 characters, select **Code 11 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and **4**. To correct an error or to change the selection, scan [Cancel on page 4-50](#).
- **Length Within Range** - Select this option to decode a Code 11 symbol with a specific length range. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). For example, to decode Code 11 symbols containing between 4 and 12 characters, first scan **Code 11 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (include a leading zero for single digit numbers). To correct an error or change the selection, scan [Cancel on page 4-50](#).
- **Any Length** - Scan this option to decode Code 11 symbols containing any number of characters within the scanner's capability.

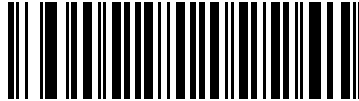
**Set Lengths for Code 11 (continued)****Code 11 - One Discrete Length****Code 11 - Two Discrete Lengths****Code 11 - Length Within Range****Code 11 - Any Length**

## Code 11 Check Digit Verification

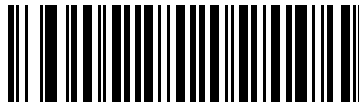
### Parameter # 0x34

This feature allows the scanner to 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. The options are to check for one check digit, check for two check digits, or disable the feature.

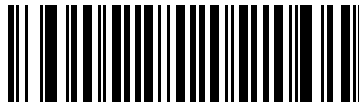
To enable this feature, scan the bar code below corresponding to the number of check digits encoded in your Code 11 symbols.



**\*Disable  
(0x00)**



**One Check Digit  
(0x01)**



**Two Check Digits  
(0x02)**



## Transmit Code 11 Check Digits

### Parameter # 0x2F

This feature selects whether or not to transmit the Code 11 check digit(s).



Transmit Code 11 Check Digit(s) (Enable)  
(0x01)



\*Do Not Transmit Code 11 Check Digit(s) (Disable)  
(0x00)



**NOTE** Code 11 Check Digit Verification must be enabled for this parameter to function.

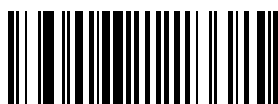
---

## Interleaved 2 of 5

### Enable/Disable Interleaved 2 of 5

#### Parameter # 0x06

To enable or disable Interleaved 2 of 5, scan the appropriate bar code below.



\*Enable Interleaved 2 of 5  
(0x01)



Disable Interleaved 2 of 5  
(0x00)

## Set Lengths for Interleaved 2 of 5

### Parameter # L1 = 0x16, L2 = 0x17

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for I 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. To set lengths via serial commands, see *Setting Code Lengths Via Serial Commands* on page B-8.

✓ **NOTE** When setting lengths, single digit numbers must always be preceded by a leading zero.

**One Discrete Length** - Select this option to decode only codes containing a selected length. For example, select **I 2 of 5 One Discrete Length**, then scan **1, 4** to decode only I 2 of 5 symbols containing 14 characters. Select the length using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**I 2 of 5 - One Discrete Length**

**Two Discrete Lengths** - Select this option to decode only codes containing two selected lengths. For example, select **I 2 of 5 Two Discrete Lengths**, then scan **0, 6, 1, 4**, to decode only I 2 of 5 symbols containing 6 or 14 characters. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**I 2 of 5 - Two Discrete Lengths**

## Set Lengths for Interleaved 2 of 5 (continued)

**Length Within Range** - Select this option to decode only codes within a specified range. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 Length Within Range**, then scan **0, 4, 1** and **2** (include a leading zero for single digit numbers). Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**I 2 of 5 - Length Within Range**

**Any Length** - Scan this option to decode I 2 of 5 symbols containing any number of characters.



**NOTE** Selecting this option may lead to misdecodes for I 2 of 5 codes.



**I 2 of 5 - Any Length**

## I 2 of 5 Check Digit Verification

### Parameter # 0x31

When enabled, this parameter checks the integrity of an I 2 of 5 symbol to ensure it complies with a specified algorithm, either USS (Uniform Symbology Specification), or OPCC (Optical Product Code Council).



**\*Disable  
(0x00)**



**USS Check Digit  
(0x01)**



**OPCC Check Digit  
(0x02)**

## Transmit I 2 of 5 Check Digit

### Parameter # 0x2C

Scan one of the following bar codes to select whether to transmit data with or without the check digit.



**Transmit I 2 of 5 Check Digit (Enable)  
(0x01)**



**\*Do Not Transmit I 2 of 5 Check Digit (Disable)  
(0x00)**

## Convert I 2 of 5 to EAN-13

### Parameter # 0x52

This parameter converts a 14 character I 2 of 5 code into EAN-13, and transmits to the host as EAN-13. To accomplish this, first enable I 2 of 5, set one length to 14, and include a leading zero and a valid EAN-13 check digit in the code.



**Convert I 2 of 5 to EAN-13 (Enable)**  
(0x01)



**\*Do Not Convert I 2 of 5 to EAN-13 (Disable)**  
(0x00)

## Discrete 2 of 5

### Enable/Disable Discrete 2 of 5

#### Parameter # 0x05

To enable or disable Discrete 2 of 5, scan the appropriate bar code below.



**Enable Discrete 2 of 5**  
(0x01)



**\*Disable Discrete 2 of 5**  
(0x00)

## Set Lengths for Discrete 2 of 5

### Parameter # L1 = 0x14, L2 = 0x15

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for D 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range.

**One Discrete Length** - Select this option to decode only codes containing a selected length. For example, select **D 2 of 5 One Discrete Length**, then scan **1, 4** to decode only D 2 of 5 symbols containing 14 characters. Select the length using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**D 2 of 5 - One Discrete Length**

**Two Discrete Lengths** - Select this option to decode only codes containing two selected lengths. For example, select **D 2 of 5 Two Discrete Lengths**, then scan **0, 2, 1, 4**, to decode only D 2 of 5 symbols containing 2 or 14 characters. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**D 2 of 5 - Two Discrete Lengths**

**Length Within Range** - Select this option to decode codes within a specified range. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 Length Within Range**, then scan **0, 4, 1**, and **2** (include a leading zero for single digit numbers). Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**D 2 of 5 - Length Within Range**

**Any Length** - Scan this option to decode D 2 of 5 symbols containing any number of characters.



**NOTE** Selecting this option may lead to misdecodes for D 2 of 5 codes.



**D 2 of 5 - Any Length**

---

## Chinese 2 of 5

### Enable/Disable Chinese 2 of 5

#### Parameter # 0xF0 0x98

To enable or disable Chinese 2 of 5, scan the appropriate bar code below.



