Customer Side Scanner for the MP7000 Scanner Scale

Product Reference Guide
MX101 CUSTOMER SIDE SCANNER FOR THE MP7000 SCANNER SCALE

PRODUCT REFERENCE GUIDE

MN-003031-02
Revision A
April 2018
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# Revision History

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About This Guide

Introduction

The MX101 Product Reference Guide provides general instructions for setting up, operating, maintaining, and troubleshooting the MX101 digital scanner.

Configurations

MX101 Kit: MX101-SR7000WW.

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<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, CSS, Platter without Flip Up Bar, United States</td>
</tr>
<tr>
<td>MP7011-LNSLM00AU</td>
<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, Platter with Flip Up Bar, CSS, Australia</td>
</tr>
<tr>
<td>MP7011-LNSLM00CM</td>
<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, Platter with Flip Up Bar, Canada/Mexico</td>
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<tr>
<td>MP7011-LNSLM00US</td>
<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, CSS, Platter with Flip Up Bar, United States</td>
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Notes:

1. EU scales are legally accepted in the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom

2. OIML scales are legally accepted in the following countries: Bahamas, Barbados, Belize, Bermuda, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Hong Kong, Jamaica, Saint Lucia, Panama, Peru, Philippines, Thailand, Trinidad, and Tobago
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<th>Configuration</th>
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<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, CSS, Drivers License Parsing, Platter with Flip Up Bar, United States</td>
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<td>MP7011-LNSLM00NN</td>
<td>MP7011 Scanner Scale, Long, Single Interval Scale, Sapphire, CSS, Platter with Flip Up Bar, OIML</td>
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<tr>
<td>MP7011-MNSLM00US</td>
<td>MP7011 Scanner Scale, Medium, Single Interval Scale, Sapphire, CSS, Platter with Flip Up Bar, United States</td>
</tr>
<tr>
<td>MP7011-MPSLM00US</td>
<td>MP7011 Scanner Scale, Medium, Single Interval Scale, Sapphire, CSS, Platter with Flip Up Bar, Drivers License Parsing, United States</td>
</tr>
<tr>
<td>MP7012-LNSLM00EU</td>
<td>MP7012 Scanner Scale, Long, Dual Interval, Sapphire, CSS, Europe</td>
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<tr>
<td>MP7012-MNSLM00EU</td>
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<td>MP7012-LNSLM00NN</td>
<td>MP7012 Scanner Scale, Long, Dual Interval, Sapphire, CSS, OIML</td>
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<tr>
<td>MP7012-MNSLM00NN</td>
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<td>MP7012-MNSLM00RU</td>
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Notes:
1. EU scales are legally accepted in the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom
2. OIML scales are legally accepted in the following countries: Bahamas, Barbados, Belize, Bermuda, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Hong Kong, Jamaica, Saint Lucia, Panama, Peru, Philippines, Thailand, Trinidad, and Tobago

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**Chapter Descriptions**

Topics covered in this guide are as follows:

- **Chapter 1, Getting Started** provides information about the scanner’s features, and setting up, installing, and configuring the digital scanner.
- **Chapter 2, Data Capture** provides beeper and LED definitions, techniques involved in capturing barcodes, general instructions and tips about scanning, and decode range information.
- **Chapter 3, USB Interface** describes how to set up the decoder with a USB host.
- **Chapter 4, User Preferences & Miscellaneous Options** describes features frequently used to customize how data transmits to the host device and programming barcodes for selecting user preference features for the decoder.
• Chapter 5, Symbologies describes all symbology features and provides programming barcodes for selecting these features for the decoder.

• Chapter 6, 123Scan and Software Tools describes this PC-based scanner configuration tool which enables rapid and easy customized setup of scanners.

• Chapter 7, Installing the MX101 Customer Side Scanner provides the steps to install the MX101 into the MP7000.

• Chapter 8, Maintenance, Troubleshooting, and Signal Descriptions provides suggested digital scanner maintenance, troubleshooting, technical specifications, and signal descriptions (pinouts).

• Appendix A, Standard Parameter Defaults provides a table of all host devices and miscellaneous defaults.

• Appendix B, Programming Reference provides a table of AIM code identifiers, ASCII character conversions, and keyboard maps.

• Appendix C, Numeric Bar Codes includes the numeric barcodes to scan for parameters requiring specific numeric values.

• Appendix D, Alphanumeric Bar Codes includes the alphanumeric barcodes to scan for parameters requiring specific alphanumeric values.

• Appendix E, Sample Bar Codes includes sample barcodes of various code types.

Notational Conventions

The following conventions are used in this document:

• MP7000 Scanner Scale is used interchangeable with MP70XX.

• Italic text is used to highlight the following:
  • Chapters and sections in this and related documents
  • Dialog box, window and screen names
  • Drop-down list and list box names
  • Check box and radio button names

• Bold text is used to highlight the following:
  • Key names on a keypad
  • Button names on a screen.

• bullets (•) indicate:
  • Action items
  • Lists of alternatives
  • Lists of required steps that are not necessarily sequential

• Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

• Throughout the programming barcode menus, asterisks (*) are used to denote default parameter settings.
Related Documents

- **MP7000 Scanner Scale Integrator Guide**, p/n MN-002914-xx, provides site preparation and installation information, as well as operating instructions.
- **MP7000 Scanner Scale Barcode Programming Guide**, p/n MN-002912-xx, provides barcodes for MP7000 Scanner Scale configuration.
- **MP7000 Scanner Scale Regulatory Guide**, p/n MN-002939-xx, provides domestic and international regulatory information, and China RoHS information.
- **Advanced Data Formatting Programmer Guide**, p/n 72E-69680-xx, provides information on ADF, a means of customizing data before transmission to a host.

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

Recommended Services 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 Zebra Customer Support Center at: [www.zebra.com/support](http://www.zebra.com/support).

When contacting Zebra support, please have the following information available:

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

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

If your problem cannot be solved by the Zebra Customer Support Center, you may need to return your equipment for servicing and will be given specific directions or a Field Service Technician may be sent to your location to perform the repair, depending on your level of entitlement set forth in the service agreement. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

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

Zebra recommends the following Service options to keep the MP7000 Scanner Scale operating at peak performance throughout its life-cycle:

- Service from the Start with Advance Exchange Support (available for scanner-only configurations).
- Service from the Start with On Site System Support (available for scanner-only and scanner/scale configurations).

Provide Documentation Feedback

If you have comments, questions, or suggestions about this guide, send an email to [EVM-Techdocs@zebra.com](mailto:EVM-Techdocs@zebra.com).
CHAPTER 1 GETTING STARTED

Introduction

The MX101 combines superior 1D and 2D omnidirectional barcode scanning with an advanced feature set in a compact design. The digital scanner was designed to integrate seamlessly into the MP7000 Scanner Scale and is optimized for scanning customer cell phones and loyalty cards.

This chapter provides information about the scanner’s features, and setting up, installing, and configuring the digital scanner.

Interfaces

The MX101 digital scanner connects to the MP7000 Scanner Scale via a single USB cable, and defaults to the SNAPI interface type.

Unpacking

Remove the unit from the packing and inspect for damage. If the scanner was damaged in transit, visit the Zebra Support & Downloads web site at www.zebra.com/support for information. KEEP THE PACKING. It is the approved shipping container and should be used if the equipment ever needs to be returned for servicing.
Features

The default location of the MX101 is in the left side tower of MP7000 Scanner Scale units purchased with an integrated MX101. The MX101 can be repositioned to the right side tower of the MP70XX if needed.

To add the MX101 to the MP7000 Scanner Scale customers must purchase the MX101-SR7000WW kit.

The MX101 scanner has the following features:

- Scans paper and mobile phone 1D/2D loyalty cards and coupons.
- Auditory and visual feedback on decode.
- Auto wakeup upon object presentation.

![Scanner Features Diagram]

Figure 1-1  Scanner Features

To add the MX101 to the MP7000 Scanner Scale customers must purchase the MX101-SR7000WW kit.
Installing and Configuring the Digital Scanner

To configure the digital scanner use the barcodes included in this manual, or use the 123Scan configuration program (see Chapter 6, 123Scan and Software Tools). Also see Chapter 4, User Preferences & Miscellaneous Options and Chapter 5, Symbologies for information about programming the digital scanner using barcode menus.

See Chapter 7, Installing the MX101 Customer Side Scanner for instructions to install the MX101 into the MP7000 Scanner Scale.
CHAPTER 2 DATA CAPTURE

Introduction

This chapter provides beeper and LED definitions, techniques involved in capturing barcodes, general instructions and tips about scanning, and decode range information.

Beeper and Decode LED Signals

The digital scanner has a visual green LED indicator and issues different beep sequences, and patterns to indicate status. Table 2-1 defines beep sequences that occur during both normal scanning and while programming the digital scanner.

Table 2-1  User Interface Indications

<table>
<thead>
<tr>
<th>Description</th>
<th>Indication</th>
<th>Beeper</th>
<th>Decode LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Decode</td>
<td>No Audible Sound</td>
<td></td>
<td>No Light</td>
</tr>
<tr>
<td>Decode</td>
<td>Middle Tone</td>
<td></td>
<td>Flash of Light</td>
</tr>
<tr>
<td>Bootup</td>
<td>Low Tone, Middle Tone, High Tone</td>
<td></td>
<td>No Light</td>
</tr>
<tr>
<td>Transmission Error</td>
<td>Four Low Tones</td>
<td></td>
<td>No Light</td>
</tr>
<tr>
<td>Entry Error</td>
<td>Low Tone, High Tone</td>
<td></td>
<td>Flash of Light</td>
</tr>
<tr>
<td>Defaults Set</td>
<td>High Tone, Low Tone, High Tone, Low Tone</td>
<td></td>
<td>Flash of Light</td>
</tr>
<tr>
<td>Parameter Entered</td>
<td></td>
<td></td>
<td>Flash of Light</td>
</tr>
<tr>
<td>Number Entry Expected</td>
<td>High Tone, Low Tone</td>
<td></td>
<td>Flash of Light</td>
</tr>
</tbody>
</table>
Scanning

For standard operation, the scanner automatically decodes barcodes that are presented in its field of view.

Figure 2-1 Scanning

Decode Ranges

Table 2-2 Decode Ranges

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<th>Typical Working Ranges (from side of MP70XX)</th>
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<td>Near</td>
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<tr>
<td>UPCA</td>
<td>Contact Read</td>
</tr>
<tr>
<td>13.0mil</td>
<td></td>
</tr>
<tr>
<td>80% MRD</td>
<td></td>
</tr>
<tr>
<td>PDF417</td>
<td>Contact Read</td>
</tr>
<tr>
<td>6.67mil</td>
<td></td>
</tr>
<tr>
<td>80% MRD</td>
<td></td>
</tr>
<tr>
<td>Code 128</td>
<td>Contact Read</td>
</tr>
<tr>
<td>15.0mil</td>
<td></td>
</tr>
<tr>
<td>80% MRD</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 3 USB INTERFACE

Introduction

This chapter describes how to set up the scanner which connects directly to a USB port on the MP70XX. No additional power supply is required.

The scanner ships with the settings shown in Table 3-1 on page 3-2 (also see Appendix A, Standard Parameter Defaults for all defaults). If the default values suit requirements, programming is not necessary.

Setting Parameters

To set feature values, scan a single barcode or a short barcode sequence. The settings are stored in non-volatile memory and are preserved even when the scanner powers down.

✓ NOTE Most computer monitors allow scanning barcodes directly on the screen. When scanning from the screen, be sure to set the document magnification to a level where you can see the barcode clearly, and bars and/or spaces do not merge.

To return all features to default values, see Default Parameters on page 4-4. Throughout the programming barcode menus, asterisks (*) indicate default values.

Errors While Scanning

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

Table 3-1 lists defaults for USB host parameters. Change these values in one of two ways:

- Scan the appropriate barcodes in this chapter. The new value replaces the standard default value in memory.
  To recall default parameter values, see Default Parameters on page 4-4.

- Configure the scanner using the 123Scan configuration program. See Chapter 6, 123Scan and Software Tools.