Enable Chinese 2 of 5  
(0x01)



\*Disable Chinese 2 of 5  
(0x00)

---

## Codabar

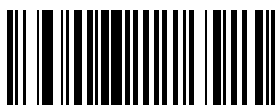
### Enable/Disable Codabar

#### Parameter # 0x07

To enable or disable Codabar, scan the appropriate bar code below.



Enable Codabar  
(0x01)



\*Disable Codabar  
(0x00)

## Set Lengths for Codabar

### Parameter # L1 = 0x18, L2 = 0x19

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Codabar to any length, one or two discrete lengths, or lengths within a specific range.

**One Discrete Length** - Select this option to decode only codes containing a selected length. For example, select **Codabar One Discrete Length**, then scan **1, 4**, to decode only Codabar symbols containing 14 characters. Select the length using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Codabar - One Discrete Length**

**Two Discrete Lengths** - Select this option to decode only codes containing two selected lengths. For example, select **Codabar Two Discrete Lengths**, then scan **0, 2, 1, 4**, to decode only Codabar symbols containing 6 or 14 characters. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Codabar - Two Discrete Lengths**

**Length Within Range** - Select this option to decode a code within a specified range. For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar Length Within Range**, then scan **0, 4, 1** and **2** (include a leading zero for single digit numbers). Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



**Codabar - Length Within Range**

**Any Length** - Scan this option to decode Codabar symbols containing any number of characters.



**Codabar - Any Length**



## CLSI Editing

### Parameter # 0x36

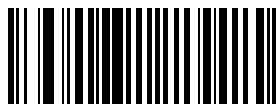
Enable this to strip the start and stop characters and insert a space after the first, fifth, and tenth characters of a 14-character Codabar symbol.



**NOTE** Symbol length does not include start and stop characters.



**Enable CLSI Editing  
(0x01)**

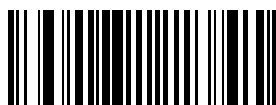


**\*Disable CLSI Editing  
(0x00)**

## NOTIS Editing

### Parameter # 0x37

Enable this to strip the start and stop characters from decoded Codabar symbol.



**Enable NOTIS Editing  
(0x01)**



**\*Disable NOTIS Editing  
(0x00)**

---

## MSI

### Enable/Disable MSI

#### Parameter # 0x0B

To enable or disable MSI, scan the appropriate bar code below.



**Enable MSI  
(0x01)**



**\*Disable MSI  
(0x00)**

## Set Lengths for MSI

### Parameter # L1 = 0x1E, L2 = 0x1F

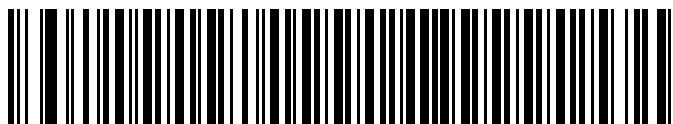
The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits. Set lengths for MSI to any length, one or two discrete lengths, or lengths within a specific range. See [Table B-6 on page B-7](#) for ASCII equivalents.

**One Discrete Length** - Select this option to decode only codes containing a selected length. For example, select **MSI Plessey One Discrete Length**, then scan **1, 4**, to decode only MSI Plessey symbols containing 14 characters. Select the length using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



MSI - One Discrete Length

**Two Discrete Lengths** - Select this option to decode only codes containing two selected lengths. For example, select **MSI Plessey Two Discrete Lengths**, then scan **0, 6, 1, 4**, to decode only MSI Plessey symbols containing 6 or 14 characters. Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



MSI - Two Discrete Lengths

**Length Within Range** - Select this option to decode codes within a specified range. For example, to decode MSI symbols containing between 4 and 12 characters, first scan **MSI Length Within Range**, then scan **0, 4, 1** and **2** (include a leading zero for single digit numbers). Select lengths using the bar codes from [Numeric Bar Codes on page 4-48](#). To change the selection or cancel an incorrect entry, scan [Cancel on page 4-50](#).



MSI - Length Within Range

**Any Length** - Scan this option to decode MSI Plessey symbols containing any number of characters.



**NOTE** Selecting this option may lead to misdecodes for MSI codes.



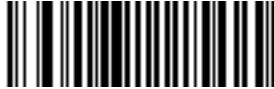
MSI - Any Length

## MSI Check Digits

### Parameter # 0x32

These check digits at the end of the bar code verify the integrity of the data. At least one check digit is always required. Check digits are not automatically transmitted with the data.

If you select two check digits, also select an [MSI Check Digit Algorithm on page 4-45](#).



**\*One MSI Check Digit  
(0x00)**



**Two MSI Check Digits  
(0x01)**

## Transmit MSI Check Digit

### Parameter # 0x2E

Scan one of the following bar codes to select whether to transmit data with or without the check digit.



**Transmit MSI Check Digit (Enable)  
(0x01)**



**\*Do Not Transmit MSI Check Digit (Disable)  
(0x00)**

## MSI Check Digit Algorithm

### Parameter # 0x33

If [MSI Check Digits on page 4-44](#) is set to **Two**, an additional verification is required to ensure integrity. Select one of the following algorithms.



**MOD 10/ MOD 11  
(0x00)**



**\*MOD 10/ MOD 10  
(0x01)**

---

## GS1 DataBar

### Enable/Disable GS1 DataBar-14

#### Parameter # 0xF0 0x52

To enable or disable GS1 DataBar-14, scan the appropriate bar code below.



**Enable GS1 DataBar-14  
(0x01)**



**\*Disable GS1 DataBar-14  
(0x00)**

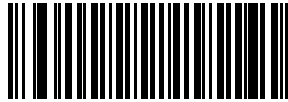
## **Enable/Disable GS1 DataBar Limited**

### **Parameter # 0xF0 0x53**

To enable or disable GS1 DataBar Limited, scan the appropriate bar code below.