NOTE See Appendix A, Standard Parameter Defaults for all user preference, host, symbology, and miscellaneous default parameters.

Table 3-1 USB Interface Parameter Defaults

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Host Parameters</td>
<td>Symbol Native API (SNAPI) with Imaging Interface</td>
<td>3-2</td>
</tr>
<tr>
<td>TGCS (IBM) USB Specification Version</td>
<td>IBM Specification Level Version 0 (Original)</td>
<td>3-3</td>
</tr>
</tbody>
</table>

USB Host Parameters

When the MX101 connects to the MP70XX, the MP70XX manages the device using the best fit host type to maximize communication between the two devices. Host types should not change. The default host type is Symbol Native API (SNAPI) with Imaging Interface. Scan Symbol Native API (SNAPI) without Imaging Interface to change the option.

NOTE When changing USB Device Types, the scanner resets and issues the standard startup beep sequences.

NOTE See Appendix A, Standard Parameter Defaults for all user preferences, symbologies, and miscellaneous default parameters.
TGCS (IBM) USB Specification Version

**IBM Specification Level Version 0 (Original)** sends the following code types as Unknown:

- Data Matrix
- QR Code
- MicroQR Code
- Aztec

**IBM Specification Level Version 2.2** sends the code types with the appropriate IBM identifiers.

*IBM Specification Level Version 0 (Original)*

IBM Specification Level Version 2.2
3 - 4 MX101 Customer Side Scanner for the MP7000 Scanner Scale PRG
CHAPTER 4 USER PREFERENCES & MISCELLANEOUS OPTIONS

Introduction

You can program the scanner to perform various functions, or activate different features. This chapter describes user preference features and provides programming barcodes for selecting these features.

The scanner ships with the settings shown in Table 4-1 on page 4-2 (also see Appendix A, Standard Parameter Defaults for all defaults). If the default values suit requirements, programming is not necessary.

Setting Parameters

To set feature values, scan a single barcode or a short barcode sequence. The settings are stored in non-volatile memory and are preserved even when the scanner powers down.

NOTE Most computer monitors allow scanning barcodes directly on the screen. When scanning from the screen, be sure to set the document magnification to a level where you can see the barcode clearly, and bars and/or spaces do not merge.

If not using the default host, select the host type (see each host chapter for specific host information) after the power-up beeps sound. This is only necessary upon the first power-up when connected to a new host.

To return all features to default values, see Default Parameters on page 4-4. Throughout the programming barcode menus, asterisks indicate (*) default values.
Phantom Scan Session

The *Phantom Scan Session* feature places the system into a known state for two seconds immediately after the power-up beep sequence in order to decode a parameter barcode without intervention, and regardless of existing settings and mode. This allows the user to scan a *Set Defaults*, or other parameter barcode without triggering the decoder or initiating a host scan session in order to return an unresponsive system to its factory default settings. Aim and illumination are turned off, and Phantom Scan exits upon a host command or successful decode.

Scanning Sequence Examples

In most cases, scanning one barcode sets the parameter value. For example, to set the beeper tone to high, scan the *High Frequency* (beeper tone) barcode listed under *Beeper Tone on page 4-8*. The scanner issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several barcodes. See the parameter descriptions for this procedure.

Errors While Scanning

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

User Preferences/Miscellaneous Options Parameter Defaults

*Table 4-1* lists defaults for user preferences parameters. Change these values in one of two ways:

- Scan the appropriate barcodes in this chapter. The new value replaces the standard default value in memory. To recall default parameter values, see *Default Parameters on page 4-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 6, 123Scan and Software Tools*.

**NOTE** See *Appendix A, Standard Parameter Defaults* for all user preference, host, symbology, and miscellaneous default parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Preferences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set Default Parameter</td>
<td>N/A</td>
<td>N/A</td>
<td>Restore Defaults</td>
<td>4-4</td>
</tr>
<tr>
<td>Parameter Barcode Scanning</td>
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<td>ECh</td>
<td>Enable</td>
<td>4-5</td>
</tr>
<tr>
<td>Lock Parameter Scanning</td>
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<td>F2h 22h</td>
<td>Disable</td>
<td>4-5</td>
</tr>
<tr>
<td>Unlock Parameter Scanning</td>
<td>803</td>
<td>F2h 23h</td>
<td>Disable</td>
<td>4-5</td>
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<tr>
<td>Beep After Good Decode</td>
<td>56</td>
<td>38h</td>
<td>Enable</td>
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</tr>
<tr>
<td>Beeper Volume</td>
<td>140</td>
<td>8Ch</td>
<td>High</td>
<td>4-7</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number 1</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beeper Tone</td>
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<td>91h</td>
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</tr>
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<td>628</td>
<td>74h</td>
<td>Long</td>
<td>4-9</td>
</tr>
<tr>
<td>Trigger Mode</td>
<td>138</td>
<td>8Ah</td>
<td>Presentation Mode</td>
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</tr>
<tr>
<td>Decode Aiming Pattern</td>
<td>306</td>
<td>32h</td>
<td>Disable</td>
<td>4-10</td>
</tr>
<tr>
<td>Suppress Power Up Beeps</td>
<td>721</td>
<td>D1h</td>
<td>Do Not Suppress</td>
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</tr>
<tr>
<td>Motion Detect Range</td>
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<td>Timeout Between Decodes, Same Symbol</td>
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<td>4-12</td>
</tr>
<tr>
<td>Timeout Between Decodes, Different Symbols</td>
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<td>90h</td>
<td>0.2 Seconds</td>
<td>4-12</td>
</tr>
<tr>
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<td>Enable</td>
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<tr>
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<td>75h</td>
<td>3 inches</td>
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</tr>
<tr>
<td>Presentation Mode Field of View</td>
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<td>61h</td>
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</tr>
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<td>Fuzzy 1D Processing</td>
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<td>Enable</td>
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<td>Disable</td>
<td>4-16</td>
</tr>
<tr>
<td>Decoding Illumination</td>
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<td>2Ah</td>
<td>Enable</td>
<td>4-16</td>
</tr>
<tr>
<td>Illumination Brightness</td>
<td>669</td>
<td>9Dh</td>
<td>6</td>
<td>4-17</td>
</tr>
<tr>
<td>Validate Concatenated Parameter Barcodes</td>
<td>692</td>
<td>B4h</td>
<td>Disable</td>
<td>4-17</td>
</tr>
<tr>
<td>Miscellaneous Options</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Code ID Character</td>
<td>45</td>
<td>2Dh</td>
<td>None</td>
<td>4-18</td>
</tr>
<tr>
<td>SSI Prefix Value</td>
<td>99, 105</td>
<td>63h, 69h</td>
<td>&lt;CR&gt;</td>
<td>4-19</td>
</tr>
<tr>
<td>SSI Suffix 1 Value</td>
<td>98, 104, 106</td>
<td>62h, 64h, 6Ah</td>
<td>&lt;CR&gt;</td>
<td>4-19</td>
</tr>
<tr>
<td>SSI Suffix 2 Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scan Data Transmission Format</td>
<td>235</td>
<td>EBh</td>
<td>Data As Is</td>
<td>4-20</td>
</tr>
<tr>
<td>Send Versions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Version</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4-22</td>
</tr>
<tr>
<td>Manufacturing Information</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4-22</td>
</tr>
<tr>
<td>Camera Manufacturing Information</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>4-22</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
User Preferences

Default Parameters
Scan one of the following barcodes to reset the scanner to its default settings as follows:

- **Restore Defaults** resets all default parameters as follows:
  - If you configured custom default parameter values via the Write to Custom Defaults barcode, scanning the Restore Defaults barcode restores these custom values.
  - If you did not configure custom default parameter values, scanning the Restore Defaults barcode restores the factory default values. See Appendix A, Standard Parameter Defaults for these values.

- **Set Factory Defaults** clears all custom default values and sets the factory default values. See Appendix A, Standard Parameter Defaults for these values.

---

![Barcode Image]

*Restore Defaults

---

![Barcode Image]

Set Factory Defaults

---

**Write to Custom Defaults**
To create a set of custom defaults, select the desired parameter values in this guide, and then scan Write to Custom Defaults.

![Barcode Image]

Write to Custom Defaults
Parameter Barcode Scanning

Parameter # 236
SSI # ECh

Scan one of the following barcodes to select whether to enable or disable the decoding of parameter barcodes, including the **Set Defaults** barcodes.

*Enable Parameter Barcode Scanning (1)*

![Barcode Image]

**Disable Parameter Barcode Scanning (0)**

![Barcode Image]

Lock/Unlock Parameter Scanning

Lock: Parameter # 803
Unlock: Parameter # 803
Lock: SSI # F2h 22h
Unlock: SSI # F2h 23h

This feature locks parameter settings with a 4-digit code to prevent the user from changing parameter values by scanning parameter barcodes. This provides an added level of security not offered via **Disable Parameter Scanning**.

After locking parameter settings, the only parameter barcode that is accepted is **Unlock** with the correct code.

**NOTE** Parameter Barcode Scanning must be enabled in order to scan the **Lock** parameter barcode. Once parameter scanning is locked, scanning the **Enable** or **Disable Parameter Scanning** barcode results in a parameter error beep.

To lock parameter scanning:

1. Scan the **Lock** barcode.
2. Scan four barcodes from Appendix C, Numeric Bar Codes that represent the desired code. Enter leading zeros for numbers below 1000, e.g., to program a code of 29, enter 0, 0, 2, 9. A "lock" beep sounds (two long high beeps) in addition to the parameter entry beep.

To unlock parameter scanning:

1. Scan the **Unlock** barcode.
2. Scan four barcodes from Appendix C, Numeric Bar Codes that represent the correct code. An "unlock" beep sounds (two long low beeps) in addition to the parameter entry beep. Entering an incorrect code results in a parameter error beep.
Lock/Unlock Parameter Scanning (continued)

Locking/Unlocking via the Host Interface
Parameter scanning can also be locked or unlocked using a host interface such as SSI or USB SNAP.
To lock parameter scanning using the host interface, store a 4-digit code within the range of 1-9999 in the Lock parameter. Values outside this range are ignored. To unlock parameter scanning, store this code in the Unlock parameter. To persist the lock/unlock status through a power cycle, make this parameter value permanent.

\[ NOTE \] Parameter values can be changed via host interface commands even when parameter scanning is locked.

Beep After Good Decode
Parameter # 56
SSI # 38h
Scan one of the following barcodes to select whether or not the scanner beeps after a good decode.
If you select **Disable Beep After Good Decode**, the beeper still operates during parameter menu scanning and to indicate error conditions.
Beeper Volume
Parameter # 140
SSI # 8Ch

Scan one of the following barcodes to select a beeper volume.

Low Volume
(2)

Medium Volume
(1)

*High Volume
(0)
Beeper Tone
Parameter # 145
SSI # 91h
Scan one of the following barcodes to select a beeper tone for the good decode beep.

- Disable Tone
  (3)

- Low Tone
  (2)

- Medium Tone
  (1)

- *High Tone
  (0)

- Medium to High Tone (2-tone)
  (4)
Beeper Duration
Parameter # 628
SSI # F1h 74h
Scan one of the following barcodes to select the duration for the good decode beep.

- Short Duration
  (0)

- Medium Duration
  (1)

- *Long Duration
  (2)

Suppress Power Up Beeps
Parameter # 721
SSI # F1h D1h
Scan one of the following barcodes to select whether or not to suppress the scanner’s power-up beeps.

- *Do Not Suppress Power Up Beeps
  (0)

- Suppress Power Up Beeps
  (1)
Trigger Mode
Parameter # 138
SSI # 8Ah

Scan one of the following barcodes to select a trigger mode for the scanner:

- **Presentation (Blink)** - The scanner activates decode processing when it detects a barcode in its field of view. After a period of non-use, the LEDs turn off until the scanner senses motion.
- **Host and Hardware Trigger Mode** - A host command issues the triggering signal, which is interpreted as a level trigger option.

Decode Aiming Pattern
Parameter # 306
SSI # F0h 32h

Select **Enable Decode Aiming Pattern** to project the aiming pattern during barcode capture, or **Disable Decode Aiming Pattern** to turn the aiming pattern off.