**Enable GS1 DataBar Limited  
(0x01)**



**\*Disable GS1 DataBar Limited  
(0x00)**

## **Enable/Disable GS1 DataBar Expanded**

### **Parameter # 0xF0 0x54**

To enable or disable GS1 DataBar Expanded, scan the appropriate bar code below.



**Enable GS1 DataBar Expanded  
(0x01)**



**\*Disable GS1 DataBar Expanded  
(0x00)**

## Convert GS1 DataBar to UPC/EAN

### Parameter # 0xF0 0x8D

This parameter only applies to GS1 DataBar-14 and GS1 DataBar Limited symbols. Enable this conversion to strip the leading **010** from GS1 DataBar-14 and GS1 DataBar Limited symbols encoding a single zero as the first digit, and report the bar code as EAN-13.

For bar codes beginning with two or more zeros but not six zeros, this conversion strips the leading **0100** and reports the bar code as UPC-A. The UPC-A Preamble parameter to transmit the system character and country code applies to converted bar codes. Note that neither the system character nor the check digit can be stripped.



**Enable Convert GS1 DataBar to UPC/EAN**



**\*Disable Convert GS1 DataBar to UPC/EAN**

## Numeric Bar Codes

For parameters requiring specific numeric values, use the following bar codes.



**NOTE** These bar codes differ from the [Numeric Bar Codes for PIN Entry on page 1-24](#) and [Numeric Bar Codes for Date and Time Settings on page 3-6](#).



0



1



2



3



4



---

## Numeric Bar Codes (continued)



5



6



7



8



9

---

## Cancel

In case of an error or to change the selection, scan the bar code below.



**Cancel**

# CHAPTER 5 MAINTENANCE AND TECHNICAL SPECIFICATIONS

---

## Introduction

This chapter provides suggested scanner maintenance, troubleshooting, and technical specifications.

---


## Maintenance

Cleaning the scan window is the only maintenance required. A dirty window can affect scanning accuracy.

- Do not allow any abrasive material to touch the window.
- Remove any dirt particles with a damp cloth.
- Wipe the window using a tissue moistened with ammonia/water.
- Do not spray water or other cleaning liquids directly onto the window.

## Troubleshooting

**Table 5-1** *Troubleshooting*

Problem	Possible Causes	Possible Solutions
Laser comes on, but scanner does not decode the bar code.	Scanner is not programmed for the correct bar code type.	Ensure the scanner is programmed to read the type of bar code being scanned.
	Bar code symbol is unreadable.	Check the symbol to ensure it is not defaced. Try scanning test bar codes of the same bar code type. See <a href="#">Appendix C, Sample Bar Codes</a> for test bar codes.
	Bar code is out of range of the scanner.	Move scanner closer to or further from bar code.
Scanner emits long beeps for 5 seconds when scanning a bar code.	Memory is full.	Download bar code data to the host and clear the memory.
Scanner does not decode the bar code and the LED blinks amber, red, green.	Scanner needs to be reset.	Press the reset button. See <a href="#">Figure 1-1 on page 1-1</a> for the location.
		Scan the Restore Defaults bar code below. 
Scanner LED turns solid red for a few seconds.	Battery is low.	Charge the battery. See <a href="#">Charging the Scanner Battery on page 1-3</a> .
Scanner does not fully charge.	Attempt to charge on a non-powered USB hub.	Connect the scanner to a powered USB hub (5V, 500mA max).
Bluetooth LED turns off.	Scanner is out of range of the Bluetooth host.	Move closer to the host and press any key to re-pair with the host.
Can't see the scanner drive after connecting scanner to host.	Scanner is mapping to a drive used by another device.	Use Windows' map drive function to change the scanner drive letter.



**NOTE** If problems still occur, contact the distributor or Motorola Solutions support. See [page xiii](#) for contact information.

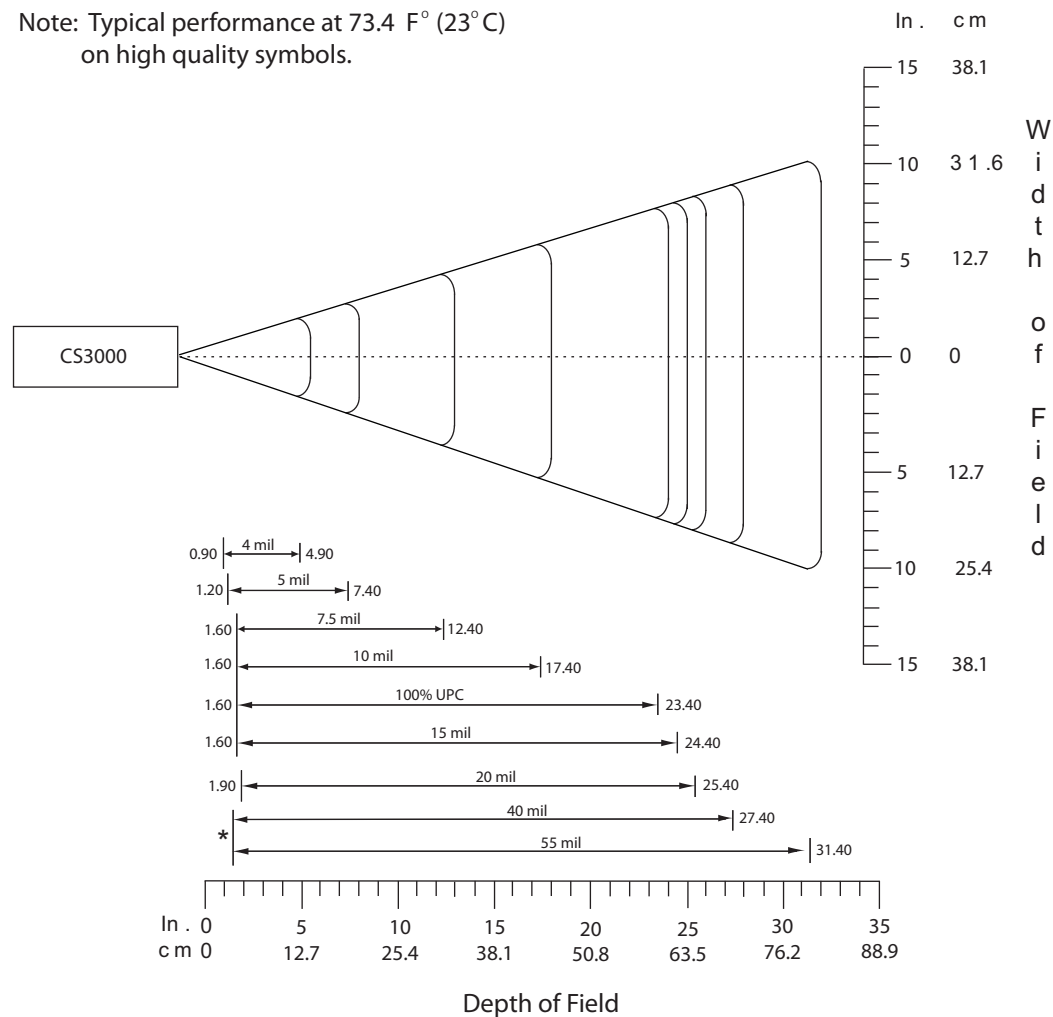
Before contacting support, view the **sysinfo.txt** file in the **\Parameters** folder on the CS30XX. This indicates the device's serial number, software version, Bluetooth version, and scan engine version and is useful when troubleshooting the scanner.

# Technical Specifications

For the latest technical specification information for the CS3000, visit: <http://www.motorola.com/CS3000>

## Decode Zone

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



\*Minimum distance determined by symbol length and scan angle



# APPENDIX A STANDARD DEFAULT PARAMETERS

**Table A-1** *Default Table*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
<b>User Preferences</b>			
Reset	N/A		<a href="#">3-4</a>
Reset Factory Defaults	N/A		<a href="#">3-4</a>
Set Date	N/A		<a href="#">3-5</a>
Set Time	N/A		<a href="#">3-5</a>
Cancel Date and Time Settings	N/A		<a href="#">3-5</a>
Clear Data	N/A		<a href="#">3-7</a>
Beeper Volume	0x8C	Medium	<a href="#">3-8</a>
Beeper Tone	0x91	Medium Frequency	<a href="#">3-9</a>
Mute Beeper	N/A	Do Not Mute	<a href="#">3-10</a>
Scan Angle	0xBF	Wide (47°)	<a href="#">3-11</a>
Transmit “No Read” Message	0x5E	Disable	<a href="#">3-12</a>
Bluetooth Unpair	N/A		<a href="#">3-13</a>
Bluetooth HID Profile	N/A		<a href="#">3-13</a>
Bluetooth Serial Port Profile (SPP)	N/A		<a href="#">3-13</a>
Disable All Symbolologies	N/A	N/A	<a href="#">3-14</a>
Linear Code Type Security Levels	0x4E	1	<a href="#">3-15</a>
Bi-directional Redundancy	0x43	Disable	<a href="#">3-16</a>

**Table A-1** *Default Table (Continued)*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
<b>Data Options</b>			
Transmit Code ID Character	0x2D	None	<a href="#">3-17</a>
Prefix/Suffix Values			<a href="#">3-18</a>
Prefix	0x69	NULL	
Suffix 1	0x68	LF	
Suffix 2	0x6A	CR	
Scan Data Transmission Format	0xEB	Data as is	<a href="#">3-19</a>
Send Firmware Version	N/A		<a href="#">3-21</a>
Send Bluetooth Version	N/A		<a href="#">3-21</a>
Send Scan Engine Version	N/A		<a href="#">3-21</a>
<b>Save Configuration</b>	N/A		<a href="#">3-22</a>
<b>Symbologies</b>			
<b>UPC/EAN</b>			
UPC-A	0x01	Enable	<a href="#">4-5</a>
UPC-E	0x02	Enable	<a href="#">4-5</a>
UPC-E1	0x0C	Disable	<a href="#">4-6</a>
EAN-8	0x04	Enable	<a href="#">4-6</a>
EAN-13	0x03	Enable	<a href="#">4-7</a>
Bookland EAN	0x53	Disable	<a href="#">4-7</a>
Decode UPC/EAN Supplementals	0x10	Ignore	<a href="#">4-8</a>
User-Programmable Supplementals			<a href="#">4-12</a>
Supplemental 1:	0xF1 0x43		
Supplemental 2:	0xF1 0x44		
Decode UPC/EAN Supplemental Redundancy	0x50	7	<a href="#">4-12</a>
Transmit UPC-A Check Digit	0x28	Enable	<a href="#">4-13</a>
Transmit UPC-E Check Digit	0x29	Enable	<a href="#">4-13</a>
Transmit UPC-E1 Check Digit	0x2A	Enable	<a href="#">4-14</a>
UPC-A Preamble	0x22	System Character	<a href="#">4-14</a>
UPC-E Preamble	0x23	System Character	<a href="#">4-15</a>
UPC-E1 Preamble	0x24	System Character	<a href="#">4-16</a>
Convert UPC-E to A	0x25	Disable	<a href="#">4-17</a>
Convert UPC-E1 to A	0x26	Disable	<a href="#">4-17</a>