- **Enable Decode Aiming Pattern** - This projects the aiming pattern during barcode capture.
- **Disable Decode Aiming Pattern** - This turns the aiming pattern off.
Motion Detect Range
Parameter # 827
SSI # F2h 3Bh

Scan one of the following barcodes to select the distance, or range, at which the scanner detects object motion and then triggers while in presentation mode.

- Full Range
  (1)

- Medium Range
  (3)

- *Short Range
  (8)

Decode Session Timeout
Parameter # 136
SSI # 88h

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.5 to 9.9 seconds. The default timeout is 9.9 seconds.

To set a Decode Session Timeout, scan the following barcode, and then scan two barcodes from Appendix C, Numeric Bar Codes that correspond to the desired on time. Enter a leading zero for single digit numbers. For example, to set a Decode Session Timeout of 0.5 seconds, scan this barcode, and then scan the 0 and 5 barcodes. To correct an error or change the selection, scan Cancel on page C-2.
### Timeout Between Decodes, Same Symbol

**Parameter # 137**  
SSI # 89h

Use this option in presentation mode to prevent the scanner from continuously decoding the same barcode when it is left in the scanner’s field of view. The barcode must be out of the field of view for the timeout period before the scanner reads the same consecutive symbol. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The default interval is 0.6 seconds.

To select the timeout between decodes for the same symbol, scan the following barcode, and then scan two barcodes from *Appendix C, Numeric Bar Codes* that correspond to the desired interval, in 0.1 second increments.

![Barcode Example](image)

### Timeout Between Decodes, Different Symbols

**Parameter # 144**  
SSI # 90h

Use this option in presentation mode to control the time the scanner waits before decoding a different symbol. It is programmable in 0.1 second increments from 0.1 to 9.9 seconds. The default is 0.2 seconds.

To select the timeout between decodes for different symbols, scan the following barcode, and then scan two barcodes from *Appendix C, Numeric Bar Codes* that correspond to the desired interval, in 0.1 second increments.

![Barcode Example](image)

**NOTE** Timeout Between Decodes, Different Symbols cannot be greater than or equal to the Decode Session Timeout.
Mobile Phone/Display Mode
Parameter # 716
SSI # F1h CCh

This mode improves barcode reading performance off mobile phones and electronic displays. Scan one of the following barcodes to select the desired mode.

*Enable Mobile Phone/Display Mode
(3)

Disable Mobile Phone/Display Mode
(0)
Range Restrict

Parameter # 629

SSI # F1h 75h

Range restriction can be enabled by setting a parameter value greater than zero and disabled when setting a value of zero. When enabled it allows for reducing the reading range of a UPC family barcode to a restricted range in inches. The parameter value represents a maximum reading range of a 100% UPC family barcode.

The value is approximate and small variations to a restriction limit are to be expected.

When scanning barcodes of different densities (i.e., 60%, 80%, and 200%) the range limit is scaled up/down proportional to the density.

- **Disable (00h)**
- **3 inches (03h)**
- **5 inches (05h)**
- **7 inches (07h)**
Presentation Mode Field of View

Parameter # 609  
SSI # F1h 61h

In presentation mode, by default the scanner searches the larger area of the aiming pattern (Full Field of View). Select Small Field of View or Medium Field of View to search for a barcode in a smaller region around the aiming pattern's center in order to speed search time.

- **Small Field of View (0)**
- **Medium Field of View (1)**
- **Full Field of View (2)**

Fuzzy 1D Processing

Parameter # 514  
SSI # F1h 02h

This option is enabled by default to optimize decode performance on 1D barcodes, including damaged and poor quality symbols. Disable this only if you experience time delays when decoding 2D barcodes, or in detecting a no decode.

- **Enable Fuzzy 1D Processing (01h)**
- **Disable Fuzzy 1D Processing (00h)**
Mirrored Image
Parameter # 624
SSI # F1h 70h
Enable this to scan images in reverse, or mirrored, as if seen through a mirror. This mode is useful in applications requiring scanning through a mirror and using symbologies that do not decode in reverse.
Enabling this mode when using snapshot mode transmits images as mirrored images.

Enable Mirrored Image
(01h)

Enable Decoding Illumination
(1)

Disable Decoding Illumination
(0)

Decoding Illumination
Parameter # 298
SSI # F0h 2Ah
Scan one of the following barcodes to determine whether the scanner turns on illumination to aid decoding. Enabling illumination usually results in superior images and better decode performance. The effectiveness of the illumination decreases as the distance to the target increases.

Enable Mirrored Image
(00h)
Illumination Brightness

Parameter # 669
SSI # F1h 9Dh

This feature sets the brightness of the illumination by altering LED power. The default is 10, which is maximum LED brightness. For values from 1 to 10, LED brightness varies from lowest to highest level of brightness. The default is 6.

To program Illumination Brightness, scan this barcode followed by two numeric barcodes in Appendix C, Numeric Bar Codes that correspond to the value of desired illumination brightness. For example, to set Illumination Brightness to 6, scan the barcode below followed by the 0 and 6 barcodes.

Validate Concatenated Parameter Barcodes

Parameter # 692
SSI # F1h B4h

The scanner can encounter invalid parameters when using concatenated parameter barcodes intended for different scanner models or different versions of a scanner. This parameter determines how to process concatenated parameter barcodes when the scanner encounters an invalid parameter setting in the barcode.

Disable this to ignore invalid parameters and configure valid parameters. Enable this to ignore all parameters if one or more are invalid.
Miscellaneous Scanner Parameters

Transmit Code ID Character

Parameter # 45
SSI # 2Dh

A Code ID character identifies the code type of a scanned barcode. This is useful when decoding more than one code type. In addition to any single character prefix selected, the Code ID character is inserted between the prefix and the decoded symbol.

Prefix/Suffix Values

Key Category Parameter # P = 99, S1 = 98, S2 = 100
SSI # P = 63h, S1 = 62h, S2 = 64h
Decimal Value Parameter # P = 105, S1 = 104, S2 = 106
SSI # P = 69h, S1 = 68h, S2 = 6Ah

You can append a prefix and/or one or two suffixes to scan data for use in data editing. To set a value for a prefix or suffix, scan one of the following barcodes, and then scan four barcodes from Appendix C, Numeric Bar Codes that correspond to that value. The first digit defines the key category (type of character to send) and is stored in the key category parameter. The remaining three digits define the value of the character and are stored in the decimal value parameter. Ensure to use both key category and decimal value parameters to define the prefix/suffix value.

When using host commands to set the prefix or suffix, set the key category parameter to 1, and then set the 3-digit decimal value. See Appendix E, ASCII Character Sets for the four-digit codes.

To correct an error or change a selection, scan Cancel on page C-2.

**NOTE** To use Prefix/Suffix values, first set the Scan Data Transmission Format on page 4-20.

- **Scan Prefix**
  - (7)

- **Scan Suffix 1**
  - (6)

- **Scan Suffix 2**
  - (8)
Scan Data Transmission Format

Parameter # 235
SSI # EBh

To change the scan data format, scan one of the following barcodes corresponding to the desired format.

![Barcode for Data As Is](image1)

*Data As Is
(0)

![Barcode for Data with Suffix 1](image2)

<Data> <Suffix 1>
(1)

![Barcode for Data with Suffix 2](image3)

<Data> <Suffix 2>
(2)

![Barcode for Data with Suffixes](image4)

<Data> <Suffix 1> <Suffix 2>
(3)

**NOTE** If using this parameter do not use ADF rules to set the prefix/suffix.

To set values for the prefix and/or suffix, see *Prefix/Suffix Values on page 4-19*. 
Scan Data Transmission Format (continued)

<PREFIX> <DATA>
(4)

<PREFIX> <DATA> <SUFFIX 1>
(5)

<PREFIX> <DATA> <SUFFIX 2>
(6)

<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>
(7)
Send Versions

**Software Version**
Scan the following barcode to send the version of software installed in the scanner.

![Software Version Barcode]

**Manufacturing Information**
Scan the following barcode to send the scanner manufacturing information to the host.

![Manufacturing Information Barcode]

**Camera Manufacturing Information**
Scan the following barcode to send the camera manufacturing information to the host.

![Camera Manufacturing Information Barcode]
CHAPTER 5 SYMBOLOGIES

Introduction

You can program the scanner to perform various functions, or activate different features. This chapter describes symbology features and provides programming barcodes for selecting these features.

The scanner ships with the settings shown in Table 5-1 on page 5-2 (also see Appendix A, Standard Parameter Defaults for all defaults). If the default values suit requirements, programming is not necessary.

Setting Parameters

To set feature values, scan a single barcode or a short barcode sequence. The settings are stored in non-volatile memory and are preserved even when the scanner powers down.

![NOTE](image)

Most computer monitors allow scanning barcodes directly on the screen. When scanning from the screen, be sure to set the document magnification to a level where you can see the barcode clearly, and bars and/or spaces do not merge.

If not using a USB cable, select a host type (see each host chapter for specific host information) after the power-up beeps sound. This is only necessary upon the first power-up when connected to a new host.

To return all features to default values, see Default Parameters on page 4-4. Throughout the programming barcode menus, asterisks (*) indicate default values.
Scanning Sequence Examples

In most cases, scanning one barcode sets the parameter value. For example, to transmit barcode data without the UPC-A check digit, scan the Do Not Transmit UPC-A Check Digit barcode under Transmit UPC-A Check Digit on page 5-18. The scanner issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several barcodes. See the parameter descriptions for this procedure.

Errors While Scanning

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

Symbology Parameter Defaults

Table 5-1 lists defaults for all symbology parameters. Change these values in one of two ways:

- Scan the appropriate barcodes in this chapter. The new value replaces the standard default value in memory. To recall the default parameter values, see Default Parameters on page 4-4.
- Configure the scanner using the 123Scan configuration program. See Chapter 6, 123Scan and Software Tools.

**NOTE** See Appendix A, Standard Parameter Defaults for all user preference, host, symbology, and miscellaneous default parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable/Disable All Code Types</td>
<td></td>
<td></td>
<td></td>
<td>5-8</td>
</tr>
<tr>
<td>1D Symbologies</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>UPC/EAN/JAN</td>
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<td></td>
</tr>
<tr>
<td>UPC-A</td>
<td>1</td>
<td>01h</td>
<td>Disable</td>
<td>5-8</td>
</tr>
<tr>
<td>UPC-E</td>
<td>2</td>
<td>02h</td>
<td>Disable</td>
<td>5-9</td>
</tr>
<tr>
<td>UPC-E1</td>
<td>12</td>
<td>0Ch</td>
<td>Disable</td>
<td>5-9</td>
</tr>
<tr>
<td>EAN-8/JAN 8</td>
<td>4</td>
<td>04h</td>
<td>Disable</td>
<td>5-10</td>
</tr>
<tr>
<td>EAN-13/JAN 13</td>
<td>3</td>
<td>03h</td>
<td>Disable</td>
<td>5-10</td>
</tr>
<tr>
<td>Bookland EAN</td>
<td>83</td>
<td>53h</td>
<td>Disable</td>
<td>5-11</td>
</tr>
<tr>
<td>Bookland ISBN Format</td>
<td>576</td>
<td>F1h 40h</td>
<td>ISBN-10</td>
<td>5-12</td>
</tr>
<tr>
<td>ISSN EAN</td>
<td>617</td>
<td>F1h 69h</td>
<td>Disable</td>
<td>5-13</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table 5-1  *Symbology Parameter Defaults (continued)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decode UPC/EAN/JAN Supplementals (2 and 5 digits)</td>
<td>16</td>
<td>10h</td>
<td>Ignore</td>
<td>5-13</td>
</tr>
<tr>
<td>User-Programmable Supplementals</td>
<td></td>
<td></td>
<td>N/A</td>
<td>5-16</td>
</tr>
<tr>
<td>Supplemental 1:</td>
<td>579</td>
<td>F4h F1h 43h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplemental 2:</td>
<td>580</td>
<td>F4h F1h 44h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPC/EAN/JAN Supplemental Redundancy</td>
<td>80</td>
<td>50h</td>
<td>10</td>
<td>5-17</td>
</tr>
<tr>
<td>Decode UPC/EAN/JAN Supplemental AIM ID</td>
<td>672</td>
<td>F1h A0h</td>
<td>Combined</td>
<td>5-17</td>
</tr>
<tr>
<td>Transmit UPC-A Check Digit</td>
<td>40</td>
<td>28h</td>
<td>Enable</td>
<td>5-18</td>
</tr>
<tr>
<td>Transmit UPC-E Check Digit</td>
<td>41</td>
<td>29h</td>
<td>Enable</td>
<td>5-19</td>
</tr>
<tr>
<td>Transmit UPC-E1 Check Digit</td>
<td>42</td>
<td>2Ah</td>
<td>Enable</td>
<td>5-19</td>
</tr>
<tr>
<td>UPC-A Preamble</td>
<td>34</td>
<td>22h</td>
<td>System Character</td>
<td>5-20</td>
</tr>
<tr>
<td>UPC-E Preamble</td>
<td>35</td>
<td>23h</td>
<td>System Character</td>
<td>5-21</td>
</tr>
<tr>
<td>UPC-E1 Preamble</td>
<td>36</td>
<td>24h</td>
<td>System Character</td>
<td>5-22</td>
</tr>
<tr>
<td>Convert UPC-E to A</td>
<td>37</td>
<td>25h</td>
<td>Disable</td>
<td>5-23</td>
</tr>
<tr>
<td>Convert UPC-E1 to A</td>
<td>38</td>
<td>26h</td>
<td>Disable</td>
<td>5-23</td>
</tr>
<tr>
<td>EAN/JAN Zero Extend</td>
<td>39</td>
<td>27h</td>
<td>Disable</td>
<td>5-24</td>
</tr>
<tr>
<td>UCC Coupon Extended Code</td>
<td>85</td>
<td>55h</td>
<td>Disable</td>
<td>5-24</td>
</tr>
<tr>
<td>Coupon Report</td>
<td>730</td>
<td>F1h DAh</td>
<td>New Coupon Format</td>
<td>5-25</td>
</tr>
</tbody>
</table>