**Table A-1** *Default Table (Continued)*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
EAN-8 Zero Extend	0x27	Disable	<a href="#">4-18</a>
Bookland ISBN Format	0xF1 0x40	ISBN-10	<a href="#">4-19</a>
UPC/EAN Security Level	0x4D	0	<a href="#">4-20</a>
UCC Coupon Extended Code	0x55	Disable	<a href="#">4-21</a>
<b>Code 128</b>			
Code 128	0x08	Enable	<a href="#">4-21</a>
GS1-128 (formerly UCC/EAN-128)	0x0E	Enable	<a href="#">4-22</a>
ISBT 128	0x54	Enable	<a href="#">4-22</a>
<b>Code 39</b>			
Code 39	0x00	Enable	<a href="#">4-23</a>
Trioptic Code 39	0x0D	Disable	<a href="#">4-23</a>
Convert Code 39 to Code 32	0x56	Disable	<a href="#">4-24</a>
Code 32 Prefix	0xE7	Disable	<a href="#">4-24</a>
Set Length(s) for Code 39	0x12 0x13	2-55	<a href="#">4-25</a>
Code 39 Check Digit Verification	0x30	Disable	<a href="#">4-26</a>
Transmit Code 39 Check Digit	0x2B	Disable	<a href="#">4-26</a>
Code 39 Full ASCII Conversion	0x11	Disable	<a href="#">4-27</a>
<b>Code 93</b>			
Code 93	0x09	Disable	<a href="#">4-28</a>
Set Length(s) for Code 93	0x1A 0x1B	4-55	<a href="#">4-28</a>
<b>Code 11</b>			
Code 11	0x0A	Disable	<a href="#">4-30</a>
Set Lengths for Code 11	0x1C 0x1D	4 to 55	<a href="#">4-30</a>
Code 11 Check Digit Verification	0x34	Disable	<a href="#">4-32</a>
Transmit Code 11 Check Digit(s)	0x2F	Disable	<a href="#">4-33</a>
<b>Interleaved 2 of 5</b>			
Interleaved 2 of 5	0x06	Enable	<a href="#">4-33</a>
Set Length(s) for I 2 of 5	0x16 0x17	14	<a href="#">4-34</a>

**Table A-1** *Default Table (Continued)*

Parameter	Parameter Number (Hex)	Factory Default	Page Number
I 2 of 5 Check Digit Verification	0x31	Disable	<a href="#">4-36</a>
Transmit I 2 of 5 Check Digit	0x2C	Disable	<a href="#">4-36</a>
Convert I 2 of 5 to EAN 13	0x52	Disable	<a href="#">4-37</a>
<b>Discrete 2 of 5</b>			
Discrete 2 of 5	0x05	Disable	<a href="#">4-37</a>
Set Length(s) for D 2 of 5	0x14 0x15	12	<a href="#">4-38</a>
<b>Chinese 2 of 5</b>			
Chinese 2 of 5	0xF0 0x98	Disable	<a href="#">4-39</a>
<b>Codabar</b>			
Codabar	0x07	Disable	<a href="#">4-39</a>
Set Lengths for Codabar	0x18 0x19	5-55	<a href="#">4-40</a>
CLSI Editing	0x36	Disable	<a href="#">4-41</a>
NOTIS Editing	0x37	Disable	<a href="#">4-41</a>
<b>MSI</b>			
MSI	0x0B	Disable	<a href="#">4-42</a>
Set Length(s) for MSI	0x1E 0x1F	6-55	<a href="#">4-43</a>
MSI Check Digits	0x32	One	<a href="#">4-44</a>
Transmit MSI Check Digit	0x2E	Disable	<a href="#">4-44</a>
MSI Check Digit Algorithm	0x33	Mod 10/Mod 10	<a href="#">4-45</a>
<b>GS1 DataBar</b>			
GS1 DataBar-14	0xF0 0x52	Disable	<a href="#">4-45</a>
GS1 DataBar Limited	0xF0 0x53	Disable	<a href="#">4-46</a>
GS1 DataBar Expanded	0xF0 0x54	Disable	<a href="#">4-46</a>
Convert GS1 DataBar to UPC/EAN	0xF0 0x8D	Disable	<a href="#">4-47</a>

# APPENDIX B PROGRAMMING REFERENCE

## Code Type IDs

**Table B-1** *Code Type IDs*

Code Type	Hex Value	Code Type	Hex Value
Not Applicable	0x00	EAN-8 with 2 Supps.	0x4A
Code 39	0x01	EAN-8 with 5 Supps.	0x8A
Codabar	0x02	EAN-13	0x0B
Code 128	0x03	EAN-13 with 2 Supps.	0x4B
Code 11	0x0C	EAN-13 with 5 Supps.	0x8B
Chinese 2 of 5	0x72	MSI	0x0E
Discrete 2 of 5	0x04	GS1-128	0x0F
IATA 2 of 5	0x05	UPC-E1	0x10
Interleaved 2 of 5	0x06	UPC-E1 with 2 Supps.	0x50
Code 93	0x07	UPC-E1 with 5 Supps.	0x90
UPC-A	0x08	Trioptic Code 39	0x15
UPC-A with 2 Supps.	0x48	Bookland EAN	0x16
UPC-A with 5 Supps.	0x88	Coupon Code	0x17
UPC-E0	0x09	GS1 DataBar Limited	0x23
UPC-E0 with 2 Supps.	0x49	GS1 DataBar-14	0x24
UPC-E0 with 5 Supps.	0x89	GS1 DataBar Expanded	0x25
EAN-8	0x0A		

---

## Symbol Code Identifiers

**Table B-2** *Symbol Code Characters*

Code Character	Code Type
A	UPC/EAN
B	Code 39, Code 39 Full ASCII, Code 32
C	Codabar
D	Code 128, ISBT 128
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
H	Code 11
J	MSI
K	UCC/EAN-128
L	Bookland EAN
M	Trioptic Code 39
R	GS1 DataBar Family

---

## AIM Code Identifiers

Each AIM Code Identifier contains the three-character string **jcm** where:

- j = Flag Character (ASCII 93)
- c = Code Character (see [Table B-3](#))
- m = Modifier Character (see [Table B-4](#))

**Table B-3** *Aim Code Characters*

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128 (all variants)
E	UPC/EAN
e	GS1 DataBar Family
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
M	MSI
S	Discrete 2 of 5, IATA 2 of 5
X	Code 39 Trioptic, Bookland EAN

The modifier character is the sum of the applicable option values based on [Table B-4](#).

**Table B-4** *Modifier Characters*

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, <b>A+I+MI+DW</b> , is transmitted as <b>J A7AIMID</b> where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as <b>J X0412356</b> .	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character <sup>FNC1</sup> in the first position, AIMID is transmitted as <b>J C1AIMID</b> .	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as <b>J I04123</b> .	
Codabar	0	Standard Codabar.
	1	ABC Codabar.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar bar code without check digit, 4123, is transmitted as <b>J F04123</b> .	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as <b>J G0012345678905</b> .	
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as <b>J M14123</b> .	

**Table B-4** *Modifier Characters (Continued)*

Code Type	Option Value	Option
D 2 of 5	0	No options specified at this time. Always transmit 0.
		Example: A D 2 of 5 bar code 4123, is transmitted as <b>JS04123</b>
UPC/EAN	0	Standard packet in full EAN country code format, which is 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two-digit supplement data only.
	2	Five-digit supplement data only.
	3	Combined data packet comprising 13 digits from a UPC-A, UPC-E, or EAN-13 symbol and 2 or 5 digits from a supplemental symbol.
	4	EAN-8 data packet.
		Example: A UPC-A bar code 012345678905 is transmitted as <b>JE00012345678905</b> .
Bookland EAN	0	No options specified at this time. Always transmit 0.
		Example: A Bookland EAN bar code 123456789X is transmitted as <b>JX0123456789X</b> .
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
		Example: A Code 11 bar code 12345678901, with one check digit enabled and transmit check digit enabled, is transmitted as <b>JH012345678901</b> .

## GS1-128 (formerly UCC/EAN-128)

GS1-128 is a convention for printing data fields with standard Code 128 bar code symbols. GS1-128 symbols are distinguished by a leading FNC 1 character as the first or second character in the symbol. Other FNC 1 characters are used to delineate fields.

When GS1-128 symbols are read, they are transmitted after special formatting strips off the leading FNC 1 character, and replaces other FNC 1 characters with the ASCII 29 (GS) control character.

When AIM symbology identifiers are transmitted, the modifier character indicates the position of the leading FNC 1 character according to AIM guidelines. For example, **jc1** indicates a GS1-128 symbol with a leading FNC1 character.

Standard Code 128 bar codes which do not have a leading FNC 1 may still be used, but are not encoded according to the GS1-128 convention. Standard Code 128 and GS1-128 may be mixed in an application. The CS3070 autodiscriminates between these symbols, and can enable or disable one or both code types. [Table B-5](#) indicates the behavior of the CS3070 in each of the four possible parameter settings.

**Table B-5** Reading Standard Code 128 & GS1-128

Standard Code 128	GS1-128	Effect and Example
Disable	Disable	No Code 128 symbols can be read.
Disable	Enable	Read only symbols with leading FNC 1. Examples: FNC1ABCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E A <sup>FNC1</sup> BCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E FNC1FNC1ABCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E ABCD <sup>FNC1</sup> E cannot be read ABCDE cannot be read
Enable	Disable	Read only symbols without leading FNC 1. Examples: FNC1ABCD <sup>FNC1</sup> E cannot be read A <sup>FNC1</sup> BCD <sup>FNC1</sup> E cannot be read FNC1FNC1ABCD <sup>FNC1</sup> E cannot be read ABCD <sup>FNC1</sup> E is read as ABCD <sup>29</sup> E ABCDE is read as ABCDE
Enable	Enable	Read both types of symbols. Examples: FNC1ABCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E A <sup>FNC1</sup> BCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E FNC1FNC1ABCD <sup>FNC1</sup> E are read as ABCD <sup>29</sup> E ABCD <sup>FNC1</sup> E is read as ABCD <sup>29</sup> E ABCDE is read as ABCDE



## Setting Prefixes and Suffixes

To append a prefix and suffixes to the decode data:

1. Set the Scan Data Transmission Format (parameter 0xE2) to the desired option.
2. Enter the required value(s) for Prefix (0x69), Suffix1 (0x68) or Suffix2 (0x6A) using the hex values for the desired ASCII value from [Table B-6](#).

**Table B-6** *Character Equivalents*

Scan Value	Hex Value	Full ASCII Code 39 Encode Char.	Keystroke
1000	00h	%U	CTRL 2
1001	01h	\$A	CTRL A
1002	02h	\$B	CTRL B
1003	03h	\$C	CTRL C
1004	04h	\$D	CTRL D
1005	05h	\$E	CTRL E
1006	06h	\$F	CTRL F
1007	07h	\$G	CTRL G
1008	08h	\$H	CTRL H
1009	09h	\$I	CTRL I
1010	0Ah	\$J	CTRL J
1011	0Bh	\$K	CTRL K
1012	0Ch	\$L	CTRL L
1013	0Dh	\$M	CTRL M
1014	0Eh	\$N	CTRL N
1015	0Fh	\$O	CTRL O
1016	10h	\$P	CTRL P
1017	11h	\$Q	CTRL Q
1018	12h	\$R	CTRL R
1019	13h	\$S	CTRL S
1020	14h	\$T	CTRL T
1021	15h	\$U	CTRL U
1022	16h	\$V	CTRL V
1023	17h	\$W	CTRL W
1024	18h	\$X	CTRL X

**Table B-6** *Character Equivalents (Continued)*

Scan Value	Hex Value	Full ASCII Code 39 Encode Char.	Keystroke
1025	19h	\$Y	CTRL Y
1026	1Ah	\$Z	CTRL Z
1027	1Bh	%A	CTRL [
1028	1Ch	%B	CTRL \
1029	1Dh	%C	CTRL ]
1030	1Eh	%D	CTRL 6
1031	1Fh	%E	CTRL -
1032	20h	Space	Space
1033	21h	/A	!
1034	22h	/B	'
1035	23h	/C	#
1036	24h	/D	\$
1037	25h	/E	%
1038	26h	/F	&
1039	27h	/G	'
1040	28h	/H	(
1041	29h	/I	)
1042	2Ah	/J	*
1043	2Bh	/K	+
1044	2Ch	/L	,
1045	2Dh	-	-
1046	2Eh	.	.
1047	2Fh	/	/
1048	30h	0	0
1049	31h	1	1
1050	32h	2	2
1051	33h	3	3
1052	34h	4	4
1053	35h	5	5
1054	36h	6	6
1055	37h	7	7

**Table B-6** *Character Equivalents (Continued)*

Scan Value	Hex Value	Full ASCII Code 39 Encode Char.	Keystroke
1056	38h	8	8
1057	39h	9	9
1058	3Ah	/Z	:
1059	3Bh	%F	;
1060	3Ch	%G	<
1061	3Dh	%H	=
1062	3Eh	%I	>
1063	3Fh	%J	?
1064	40h	%V	@
1065	41h	A	A
1066	42h	B	B
1067	43h	C	C
1068	44h	D	D
1069	45h	E	E
1070	46h	F	F
1071	47h	G	G
1072	48h	H	H
1073	49h	I	I
1074	4Ah	J	J
1075	4Bh	K	K
1076	4Ch	L	L
1077	4Dh	M	M
1078	4Eh	N	N
1079	4Fh	O	O
1080	50h	P	P
1081	51h	Q	Q
1082	52h	R	R
1083	53h	S	S
1084	54h	T	T
1085	55h	U	U
1086	56h	V	V