#### Code 128

| Code 128                                                      | 8                  | 08h          | Enable    | 5-26        |
| Set Length(s) for Code 128                                    | 209, 210           | D1h, D2h     | Any Length | 5-26        |
| GS1-128 (formerly UCC/EAN-128)                                | 14                 | 0Eh          | Disable   | 5-27        |
| ISBT 128                                                      | 84                 | 54h          | Disable   | 5-28        |
| ISBT Concatenation                                            | 577                | F1h 41h      | Disable   | 5-28        |
| Check ISBT Table                                             | 578                | F1h 42h      | Enable    | 5-29        |
| ISBT Concatenation Redundancy                                 | 223                | DFh          | 10        | 5-29        |

#### Code 39

| Code 39                                                       | 0                  | 00h          | Disable   | 5-30        |

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table 5-1  Symbology Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
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<tbody>
<tr>
<td>Trioptic Code 39</td>
<td>13</td>
<td>0Dh</td>
<td>Disable</td>
<td>5-30</td>
</tr>
<tr>
<td>Convert Code 39 to Code 32 (Italian Pharmacy Code)</td>
<td>86</td>
<td>56h</td>
<td>Disable</td>
<td>5-31</td>
</tr>
<tr>
<td>Code 32 Prefix</td>
<td>231</td>
<td>E7h</td>
<td>Disable</td>
<td>5-31</td>
</tr>
<tr>
<td>Set Length(s) for Code 39</td>
<td>18, 19</td>
<td>12h, 13h</td>
<td>2 to 55</td>
<td>5-32</td>
</tr>
<tr>
<td>Code 39 Check Digit Verification</td>
<td>48</td>
<td>30h</td>
<td>Disable</td>
<td>5-33</td>
</tr>
<tr>
<td>Transmit Code 39 Check Digit</td>
<td>43</td>
<td>2Bh</td>
<td>Disable</td>
<td>5-34</td>
</tr>
<tr>
<td>Code 39 Full ASCII Conversion</td>
<td>17</td>
<td>11h</td>
<td>Disable</td>
<td>5-34</td>
</tr>
<tr>
<td>Code 39 Buffering</td>
<td>113</td>
<td>71h</td>
<td>Disable</td>
<td>5-35</td>
</tr>
<tr>
<td><strong>Code 93</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 93</td>
<td>9</td>
<td>09h</td>
<td>Disable</td>
<td>5-37</td>
</tr>
<tr>
<td>Set Length(s) for Code 93</td>
<td>26, 27</td>
<td>1Ah, 1Bh</td>
<td>4 to 55</td>
<td>5-37</td>
</tr>
<tr>
<td><strong>Code 11</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 11</td>
<td>10</td>
<td>0Ah</td>
<td>Disable</td>
<td>5-39</td>
</tr>
<tr>
<td>Set Length(s) for Code 11</td>
<td>28, 29</td>
<td>1Ch, 1Dh</td>
<td>4 to 55</td>
<td>5-39</td>
</tr>
<tr>
<td>Code 11 Check Digit Verification</td>
<td>52</td>
<td>34h</td>
<td>Disable</td>
<td>5-41</td>
</tr>
<tr>
<td>Transmit Code 11 Check Digit(s)</td>
<td>47</td>
<td>2Fh</td>
<td>Disable</td>
<td>5-42</td>
</tr>
<tr>
<td><strong>Interleaved 2 of 5 (ITF)</strong></td>
<td></td>
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<tr>
<td>Interleaved 2 of 5 (ITF)</td>
<td>6</td>
<td>06h</td>
<td>Disable</td>
<td>5-42</td>
</tr>
<tr>
<td>Set Lengths for I 2 of 5</td>
<td>22, 23</td>
<td>16h, 17h</td>
<td>1 Length; Length = 14</td>
<td>5-43</td>
</tr>
<tr>
<td>I 2 of 5 Check Digit Verification</td>
<td>49</td>
<td>31h</td>
<td>Disable</td>
<td>5-45</td>
</tr>
<tr>
<td>Transmit I 2 of 5 Check Digit</td>
<td>44</td>
<td>2Ch</td>
<td>Disable</td>
<td>5-45</td>
</tr>
<tr>
<td>Convert I 2 of 5 to EAN 13</td>
<td>82</td>
<td>52h</td>
<td>Disable</td>
<td>5-46</td>
</tr>
<tr>
<td><strong>Discrete 2 of 5 (DTF)</strong></td>
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<tr>
<td>Discrete 2 of 5</td>
<td>5</td>
<td>05h</td>
<td>Disable</td>
<td>5-46</td>
</tr>
<tr>
<td>Set Length(s) for D 2 of 5</td>
<td>20, 21</td>
<td>14h 15h</td>
<td>1 Length; Length = 12</td>
<td>5-47</td>
</tr>
<tr>
<td><strong>Codabar (NW - 7)</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Codabar</td>
<td>7</td>
<td>07h</td>
<td>Disable</td>
<td>5-48</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table 5-1  Symbology Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Lengths for Codabar</td>
<td>24, 25</td>
<td>18h, 19h</td>
<td>5 to 55</td>
<td>5-49</td>
</tr>
<tr>
<td>CLSI Editing</td>
<td>54</td>
<td>36h</td>
<td>Disable</td>
<td>5-51</td>
</tr>
<tr>
<td>NOTIS Editing</td>
<td>55</td>
<td>37h</td>
<td>Disable</td>
<td>5-51</td>
</tr>
<tr>
<td>Codabar Upper or Lower Case Start/Stop Characters Detection</td>
<td>855</td>
<td>F2h 57h</td>
<td>Upper Case</td>
<td>5-52</td>
</tr>
<tr>
<td><strong>MSI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSI</td>
<td>11</td>
<td>0Bh</td>
<td>Disable</td>
<td>5-52</td>
</tr>
<tr>
<td>Set Length(s) for MSI</td>
<td>30, 31</td>
<td>1Eh, 1Fh</td>
<td>4 to 55</td>
<td>5-53</td>
</tr>
<tr>
<td>MSI Check Digits</td>
<td>50</td>
<td>32h</td>
<td>One</td>
<td>5-54</td>
</tr>
<tr>
<td>Transmit MSI Check Digit</td>
<td>46</td>
<td>2Eh</td>
<td>Disable</td>
<td>5-55</td>
</tr>
<tr>
<td>MSI Check Digit Algorithm</td>
<td>51</td>
<td>33h</td>
<td>Mod 10/Mod 10</td>
<td>5-55</td>
</tr>
<tr>
<td><strong>Chinese 2 of 5</strong></td>
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<tr>
<td>Chinese 2 of 5</td>
<td>408</td>
<td>F0h 98h</td>
<td>Disable</td>
<td>5-56</td>
</tr>
<tr>
<td><strong>Matrix 2 of 5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matrix 2 of 5</td>
<td>618</td>
<td>F1h 6Ah</td>
<td>Disable</td>
<td>5-56</td>
</tr>
<tr>
<td>Matrix 2 of 5 Lengths</td>
<td>619 620</td>
<td>F1h 6Bh F1h 6Ch</td>
<td>Any Length</td>
<td>5-57</td>
</tr>
<tr>
<td>Matrix 2 of 5 Check Digit</td>
<td>622</td>
<td>F1h 6Eh</td>
<td>Disable</td>
<td>5-58</td>
</tr>
<tr>
<td>Transmit Matrix 2 of 5 Check Digit</td>
<td>623</td>
<td>F1h 6Fh</td>
<td>Disable</td>
<td>5-59</td>
</tr>
<tr>
<td><strong>Korean 3 of 5</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Korean 3 of 5</td>
<td>581</td>
<td>F1h 45h</td>
<td>Disable</td>
<td>5-59</td>
</tr>
<tr>
<td><strong>Inverse 1D</strong></td>
<td>586</td>
<td>F1h 4Ah</td>
<td>Regular</td>
<td>5-60</td>
</tr>
<tr>
<td><strong>GS1 DataBar</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional</td>
<td>338</td>
<td>F0h 52h</td>
<td>Enable</td>
<td>5-61</td>
</tr>
<tr>
<td>GS1 DataBar Limited</td>
<td>339</td>
<td>F0h 53h</td>
<td>Disable</td>
<td>5-61</td>
</tr>
<tr>
<td>GS1 DataBar Expanded, GS1 DataBar Expanded Stacked</td>
<td>340</td>
<td>F0h 54h</td>
<td>Disable</td>
<td>5-62</td>
</tr>
<tr>
<td>Convert GS1 DataBar to UPC/EAN/JAN</td>
<td>397</td>
<td>F0h 8Dh</td>
<td>Disable</td>
<td>5-62</td>
</tr>
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</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Table 5-1  Symbology Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>SSI Number ²</th>
<th>Default</th>
<th>Page Number</th>
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<tr>
<td>GS1 DataBar Limited Margin Check</td>
<td>728</td>
<td>F1h D8h</td>
<td>Level 3</td>
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</tbody>
</table>

**Symbology-Specific Security Features**

<table>
<thead>
<tr>
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<th>SSI Number ²</th>
<th>Default</th>
<th>Page Number</th>
</tr>
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<tr>
<td>Redundancy Level</td>
<td>78</td>
<td>4Eh</td>
<td>1</td>
<td>5-64</td>
</tr>
<tr>
<td>Security Level</td>
<td>77</td>
<td>4Dh</td>
<td>1</td>
<td>5-66</td>
</tr>
<tr>
<td>Intercharacter Gap Size</td>
<td>381</td>
<td>F0h 7Dh</td>
<td>Normal</td>
<td>5-67</td>
</tr>
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</table>