**Table B-6** *Character Equivalents (Continued)*

Scan Value	Hex Value	Full ASCII Code 39 Encode Char.	Keystroke
1087	57h	W	W
1088	58h	X	X
1089	59h	Y	Y
1090	5Ah	Z	Z
1091	5Bh	%K	[
1092	5Ch	%L	\
1093	5Dh	%M	]
1094	5Eh	%N	^
1095	5Fh	%O	_
1096	60h	%W	'
1097	61h	+A	a
1098	62h	+B	b
1099	63h	+C	c
1100	64h	+D	d
1101	65h	+E	e
1102	66h	+F	f
1103	67h	+G	g
1104	68h	+H	h
1105	69h	+I	i
1106	6Ah	+J	j
1107	6Bh	+K	k
1108	6Ch	+L	l
1109	6Dh	+M	m
1110	6Eh	+N	n
1111	6Fh	+O	o
1112	70h	+P	p
1113	71h	+Q	q
1114	72h	+R	r
1115	73h	+S	s
1116	74h	+T	t
1117	75h	+U	u

**Table B-6** *Character Equivalents (Continued)*

Scan Value	Hex Value	Full ASCII Code 39 Encode Char.	Keystroke
1118	76h	+V	v
1119	77h	+W	w
1120	78h	+X	x
1121	79h	+Y	y
1122	7Ah	+Z	z
1123	7Bh	%P	{
1124	7Ch	%Q	
1125	7Dh	%R	}
1126	7Eh	%S	~
1127	7Fh		Undefined

Values from 1128 through 1255 may also be set.



# APPENDIX C SAMPLE BAR CODES

---

## UPC-A



---

## UPC-E



---

## UPC-E1



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable UPC-E1 on page 4-6](#).



---

## EAN-13



---

## EAN-8



---

## Code 39





---

## Trioptic Code 39



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable Trioptic Code 39 on page 4-23](#).



---

## Code 93



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable Code 93 on page 4-28](#).



---

## Code 11



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable Code 11 on page 4-30](#).



---

## Codabar



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable Codabar on page 4-39](#).



---

## MSI



**NOTE** To enable this symbology in order to scan the sample, see [Enable/Disable MSI on page 4-42](#).



---

## Interleaved 2 of 5



# INDEX

## A

AIM code identifiers .....	B-3
modifier characters .....	B-4
autorun .....	2-2

## B

bar codes	
beeper tone .....	3-9
beeper volume .....	3-8
bi-directional redundancy .....	3-16
bluetooth options .....	3-13
cancel .....	4-50
Chinese 2 of 5 .....	4-39
clear data .....	3-7
codabar .....	4-39
CLSI editing .....	4-41
lengths .....	4-40
NOTIS editing .....	4-41
code 11 .....	4-30
check digit verification .....	4-32
lengths .....	4-30
transmit check digits .....	4-33
code 128 .....	4-21
GS1-128 .....	4-22
ISBT 128 .....	4-22
lengths .....	4-22
code 39 .....	4-23
check digit verification .....	4-26
code 39 full ASCII .....	4-27
lengths .....	4-25
transmit check digit .....	4-26
trioptic code 39 .....	4-23
code 93 .....	4-28
lengths .....	4-28
disable all symbologies .....	3-14
discrete 2 of 5 .....	4-37
lengths .....	4-38
GS1 DataBar .....	4-45
convert to UPC/EAN .....	4-47
GS1 DataBar Expanded .....	4-46
GS1 DataBar Limited .....	4-46
GS1 DataBar-14 .....	4-45
interleaved 2 of 5 .....	4-33
check digit verification .....	4-36
convert 1 2 of 5 to EAN-13 .....	4-37
lengths .....	4-34
transmit check digit .....	4-36
linear code type security .....	3-15–3-16
MSI plessey .....	4-42
check digit algorithm .....	4-45
check digits .....	4-44
lengths .....	4-43
transmit check digit .....	4-44
mute beeper .....	3-10
numeric .....	4-48
numeric for pin entry .....	1-24
prefix/suffix values .....	3-18
reset .....	3-4
reset to factory defaults .....	3-4
sample .....	C-1
save configuration .....	3-22
scan angle .....	3-11
scan data transmission format .....	3-19
send versions .....	3-21
set date and time .....	3-5
symbologies	
default table .....	4-2
transmit code ID character .....	3-17
transmit no read message .....	3-12
UPC/EAN .....	4-5
bookland EAN .....	4-7
bookland ISBN format .....	4-19

convert UPC-E to UPC-A	4-17
convert UPC-E1 to UPC-A	4-17
decode supplementals	4-8
EAN zero extend	4-18
EAN-13	4-7
EAN-8	4-6
security level	4-20
supplemental redundancy	4-12
UCC coupon extended code	4-21
UPC-A	4-5
UPC-A check digit	4-13
UPC-A preamble	4-14
UPC-E	4-5
UPC-E check digit	4-13
UPC-E preamble	4-15
UPC-E1	4-6
UPC-E1 check digit	4-14
UPC-E1 Preamble	4-16
user-programmable supplementals	4-12
batch	1-5
transmitting data	2-2
battery	
charging	1-3, 1-5
charging via cradle	1-4
charging via USB host cable	1-3
replacing	1-3
beeper	
definitions	2-5
muting	3-10
setting tone	3-9
setting volume	3-8
bluetooth	1-1
address	1-25, 1-26
beeper definitions	2-5
button	1-1, 1-6, 1-7, 1-13, 1-21
connecting	1-5, 1-6
HID pairing	1-6, 1-7, 1-13, 1-17
HID profile	3-13
iPad pairing	1-21
LED definitions	2-4
out of range	2-3
pin	1-26
profiles	3-13
serial number	1-25, 1-26
SPP pairing	1-10
SPP profile	3-13
transmitting data	2-2
unpairing	3-13
bluetooth pin	1-26
bullets	xii
buttons	
bluetooth	1-1, 1-6, 1-7, 1-13, 1-21
delete	2-2
scan	1-1