**Composite Codes**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number ²</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite CC-C</td>
<td>341</td>
<td>F0h 55h</td>
<td>Disable</td>
<td>5-67</td>
</tr>
<tr>
<td>Composite CC-A/B</td>
<td>342</td>
<td>F0h 56h</td>
<td>Disable</td>
<td>5-68</td>
</tr>
<tr>
<td>Composite TLC-39</td>
<td>371</td>
<td>F0h 73h</td>
<td>Disable</td>
<td>5-68</td>
</tr>
<tr>
<td>UPC Composite Mode</td>
<td>344</td>
<td>F0h 58h</td>
<td>UPC Never Linked</td>
<td>5-69</td>
</tr>
<tr>
<td>Composite Beep Mode</td>
<td>398</td>
<td>F0h 8Eh</td>
<td>Beep As Each Code Type is Decoded</td>
<td>5-70</td>
</tr>
<tr>
<td>GS1-128 Emulation Mode for UCC/EAN Composite Codes</td>
<td>427</td>
<td>F0h ABh</td>
<td>Disable</td>
<td>5-70</td>
</tr>
</tbody>
</table>

**2D Symbologies**

<table>
<thead>
<tr>
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<th>Parameter Number</th>
<th>SSI Number ²</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDF417</td>
<td>15</td>
<td>0Fh</td>
<td>Disable</td>
<td>5-71</td>
</tr>
<tr>
<td>MicroPDF417</td>
<td>227</td>
<td>E3h</td>
<td>Disable</td>
<td>5-71</td>
</tr>
<tr>
<td>Code 128 Emulation</td>
<td>123</td>
<td>7Bh</td>
<td>Disable</td>
<td>5-72</td>
</tr>
<tr>
<td>Data Matrix</td>
<td>292</td>
<td>F0h 24h</td>
<td>Disable</td>
<td>5-73</td>
</tr>
<tr>
<td>Data Matrix Inverse</td>
<td>588</td>
<td>F1h 4Ch</td>
<td>Regular Only</td>
<td>5-73</td>
</tr>
<tr>
<td>Decode Data Matrix Mirror Images</td>
<td>537</td>
<td>F1h 19h</td>
<td>Auto</td>
<td>5-74</td>
</tr>
<tr>
<td>Maxicode</td>
<td>294</td>
<td>F0h 26h</td>
<td>Disable</td>
<td>5-75</td>
</tr>
<tr>
<td>QR Code</td>
<td>293</td>
<td>F0h 25h</td>
<td>Disable</td>
<td>5-75</td>
</tr>
<tr>
<td>QR Inverse</td>
<td>587</td>
<td>F1h 4Bh</td>
<td>Regular</td>
<td>5-76</td>
</tr>
<tr>
<td>MicroQR</td>
<td>573</td>
<td>F1h 3Dh</td>
<td>Disable</td>
<td>5-77</td>
</tr>
<tr>
<td>Aztec</td>
<td>574</td>
<td>F1h 3Eh</td>
<td>Disable</td>
<td>5-77</td>
</tr>
<tr>
<td>Aztec Inverse</td>
<td>589</td>
<td>F1h 4Dh</td>
<td>Inverse Autodetect</td>
<td>5-78</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table 5-1  *Symbology Parameter Defaults (continued)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number</th>
<th>Default</th>
<th>Page Number</th>
</tr>
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<td>Disable</td>
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1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Enable/Disable All Code Types

Scan the **Disable All Code Types** barcode to disable all symbologies. This is useful when enabling only a few code types.

Scan **Enable All Code Types** to enable all symbologies. This is useful if you need to disable only a few code types.

---

UPC/EAN/JAN

**UPC-A**

Parameter # 1

SSI # 01h

Scan one of the following barcodes to enable or disable UPC-A.

---

*Enable UPC-A

(1)

---

Disable UPC-A

(0)
UPC-E

Parameter # 2
SSI # 02h

Scan one of the following barcodes to enable or disable UPC-E.

*Enable UPC-E

(1)

NOTE

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

Enable UPC-E1

(1)

UPC-E1

Parameter # 12
SSI # 0Ch

Scan one of the following barcodes to enable or disable UPC-E1.

✓ NOTE

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

*Disable UPC-E1

(0)
EAN-8/JAN-8
Parameter # 4
SSI # 04h
Scan one of the following barcodes to enable or disable EAN-8/JAN-8.

*Enable EAN-8/JAN-8
(1)

Disable EAN-8/JAN-8
(0)

EAN-13/JAN-13
Parameter # 3
SSI # 03h
Scan one of the following barcodes to enable or disable EAN-13/JAN-13.

*Enable EAN-13/JAN-13
(1)

Disable EAN-13/JAN-13
(0)
**Bookland EAN**

Parameter # 83  
SSI # 53h

Scan one of the following barcodes to enable or disable Bookland EAN.

- **Enable Bookland EAN**  
  (1)

- **Disable Bookland EAN**  
  (0)

**NOTE** If you enable Bookland EAN, select a *Bookland ISBN Format*. Also set *Decode UPC/EAN/JAN Supplementals on page 5-13* to either Decode UPC/EAN/JAN with Supplementals Only, Autodiscriminate UPC/EAN/JAN With Supplementals, or Enable 978/979 Supplemental Mode.
Bookland ISBN Format

Parameter # 576
SSI # F1h 40h

If you enabled Bookland EAN using *Bookland EAN on page 5-11*, 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.


*NOTE* For Bookland EAN to function properly, first enable Bookland EAN using *Bookland EAN on page 5-11*, and then set *Decode UPC/EAN/JAN Supplementals on page 5-13* to either Decode UPC/EAN/JAN with Supplementals Only, Autodiscriminate UPC/EAN/JAN With Supplementals, or Enable 978/979 Supplemental Mode.
ISSN EAN
Parameter # 617
SSI # F1h 69h

Scan one of the following barcodes to enable or disable ISSN EAN.

Enable ISSN EAN
(1)

*Disable ISSN EAN
(0)

Decode UPC/EAN/JAN Supplementals
Parameter # 16
SSI # 10h

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

- **Decode UPC/EAN/JAN with Supplementals Only** - The scanner only decodes UPC/EAN/JAN symbols with supplemental characters, and ignores symbols without supplementals.

- **Ignore UPC/EAN/JAN Supplementals** - When presented with a UPC/EAN/JAN plus supplemental symbol, the scanner decodes UPC/EAN/JAN and ignores the supplemental characters.

- **Autodiscriminate UPC/EAN/JAN with Supplementals** - The scanner decodes UPC/EAN/JAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the scanner must decode the barcode the number of times set via **UPC/EAN/JAN Supplemental Redundancy on page 5-17** before transmitting its data to confirm that there is no supplemental.

Select one of the following **Supplemental Mode** options to immediately transmit EAN-13 barcodes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the scanner must decode the barcode the number of times set via **UPC/EAN/JAN Supplemental Redundancy on page 5-17** before transmitting the data to confirm that there is no supplemental. The scanner transmits UPC/EAN/JAN barcodes 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 barcodes, see **Bookland EAN on page 5-11** to enable Bookland EAN, and select a format using **Bookland ISBN Format on page 5-12**.

- **Enable 977 Supplemental Mode**
- **Enable 414/419/434/439 Supplemental Mode**
- **Enable 491 Supplemental Mode**
- **Enable Smart Supplemental Mode** - This applies to EAN-13 barcodes starting with any prefix listed previously.
- **Supplemental User-Programmable Type 1** - This applies to EAN-13 barcodes starting with a 3-digit user-defined prefix. Set this using *User-Programmable Supplementals on page 5-16*.
- **Supplemental User-Programmable Type 1 and 2** - This applies to EAN-13 barcodes starting with either of two 3-digit user-defined prefixes. Set the prefixes using *User-Programmable Supplementals on page 5-16*.
- **Smart Supplemental Plus User-Programmable 1** - This applies to EAN-13 barcodes starting with any prefix listed previously or the prefix set using *User-Programmable Supplementals on page 5-16*.
- **Smart Supplemental Plus User-Programmable 1 and 2** - This applies to EAN-13 barcodes starting with any prefix listed previously or one of the two user-defined prefixes set using *User-Programmable Supplementals on page 5-16*.

**NOTE** To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.
Decode UPC/EAN/JAN Supplementals (continued)

Enable 978/979 Supplemental Mode
(5)

Enable 977 Supplemental Mode
(7)

Enable 414/419/434/439 Supplemental Mode
(6)

Enable 491 Supplemental Mode
(8)

Enable Smart Supplemental Mode
(3)

Supplemental User-Programmable Type 1
(9)
Decode UPC/EAN/JAN Supplementals (continued)

Supplemental User-Programmable Type 1 and 2
(10)

Smart Supplemental Plus User-Programmable 1
(11)

Smart Supplemental Plus User-Programmable 1 and 2
(12)

User-Programmable Supplementals

Supplemental 1: Parameter # 579
SSI # F4h F1h 43h

Supplemental 2: Parameter # 580
SSI # F4h F1h 44h

If you selected a Supplemental User-Programmable option from Decode UPC/EAN/JAN Supplementals on page 5-13, scan User-Programmable Supplemental 1, and then scan three barcodes from Appendix C, Numeric Bar Codes to set the 3-digit prefix. To set a second 3-digit prefix, scan User-Programmable Supplemental 2, and then scan three barcodes from Appendix C, Numeric Bar Codes.

User-Programmable Supplemental 1

User-Programmable Supplemental 2
UPC/EAN/JAN Supplemental Redundancy
Parameter # 80
SSI # 50h

If you selected **Autodiscriminate UPC/EAN/JAN with Supplementals**, this option sets the number of times to decode a symbol without supplementals before transmission. The range is from two to 30. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals. The default is 10.

To set a redundancy value, scan the following barcode, and then scan two barcodes from *Appendix C, Numeric Bar Codes*. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan *Appendix, Cancel*.

![Barcode Image]

UPC/EAN/JAN Supplemental AIM ID Format
Parameter # 672
SSI # F1h A0h

If **Transmit Code ID Character on page 4-18** is set to **AIM Code ID Character**, scan one of the following barcodes to select an output format when reporting UPC/EAN/JAN barcodes with supplementals:

- **Separate** - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs but one transmission, i.e.,
  \[E<0 \text{ or } 4><\text{data}>][E<1 \text{ or } 2>][\text{supplemental data}]

- **Combined** – Transmit UPC/EAN/JAN with supplementals with one AIM ID and one transmission, i.e.,
  \[E3<\text{data+supplemental data}>\]

- **Separate Transmissions** - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs and separate transmissions, i.e.,
  \[E<0 \text{ or } 4><\text{data}>\]
  \[E<1 \text{ or } 2>][\text{supplemental data}]
UPC/EAN/JAN Supplemental AIM ID Format

Transmit UPC-A Check Digit
Parameter # 40
SSI # 28h

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the UPC-A check digit. It is always verified to guarantee the integrity of the data.

Separate (0)

*Combined (1)

Separate Transmissions (2)

*Transmit UPC-A Check Digit (1)

Do Not Transmit UPC-A Check Digit (0)
**Transmit UPC-E Check Digit**  
Parameter # 41  
SSI # 29h

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the UPC-E check digit. It is always verified to guarantee the integrity of the data.

*Transmit UPC-E Check Digit*  
(1)

Do Not Transmit UPC-E Check Digit  
(0)

**Transmit UPC-E1 Check Digit**  
Parameter # 42  
SSI # 2Ah

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the UPC-E1 check digit. It is always verified to guarantee the integrity of the data.

*Transmit UPC-E1 Check Digit*  
(1)

Do Not Transmit UPC-E1 Check Digit  
(0)
UPC-A Preamble
Parameter # 34
SSI # 22h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-A preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code ("0" for USA)
- Transmit no preamble.

---

No Preamble (<DATA>)
(0)

*System Character
(<SYSTEM CHARACTER> <DATA>)
(1)

System Character & Country Code
(<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)
UPC-E Preamble

Parameter # 35
SSI # 23h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code (“0” for USA)
- Transmit no preamble.

No Preamble (<DATA>)
(0)

*System Character
(<SYSTEM CHARACTER> <DATA>)
(1)

System Character & Country Code
(<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)
UPC-E1 Preamble

Parameter # 36
SSI # 24h

Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E1 preamble to match the host system:

- Transmit System Character only
- Transmit System Character and Country Code (“0” for USA)
- Transmit no preamble.

No Preamble (<DATA>)
(0)

*System Character
(<SYSTEM CHARACTER> <DATA>)
(1)

System Character & Country Code
(<COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)
Convert UPC-E to UPC-A

Parameter # 37
SSI # 25h

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

Disable this to transmit UPC-E decoded data as UPC-E data, without conversion.

Convert UPC-E to UPC-A (Enable) (1)

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

Convert UPC-E1 to UPC-A

Parameter # 38
SSI # 26h

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

Scan Do Not Convert UPC-E1 to UPC-A (Disable) to transmit UPC-E1 decoded data as UPC-E1 data, without conversion.

Convert UPC-E1 to UPC-A (Enable) (1)

*Do Not Convert UPC-E1 to UPC-A (Disable) (0)
EAN/JAN Zero Extend
Parameter # 39
SSI # 27h

Scan **Enable EAN/JAN Zero Extend** to add five leading zeros to decoded EAN-8 symbols to make them compatible in length to EAN-13 symbols. Scan **Disable EAN/JAN Zero Extend** to transmit EAN-8 symbols as is.

Enable EAN/JAN Zero Extend
(1)

*Disable EAN/JAN Zero Extend
(0)

UCC Coupon Extended Code
Parameter # 85
SSI # 55h

Scan **Enable UCC Coupon Extended Code** to decode UPC-A barcodes starting with digit ‘5’, EAN-13 barcodes starting with digit ‘99’, and UPC-A/GS1-128 coupon codes. UPC-A, EAN-13, and GS1-128 must be enabled to use this feature.

Enable UCC Coupon Extended Code
(1)

*Disable UCC Coupon Extended Code
(0)

**NOTE** See **UPC/EAN/JAN Supplemental Redundancy on page 5-17** to control autodiscrimination of the GS1-128 portion (right half) of a coupon code.
Coupon Report
Parameter # 730
SSI # F1h DAh

Scan one of the following barcodes to select the type of coupon format to support.

- **New Coupon Format** - An interim format to support UPC-A/GS1-DataBar and EAN-13/GS1-DataBar.
- **Autodiscriminate Format** - Support both **Old Coupon Format** and **New Coupon Format**.

![Barcode for Old Coupon Format](image)
Old Coupon Format (0)

![Barcode for New Coupon Format](image)
*New Coupon Format*
(1)

![Barcode for Autodiscriminate Format](image)
Autodiscriminate Coupon Format (2)
Code 128

Parameter # 8
SSI # 08h

Scan one of the following barcodes to enable or disable Code 128.

*Enable Code 128 (1)

Disable Code 128 (0)

Set Lengths for Code 128

L1 = Parameter # 209
SSI # D1h
L2 = Parameter # 210
SSI # D2h

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 128 to any length, one or two discrete lengths, or lengths within a specific range. The default is Any Length.

NOTE When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Code 128 symbols containing a selected length. Select the length using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode only Code 128 symbols with 14 characters, scan Code 128 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, scan Cancel on page C-2.

- **Two Discrete Lengths** - Decode only Code 128 symbols containing either of two lengths. Select lengths using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode only Code 128 symbols containing either 2 or 14 characters, scan Code 128 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan Cancel on page C-2.

- **Length Within Range** - Decode Code 128 symbols with a specific length range. Select lengths using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode Code 128 symbols containing between 4 and 12 characters, scan Code 128 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan Cancel on page C-2.

- **Any Length** - Decode Code 128 symbols containing any number of characters within the scanner’s capability.
Set Lengths for Code 128 (continued)

Code 128 - One Discrete Length

Code 128 - Two Discrete Lengths

Code 128 - Length Within Range

*Code 128 - Any Length

GS1-128 (formerly UCC/EAN-128)

Parameter # 14
SSI # 0Eh

Scan one of the following barcodes to enable or disable GS1-128.

Enable GS1-128
(1)

*Disable GS1-128
(0)
ISBT 128

Parameter # 84
SSI # 54h

ISBT 128 is a variant of Code 128 used in the blood bank industry. Scan one of the following barcodes to enable or disable ISBT 128.

Isbt Concatenation

Parameter # 577
SSI # F1h 41h

Select an option for concatenating pairs of ISBT code types:

- **Enable ISBT Concatenation** - There must be two ISBT codes in order for the scanner to decode and perform concatenation. The scanner does not decode single ISBT symbols.

- **Disable ISBT Concatenation** - The scanner does not concatenate pairs of ISBT codes it encounters.

- **Autodiscriminate ISBT Concatenation** - The scanner decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the scanner must decode the symbol the number of times set via ISBT Concatenation Redundancy on page 5-29 before transmitting its data to confirm that there is no additional ISBT symbol.
Check ISBT Table
Parameter # 578
SSI # F1h 42h

The ISBT specification includes a table that lists several types of ISBT barcodes that are commonly used in pairs. If you set ISBT Concatenation to Enable, enable Check ISBT Table to concatenate only those pairs found in this table. Other types of ISBT codes are not concatenated.

### ISBT Concatenation Redundancy
Parameter # 223
SSI # DFh

If you set ISBT Concatenation on page 5-28 to Autodiscriminate (the default), use this parameter to set the number of times the scanner must decode an ISBT symbol before determining that there is no additional symbol.

Scan the following barcode, and then scan barcodes in Appendix C, Numeric Bar Codes to set a value between 2 and 20. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan Cancel on page C-2. The default is 10.
## Code 39

Parameter # 0  
SSI # 00h  

Scan one of the following barcodes to enable or disable Code 39.

Enable Code 39 
(1)

*Disable Code 39 
(0)

## Trioptic Code 39

Parameter # 13 
SSI # 0Dh  

Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. Trioptic Code 39 symbols always contain six characters. Scan one of the following barcodes to enable or disable Trioptic Code 39.

Enable Trioptic Code 39 
(1)

*Disable Trioptic Code 39 
(0)

**NOTE** You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.
Convert Code 39 to Code 32
Parameter # 86
SSI # 56h

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan one of the following barcodes to enable or disable converting Code 39 to Code 32.

✓  Code 39 must be enabled for this parameter to function.

Enable Convert Code 39 to Code 32
(1)  

*Disable Convert Code 39 to Code 32
(0)

Code 32 Prefix
Parameter # 231
SSI # E7h

Scan one of the following barcodes to enable or disable adding the prefix character “A” to all Code 32 barcodes.

✓  Convert Code 39 to Code 32 must be enabled for this parameter to function.

Enable Code 32 Prefix
(1)  

*Disable Code 32 Prefix
(0)
Set Lengths for Code 39

L1 = Parameter # 18
SSI # 12h

L2 = Parameter # 19
SSI # 13h

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 Code 39 Full ASCII is enabled, **Length Within Range** or **Any Length** are the preferred options. The default is **Length Within Range**: 2 to 55.

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

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Code 39 symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 39 symbols with 14 characters, scan **Code 39 - One Discrete Length**, and then scan 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only Code 39 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 39 symbols containing either 2 or 14 characters, scan **Code 39 - Two Discrete Lengths**, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode Code 39 symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode Code 39 symbols containing between 4 and 12 characters, scan **Code 39 - Length Within Range**, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode Code 39 symbols containing any number of characters within the scanner’s capability.
Set Lengths for Code 39 (continued)

Code 39 Check Digit Verification
Parameter # 48  
SSI # 30h

Scan **Enable Code 39 Check Digit** to check the integrity of all Code 39 symbols to verify that the data complies with specified check digit algorithm. Only Code 39 symbols which include a modulo 43 check digit are decoded. Enable this feature if the Code 39 symbols contain a Modulo 43 check digit.
Transmit Code 39 Check Digit
Parameter # 43
SSI # 2Bh

Scan one of the following barcodes to transmit Code 39 data with or without the check digit.

- Transmit Code 39 Check Digit (Enable) (1)
- *Do Not Transmit Code 39 Check Digit (Disable) (0)

**NOTE** Code 39 Check Digit Verification must be enabled for this parameter to function.

Code 39 Full ASCII Conversion
Parameter # 17
SSI # 11h

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. Scan one of the following barcodes to enable or disable Code 39 Full ASCII.

- Enable Code 39 Full ASCII (1)
- *Disable Code 39 Full ASCII (0)

**NOTE** You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.

Code 39 Full ASCII to Full ASCII Correlation is host-dependent, and is therefore described in the ASCII character set table for the appropriate interface. See *Table E-1 on page E-1*. 
**Code 39 Buffering - Scan & Store**

Parameter # 113  
SSI # 71h

This feature allows the scanner to accumulate data from multiple Code 39 symbols. Selecting the Scan and Store option (Buffer Code 39) temporarily buffers all Code 39 symbols having a leading space as a first character for later transmission. The leading space is not buffered.

Decoding a Code 39 symbol with no leading space transmits in sequence all buffered data in a first-in first-out format, plus the “triggering” symbol. See the following pages for further details.

Select **Do Not Buffer Code 39** to transmit all decoded Code 39 symbols immediately without storing them in the buffer.

This feature affects Code 39 only. If selecting **Buffer Code 39**, we recommend configuring the scanner to decode Code 39 symbology only.

While there is data in the transmission buffer, you cannot select **Do Not Buffer Code 39**. The buffer holds 200 bytes of information.

To disable Code 39 buffering when there is data in the transmission buffer, first force the buffer transmission (see *Transmit Buffer on page 5-36*) or clear the buffer.

**Buffer Data**

To buffer data, enable Code 39 buffering and scan a Code 39 symbol with a space immediately following the start pattern.

- Unless the data overflows the transmission buffer, the scanner issues a low/high beep to indicate successful decode and buffering. (For overflow conditions, see *Overfilling Transmission Buffer on page 5-36*.)
- The scanner adds the decoded data excluding the leading space to the transmission buffer.
- No transmission occurs.

**Clear Transmission Buffer**

To clear the transmission buffer, scan the **Clear Buffer** barcode below, which contains only a start character, a dash (minus), and a stop character.

- The scanner issues a short high/low/high beep.
- The scanner erases the transmission buffer.
- No transmission occurs.
Clear Transmission Buffer (continued)

![Clear Buffer Barcode]

✓ **NOTE** The Clear Buffer contains only the dash (minus) character. In order to scan this command, set Code 39 lengths to include length 1.

**Transmit Buffer**

There are two methods to transmit the Code 39 buffer.

1. Scan the **Transmit Buffer** barcode below, which includes only a start character, a plus (+), and a stop character.

2. The scanner transmits and clears the buffer.
   - The scanner issues a low/high beep.

![Transmit Buffer Barcode]

3. Scan a Code 39 barcode with a leading character other than a space.
   - The scanner appends new decode data to buffered data.
   - The scanner transmits and clears the buffer.
   - The scanner signals that it transmitted the buffer with a low/high beep.
   - The scanner transmits and clears the buffer.

✓ **NOTE** The Transmit Buffer contains only a plus (+) character. In order to scan this command, set Code 39 lengths to include length 1.

**Overfilling Transmission Buffer**

The Code 39 buffer holds 200 characters. If the symbol just read overflows the transmission buffer:

- The scanner indicates that it rejected the symbol by issuing three long, high beeps.
- No transmission occurs. The data in the buffer is not affected.

**Attempt to Transmit an Empty Buffer**

If you scan the **Transmit Buffer** symbol and the Code 39 buffer is empty:

- A short low/high/low beep signals that the buffer is empty.
- No transmission occurs.
- The buffer remains empty.


**Code 93**

Parameter # 9  
SSI # 09h

Scan one of the following barcodes to enable or disable Code 93.

---

Enable Code 93  
(1)

---

*Disable Code 93  
(0)

---

**Set Lengths for Code 93**

L1 = Parameter # 26  
SSI # 1Ah  
L2 = Parameter # 27  
SSI # 1Bh

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.

☑️ **NOTE** When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Code 93 symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 93 symbols with 14 characters, scan *Code 93 - One Discrete Length*, and then scan 1, 4. To correct an error or change the selection, scan *Cancel on page C-2*.

- **Two Discrete Lengths** - Decode only Code 93 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 93 symbols containing either 2 or 14 characters, scan *Code 93 - Two Discrete Lengths*, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan *Cancel on page C-2*.

- **Length Within Range** - Decode Code 93 symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode Code 93 symbols containing between 4 and 12 characters, scan *Code 93 - Length Within Range*, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan *Cancel on page C-2*.