**C**

cables	
host	1-3
installing	1-2
charging	1-3, 1-5
LED definitions	2-4
LEDs	1-5
via cradle	1-4
via USB host cable	1-3
cleaning	5-1
clearing data	3-7
code identifiers	
AIM	B-3
AIM modifier characters	B-4
Symbol	B-2
code types	
IDs	B-1
configuration file	1-25
editing	1-26
parameters	1-26
configuring scanner	1-25
editing configuration file	1-26
connecting	
batch	1-5
bluetooth	1-5, 1-6
cradle	1-2, 1-4
to host	1-5
conventions	
notational	xii
cradle	1-2
charging	1-4
connecting	1-2

**D**

data storage	1-3
date	
setting	1-26, 3-5, 3-6
decode zone	5-3
default parameters	3-2
symbolologies	4-2
user preferences	3-2
default table	4-2, A-1
deleting bar codes	2-2
Droid	
pairing	1-6

**G**

GS1-128	B-6
---------	-----

- I**
- interfaces ..... 1-1
  - iPad
    - pairing ..... 1-21
- L**
- LED ..... 1-1
    - charging ..... 1-5
    - definitions ..... 2-3
- M**
- maintenance ..... 5-1
  - Motorola Solutions support ..... xiii
- N**
- notational conventions ..... xii
  - numeric bar codes ..... 4-48
    - for pin entry ..... 1-24
- P**
- pairing ..... 1-5, 1-6
    - Droid ..... 1-6
    - HID ..... 1-6, 1-7, 1-13, 1-17
    - iPad ..... 1-21
    - SPP ..... 1-10
    - windows mobile device ..... 1-13, 1-17
  - passkey ..... 1-8, 1-12
    - numeric bar codes ..... 1-24
  - pin ..... 1-8, 1-12, 1-26
    - default ..... 1-26
    - numeric bar codes ..... 1-24
  - prefixes ..... B-7
- R**
- resetting scanner ..... 3-4
    - to factory defaults ..... 3-4
- S**
- sample bar codes ..... C-1
  - save configuration ..... 3-22
  - scanner defaults ..... 3-2
  - scanning ..... 2-1
    - aiming ..... 2-1
    - button ..... 1-1
    - errors ..... 3-1, 4-1
    - parameters ..... 3-1
    - scan angle ..... 3-11
    - sequence example ..... 4-1
    - transmitting data ..... 2-2
  - service information ..... xiii
  - setup
    - bluetooth ..... 1-5, 1-6
    - charging ..... 1-3
    - configuring scanner ..... 1-25
    - connecting to host ..... 1-5
    - cradle ..... 1-2
    - editing configuration file ..... 1-26
    - scanner ..... 1-2
    - unpacking ..... 1-2
  - specifications ..... 5-3
  - standard defaults ..... 3-2
  - suffixes ..... B-7
  - support ..... xiii
  - Symbol code identifiers ..... B-2
  - symbology default parameters ..... 4-2
- T**
- technical specifications ..... 5-3
  - time
    - setting ..... 1-26, 3-5, 3-6
  - transmitting data ..... 2-2
    - bluetooth ..... 2-2
  - troubleshooting ..... 5-2
- U**
- unpacking ..... 1-2
  - unpairing ..... 1-23, 3-13
  - USB ..... 1-1
    - port ..... 1-1
  - user interface ..... 2-3
    - LED definitions ..... 2-3
  - user preferences parameters ..... 3-2
- V**
- version
    - bar codes ..... 3-21
- W**
- windows mobile device
    - pairing ..... 1-13, 1-17



# Quick Start Instructions

## Getting Started

Device Layout: Buttons / LEDs / USB Port- - - - -	1-1, 2-1, 2-2
Charging - - - - -	1-3, 1-5, 2-3
Battery strength LED - - - - -	1-3
LED indication table - - - - -	2-3

## Batch Operation

BarcodeFile.txt - file storing batch scanned data - - - - -	2-2
Batch data transfer process - - - - -	1-3, 1-5
Clearing all bar code data - - - - -	2-2, 2-3, 3-7

## Bluetooth Operation

Bluetooth profile options - - - - -	1-5
-------------------------------------	-----

### Pairing

Serial Port Profile (overview) - - - - -	1-6
Bar code for SPP mode / PIN entry - - - - -	1-19, 1-26, 3-13
PC host - - - - -	1-10
Smart Phone (Windows Mobile 6.5)- - - - -	1-17
HID (overview) - - - - -	1-6
Bar code for HID mode / PIN entry - - - - -	1-24, 3-13
Droid- - - - -	1-6
PC host- - - - -	1-7
Smart Phone (Windows Mobile 6.5)- - - - -	1-13

Transferring data- - - - -	2-2
Out of range behavior - - - - -	2-3

## Developer Recommendations

Bluetooth connection options - - - - -	1-6, 2-2
Batch programming option / Autorun.inf- - - - -	2-2
Staging multiple scanners	
Programming a golden scanner via bar codes - - - - -	1-25
Generating a config.ini file - - - - -	1-25
Editing the config.ini file- - - - -	1-26
Staging multiple scanners - - - - -	1-25

## Frequently Used Parameters

Reset to Factory Defaults- - - - -	3-4
Default parameter settings tables - - - - -	3-2, A-1
Programming Time/Date - - - - -	1-26, 3-5, 3-6
Enabling Time/Date stamp - - - - -	1-26
Beeper settings- - - - -	3-8, 3-9, 3-10
Disable All Symbolologies - - - - -	3-14
Data formatting (Prefix/Suffix values) - - - - -	3-17, 3-18, 3-19, B-7
Numeric bar codes	
HID Pairing - - - - -	1-24
Time / Date entry - - - - -	3-6
Numeric bar codes for general use- - - - -	4-48
Sleep mode - - - - -	1-27
Bluetooth Profiles (HID and SPP) - - - - -	3-13



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