- **Any Length** - Decode Code 93 symbols containing any number of characters within the scanner’s capability.
Set Lengths for Code 93 (continued)

Code 93 - One Discrete Length

Code 93 - Two Discrete Lengths

*Code 93 - Length Within Range

Code 93 - Any Length
Code 11

Parameter # 10
SSI # 0Ah

Scan one of the following barcodes to enable or disable Code 11

![Enable Code 11 Barcode] (1)

Set Lengths for Code 11
L1 = Parameter # 28
SSI # 1Ch
L2 = Parameter # 29
SSI # 1Dh

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. The default is **Length Within Range**: 4 to 55.

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

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Code 11 symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, and then scan 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only Code 11 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Code 11 symbols containing either 2 or 14 characters, scan **Code 11 - Two Discrete Lengths**, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode Code 11 symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode Code 11 symbols containing between 4 and 12 characters, scan **Code 11 - Length Within Range**, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode Code 11 symbols containing any number of characters within the scanner’s capability.

![*Disable Code 11 Barcode] (0)
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 # 52
SSI # 34h

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.

Scan one of the following barcodes to specify the number of check digits encoded in the Code 11 symbols, or to disable this feature.

*Disable
(0)

One Check Digit
(1)

Two Check Digits
(2)
Transmit Code 11 Check Digits
Parameter # 47
SSI # 2Fh

Scan one of the following barcodes to select whether or not to transmit the Code 11 check digit(s).

Transmit Code 11 Check Digit(s) (Enable)
(1)

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

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

Interleaved 2 of 5 (ITF)

Parameter # 6
SSI # 06h

Scan one of the following barcodes to enable or disable Interleaved 2 of 5.

Enable Interleaved 2 of 5
(1)

*Disable Interleaved 2 of 5
(0)
Set Lengths for Interleaved 2 of 5

L1 = Parameter # 22
SSI # 16h

L2 = Parameter # 23
SSI # 17h

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 I 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is 1 Length (14).

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

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only I 2 of 5 symbols containing a selected length. Select the length using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode only I 2 of 5 symbols with 14 characters, scan I 2 of 5 - One Discrete Length, and then scan 1, 4. To correct an error or change the selection, scan Cancel on page C-2.

- **Two Discrete Lengths** - Decode only I 2 of 5 symbols containing either of two lengths. Select lengths using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode I 2 of 5 symbols containing either 2 or 14 characters, scan I 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan Cancel on page C-2.

- **Length Within Range** - Decode I 2 of 5 symbols with a specific length range. Select lengths using the barcodes in Appendix C, Numeric Bar Codes. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, scan I 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan Cancel on page C-2.
Set Lengths for Interleaved 2 of 5 (continued)

- **Any Length** - Decode I 2 of 5 symbols containing any number of characters within the scanner’s capability.

**NOTE** Due to the construction of the I 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the barcode. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length, Two Discrete Lengths) for I 2 of 5 applications.

*I 2 of 5 - One Discrete Length

I 2 of 5 - Two Discrete Lengths

I 2 of 5 - Length Within Range

I 2 of 5 - Any Length
I 2 of 5 Check Digit Verification

Parameter # 49
SSI # 31h

Scan one of the following barcodes to check the integrity of all I 2 of 5 symbols to verify the data complies with either the specified Uniform Symbology Specification (USS), or the Optical Product Code Council (OPCC) check digit algorithm.

- USS Check Digit
  - (1)

- OPCC Check Digit
  - (2)

Transmit I 2 of 5 Check Digit

Parameter # 44
SSI # 2Ch

Scan one of the following barcodes to transmit I 2 of 5 data with or without the check digit.

- Transmit I 2 of 5 Check Digit (Enable)
  - (1)

- *Do Not Transmit I 2 of 5 Check Digit (Disable)
  - (0)
Convert I 2 of 5 to EAN-13

Parameter # 82
SSI # 52h

Scan Convert I 2 of 5 to EAN-13 (Enable) to convert 14-character I 2 of 5 codes to EAN-13, and transmit to the host as EAN-13. To accomplish this, the I 2 of 5 code must be enabled, and the code must have a leading zero and a valid EAN-13 check digit.

---

Discrete 2 of 5 (DTF)

Parameter # 5
SSI # 05h

Scan one of the following barcodes to enable or disable Discrete 2 of 5.

---
Set Lengths for Discrete 2 of 5

L1 = Parameter # 20
SSI # 14h

L2 = Parameter # 21
SSI # 15h

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. The default is 1 Length (12).

NOTE When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only D 2 of 5 symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only D 2 of 5 symbols with 14 characters, scan **D 2 of 5 - One Discrete Length**, and then scan 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only D 2 of 5 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only D 2 of 5 symbols containing either 2 or 14 characters, scan **D 2 of 5 - Two Discrete Lengths**, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode D 2 of 5 symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, scan **D 2 of 5 - Length Within Range**, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode D 2 of 5 symbols containing any number of characters within the scanner’s capability.

NOTE Due to the construction of the D 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the barcode. To prevent this, select specific lengths (D 2 of 5 - One Discrete Length, Two Discrete Lengths) for D 2 of 5 applications.
Set Lengths for Discrete 2 of 5 (continued)

![D 2 of 5 - Length Within Range]

![D 2 of 5 - Any Length]

---

Codabar (NW - 7)

Parameter # 7
SSI # 07h
Scan one of the following barcodes to enable or disable Codabar.

![Enable Codabar](1)

![*Disable Codabar](0)
Set Lengths for Codabar

L1 = Parameter # 24
SSI # 18h

L2 = Parameter # 25
SSI # 19h

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. The default is Length Within Range: 5 to 55.

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

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Codabar symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Codabar symbols with 14 characters, scan **Codabar - One Discrete Length**, and then scan 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only Codabar symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Codabar symbols containing either 2 or 14 characters, scan **Codabar - Two Discrete Lengths**, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode Codabar symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode Codabar symbols containing between 4 and 12 characters, scan **Codabar - Length Within Range**, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode Codabar symbols containing any number of characters within the scanner's capability.
Set Lengths for Codabar (continued)

Codabar - One Discrete Length

Codabar - Two Discrete Lengths

*Codabar - Length Within Range

Codabar - Any Length
CLSI Editing
Parameter # 54
SSI # 36h

Scan Enable CLSI Editing to strip the start and stop characters and insert a space after the first, fifth, and tenth characters of a 14-character Codabar symbol if the host system requires this data format.

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

Enable CLSI Editing
(1)

*Disable CLSI Editing
(0)

NOTIS Editing

Parameter # 55
SSI # 37h

Scan Enable NOTIS Editing to strip the start and stop characters from a decoded Codabar symbol if the host system requires this data format.

Enable NOTIS Editing
(1)

*Disable NOTIS Editing
(0)
**Codabar Upper or Lower Case Start/Stop Characters**

Parameter # 855  
SSI # F2h 57h

Scan one of the following barcodes to select whether to transmit upper case or lower case Codabar start/stop characters.

- **Lower Case**
  - Value: (1)

- **Upper Case**
  - Value: (0)

---

**MSI**

Parameter # 11  
SSI # 0Bh

Scan one of the following barcodes to enable or disable MSI.

- **Enable MSI**
  - Value: (1)

- **Disable MSI**
  - Value: (0)
Set Lengths for MSI

L1 = Parameter # 30
SSI # 1Eh

L2 = Parameter # 31
SSI # 1Fh

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 MSI to any length, one or two discrete lengths, or lengths within a specific range. The default is **Length Within Range**: 4 to 55.

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

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only MSI symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only MSI symbols with 14 characters, scan **MSI - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only MSI symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only MSI symbols containing either 2 or 14 characters, scan **MSI - Two Discrete Lengths**, and then scan **0, 2, 1, 4**. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode MSI symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode MSI symbols containing between 4 and 12 characters, scan **MSI - Length Within Range**, and then scan **0, 4, 1, 2**. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode MSI symbols containing any number of characters within the scanner’s capability.

**NOTE** Due to the construction of the MSI symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the barcode. To prevent this, select specific lengths (**MSI - One Discrete Length**, **Two Discrete Lengths**) for MSI applications.
Set Lengths for MSI (continued)

*MSI - Length Within Range

MSI Check Digits

Parameter # 50
SSI # 32h

With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional. If the MSI codes include two check digits, scan the Two MSI Check Digits barcode to enable verification of the second check digit.

See MSI Check Digit Algorithm on page 5-55 to select second digit algorithms.

*One MSI Check Digit
(0)

Two MSI Check Digits
(1)
Transmit MSI Check Digit(s)
Parameter # 46
SSI # 2Eh
Scan one of the following barcodes to transmit MSI data with or without the check digit.

Transmit MSI Check Digit(s) (Enable) (1)

*Do Not Transmit MSI Check Digit(s) (Disable) (0)

MSI Check Digit Algorithm
Parameter # 51
SSI # 33h
Two algorithms are available for verifying the second MSI check digit. Scan one of the following barcodes to select the algorithm used to encode the check digit.

MOD 11/MOD 10 (0)

*MOD 10/MOD 10 (1)
Chinese 2 of 5

Parameter # 408
SSI # F0h 98h

Scan one of the following barcodes to enable or disable Chinese 2 of 5.

Enable Chinese 2 of 5
(1)

*Disable Chinese 2 of 5
(0)

Matrix 2 of 5

Parameter # 618
SSI # F1h 6Ah

Scan one of the following barcodes to enable or disable Matrix 2 of 5.

Enable Matrix 2 of 5
(1)

*Disable Matrix 2 of 5
(0)
Matrix 2 of 5 (continued)

Set Lengths for Matrix 2 of 5

L1 = Parameter # 619  
SSI # F1h 6Bh

L2 = Parameter # 620  
SSI # F1h 6Ch

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 Matrix 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is **Any Length**.

> **NOTE** When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following barcodes to select a length option:

- **One Discrete Length** - Decode only Matrix 2 of 5 symbols containing a selected length. Select the length using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Matrix 2 of 5 symbols with 14 characters, scan **Matrix 2 of 5 - One Discrete Length**, and then scan 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Two Discrete Lengths** - Decode only Matrix 2 of 5 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode only Matrix 2 of 5 symbols containing either 2 or 14 characters, scan **Matrix 2 of 5 - Two Discrete Lengths**, and then scan 0, 2, 1, 4. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Length Within Range** - Decode Matrix 2 of 5 symbols with a specific length range. Select lengths using the barcodes in *Appendix C, Numeric Bar Codes*. For example, to decode Matrix 2 of 5 symbols containing between 4 and 12 characters, scan **Matrix 2 of 5 - Length Within Range**, and then scan 0, 4, 1, 2. To correct an error or change the selection, scan **Cancel on page C-2**.

- **Any Length** - Decode Matrix 2 of 5 symbols containing any number of characters within the scanner’s capability.

---

Matrix 2 of 5 - One Discrete Length

Matrix 2 of 5 - Two Discrete Lengths
Set Lengths for Matrix 2 of 5 (continued)

*Matrix 2 of 5 - Length Within Range

*Matrix 2 of 5 - Any Length

Matrix 2 of 5 Check Digit
Parameter # 622
SSI # F1h 6Eh

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to determine whether to include the Matrix 2 of 5 check digit with the barcode data.

Enable Matrix 2 of 5 Check Digit
(1)

*Disable Matrix 2 of 5 Check Digit
(0)
Transmit Matrix 2 of 5 Check Digit
Parameter # 623
SSI # F1h 6Fh
Scan one of the following barcodes to transmit Matrix 2 of 5 data with or without the check digit.

- Transmit Matrix 2 of 5 Check Digit
  (1)

- *Do Not Transmit Matrix 2 of 5 Check Digit
  (0)

---

Korean 3 of 5
Parameter # 581
SSI # F1h 45h
Scan one of the following barcodes to enable or disable Korean 3 of 5.

- Enable Korean 3 of 5
  (1)

- *Disable Korean 3 of 5
  (0)

NOTE The length for Korean 3 of 5 is fixed at 6.
Inverse 1D

Parameter # 586
SSI # F1h 4Ah

Scan one of the following barcodes to set the 1D inverse decoder setting:

- **Regular Only** - The scanner decodes regular 1D barcodes only.
- **Inverse Only** - The scanner decodes inverse 1D barcodes only.
- **Inverse Autodetect** - The scanner decodes both regular and inverse 1D barcodes.
GS1 DataBar

The variants of GS1 DataBar are DataBar Omnidirectional, DataBar Limited, and DataBar Expanded. The limited and expanded versions have stacked variants. Scan the appropriate barcodes to enable or disable each variant of GS1 DataBar.

GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional
Parameter # 338
SSI # F0h 52h

*Enable GS1 DataBar Omnidirectional
(1)

Disable GS1 DataBar Omnidirectional
(0)

GS1 DataBar Limited
Parameter # 339
SSI # F0h 53h

Enable GS1 DataBar Limited
(1)

*Disable GS1 DataBar Limited
(0)
GS1 DataBar Expanded, GS1 DataBar Expanded Stacked

Parameter # 340
SSI # F0h 54h

![Enable GS1 DataBar Expanded](1)

*Disable GS1 DataBar Expanded Expanded (0)

Convert GS1 DataBar to UPC/EAN/JAN

Parameter # 397
SSI # F0h, 8Dh

This parameter only applies to GS1 DataBar Omnidirectional and GS1 DataBar Limited symbols not decoded as part of a Composite symbol. Scan **Enable Convert GS1 DataBar to UPC/EAN/JAN** to strip the leading '010' from DataBar Omnidirectional and DataBar Limited symbols encoding a single zero as the first digit, and report the barcode as EAN-13.

For barcodes beginning with between two and five zeros, this strips the leading '0100' and reports the barcode as UPC-A. The **UPC-A Preamble** option that transmits the system character and country code applies to converted barcodes. Note that neither the system character nor the check digit can be stripped.

![Enable Convert GS1 DataBar to UPC/EAN/JAN](1)

*Disable Convert GS1 DataBar to UPC/EAN/JAN (0)
GS1 DataBar Limited Margin Check

Parameter # 728
SSI # F1h D8h

The scanner offers four levels of decode security for GS1 DataBar Limited barcodes. There is an inverse relationship between the level of margin check and scanner aggressiveness. Increasing the level of margin check can reduce scanning aggressiveness, so select only the level of margin check necessary.

- **Margin Check Level 1** – No clear margin required. This complies with the original GS1 standard, yet can result in erroneous decoding of a DataBar Limited barcode when scanning some UPC symbols that start with digits 9 and 7.

- **Margin Check Level 2** – Automatic risk detection. This level of margin check can result in erroneous decoding of DataBar Limited barcodes when scanning some UPC symbols. If a misdecode is detected, the scanner operates in Level 3 or Level 1.

- **Margin Check Level 3** – Margin check level reflects the newly proposed GS1 standard that requires a five times trailing clear margin.

- **Margin Check Level 4** – Security level extends beyond the standard required by GS1. This level of margin check requires a five times leading and trailing clear margin.

GS1 DataBar Limited Margin Check Level 1
(1)

GS1 DataBar Limited Margin Check Level 2
(2)

*GS1 DataBar Limited Margin Check Level 3
(3)

GS1 DataBar Limited Margin Check Level 4
(4)
Symbology-Specific Security Features

Redundancy Level

Parameter # 78
SSI # 4Eh

The scanner offers four levels of decode redundancy. Select higher redundancy levels for decreasing levels of barcode quality. As redundancy levels increase, the scanner’s aggressiveness decreases.

Scan one of the following barcodes to select the redundancy level appropriate for the barcode quality:

- **Redundancy Level 1** - The scanner must read the following code types twice before decoding:
  - Codabar (8 characters or less)
  - MSI (4 characters or less)
  - D 2 of 5 (8 characters or less)
  - I 2 of 5 (8 characters or less)

- **Redundancy Level 2** - The scanner must read all code types twice before decoding.

- **Redundancy Level 3** - The scanner must read code types other than the following twice before decoding, but must read the following codes three times:
  - Codabar (8 characters or less)
  - MSI (4 characters or less)
  - D 2 of 5 (8 characters or less)
  - I 2 of 5 (8 characters or less)

- **Redundancy Level 4** - The scanner must read all code types three times before decoding.
Redundancy Level (continued)

*Redundancy Level 1 (1)

Redundancy Level 2 (2)

Redundancy Level 3 (3)

Redundancy Level 4 (4)
Security Level
Parameter # 77
SSI # 4Dh

The scanner offers four levels of decode security for delta barcodes, which include the Code 128 family, UPC/EAN/JAN, and Code 93. Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security and scanner aggressiveness, so choose only that level of security necessary for the application.

- **Security Level 0** - The scanner operates in its most aggressive state, while providing sufficient security decoding most in-spec barcodes.
- **Security Level 1** - This default setting eliminates most misdecodes.
- **Security Level 2** - Select this option if Security Level 1 fails to eliminate misdecodes.
- **Security Level 3** - If you selected Security Level 2 and misdecodes still occur, select this security level.

\[ NOTE \] Selecting this option is an extreme measure against mis-decoding severely out-of-spec barcodes, and significantly impairs the decoding ability of the scanner. If this level of security is required, try to improve the quality of the barcodes.
Intercharacter Gap Size

Parameter # 381  
SSI # F0h, 7Dh

The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various barcode printing technologies, this gap can grow larger than the maximum size allowed, preventing the scanner from decoding the symbol. If this problem occurs, scan the Large Intercharacter Gaps parameter to tolerate these out-of-specification barcodes.

```
*Normal Intercharacter Gaps
   (6)
```

```
Large Intercharacter Gaps
   (10)
```

Composite

Composite CC-C

Parameter # 341  
SSI # F0h 55h

Scan one of the following barcodes to enable or disable Composite barcodes of type CC-C.

```
Enable CC-C
   (1)
```

```
*Disable CC-C
   (0)
```
Composite CC-A/B
Parameter # 342
SSI # F0h 56h
Scan one of the following barcodes to enable or disable Composite barcodes of type CC-A/B.

Enable CC-A/B
(1)

*Disable CC-A/B
(0)

Composite TLC-39
Parameter # 371
SSI # F0h 73h
Scan one of the following barcodes to enable or disable Composite barcodes of type TLC-39.

Enable TLC39
(1)

*Disable TLC39
(0)
**UPC Composite Mode**

Parameter # 344  
SSI # F0h 58h

Select an option for linking UPC symbols with a 2D symbol during transmission as if they were one symbol:

- **UPC Never Linked** - Transmit UPC barcodes regardless of whether a 2D symbol is detected.
- **UPC Always Linked** - Transmit UPC barcodes and the 2D portion. If 2D is not present, do not transmit the barcode.
- **Autodiscriminate UPC Composites** - The scanner determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.

*UPC Never Linked  (0)*

*UPC Always Linked  (1)*

Autodiscriminate UPC Composites  (2)
Composite Beep Mode

Parameter # 398  
SSI # F0h, 8Eh  
Scan one of the following barcodes to select the number of decode beeps that sound upon decoding a Composite barcode.

- Single Beep After Both are Decoded (0)
- *Beep as Each Code Type is Decoded (1)
- Double Beep After Both are Decoded (2)

GS1-128 Emulation Mode for UCC/EAN Composite Codes

Parameter # 427  
SSI # F0h, ABh  
Scan one of the following barcodes to enable or disable this mode.

- Enable GS1-128 Emulation Mode for UCC/EAN Composite Codes (1)
- *Disable GS1-128 Emulation Mode for UCC/EAN Composite Codes (0)
2D Symbologies

PDF417
Parameter # 15
SSI # 0Fh

Scan one of the following barcodes to enable or disable PDF417.

Enable PDF417
(1)

*Disable PDF417
(0)

MicroPDF417
Parameter # 227
SSI # E3h

Scan one of the following barcodes to enable or disable MicroPDF417.

Enable MicroPDF417
(1)

*Disable MicroPDF417
(0)
Code 128 Emulation

Parameter # 123
SSI # 7Bh

Enable this parameter to transmit data from certain MicroPDF417 symbols as Code 128. You must enable AIM Code ID Character (1) on page 4-18 for this parameter to work.

Enable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

- JC1 if the first codeword is 903-905
- JC2 if the first codeword is 908 or 909
- JC0 if the first codeword is 910 or 911

Disable Code 128 Emulation to transmit these MicroPDF417 symbols with one of the following prefixes:

- JL3 if the first codeword is 903-905
- JL4 if the first codeword is 908 or 909
- JL5 if the first codeword is 910 or 911

Scan one of the following barcodes to enable or disable Code 128 Emulation.

✓ NOTE Linked MicroPDF codewords 906, 907, 912, 914, and 915 are not supported. Use GS1 Composites instead.
Data Matrix
Parameter # 292
SSI # F0h, 24h

Scan one of the following barcodes to enable or disable Data Matrix.

Enable Data Matrix
(1)

*Disable Data Matrix
(0)

Data Matrix Inverse
Parameter # 588
SSI # F1h 4Ch

Scan one of the following barcodes to select the Data Matrix inverse decoder setting:

- **Regular Only** - The scanner decodes regular Data Matrix barcodes only.
- **Inverse Only** - The scanner decodes inverse Data Matrix barcodes only.
- **Inverse Autodetect** - The scanner decodes both regular and inverse Data Matrix barcodes.

*Regular Only
(0)

Inverse Only
(1)

Inverse Autodetect
(2)
Decode Data Matrix Mirror Images
Parameter # 537
SSI # F1h 19h

Scan one of the following barcodes to select an option for decoding mirror image Data Matrix barcodes:

- **Never** - Do not decode Data Matrix barcodes that are mirror images.
- **Always** - Decode only Data Matrix barcodes that are mirror images.
- **Auto** - Decode both mirrored and unmirrored Data Matrix barcodes.

Never
(0)

Always
(1)

*Auto
(2)
Maxicode
Parameter # 294
SSI # F0h, 26h

Scan one of the following barcodes to enable or disable Maxicode.

Enable Maxicode
(1)

*Disable Maxicode
(0)

NOTE Enabling this also enables QR Inverse, QR Mirrored, and Linked QR.

QR Code
Parameter # 293
SSI # F0h, 25h

Scan one of the following barcodes to enable or disable QR Code.

Enable QR Code
(1)

*Disable QR Code
(0)
QR Inverse
Parameter # 587
SSI # F1h 4Bh

Scan one of the following barcodes to set the QR inverse decoder setting:

- **Regular Only** - The scanner decodes regular QR barcodes only.
- **Inverse Only** - The scanner decodes inverse QR barcodes only.
- **Inverse Autodetect** - The scanner decodes both regular and inverse QR barcodes.
**MicroQR**

Parameter # 573  
SSI # F1h 3Dh

Scan one of the following barcodes to enable or disable MicroQR.

- ![Enable MicroQR (1)](image)
- ![Disable MicroQR (0)](image)

**Aztec**

Parameter # 574  
SSI # F1h 3Eh

Scan one of the following barcodes to enable or disable Aztec.

- ![Enable Aztec (1)](image)
- ![Disable Aztec (0)](image)

**NOTE** Enabling this also enables Linked Aztec.
Aztec Inverse
Parameter # 589
SSI # F1h 4Dh

Scan one of the following barcodes to select the Aztec inverse decoder setting:

- Regular Only - The scanner decodes regular Aztec barcodes only.
- Inverse Only - The scanner decodes inverse Aztec barcodes only.
- Inverse Autodetect - The scanner decodes both regular and inverse Aztec barcodes.
Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The scanner can decode symbols encoded with this feature, and can store more than 64 Kb of decoded data from up to 50 MacroPDF symbols.

**CAUTION** When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix barcodes from several Macro PDF sequences, even if they encode the same data. When scanning a Macro PDF sequence, scan the entire sequence without interruption. When scanning a mixed sequence, two long low beeps (low / low) indicate an inconsistent file ID or inconsistent symbology error.

Macro PDF User Indications

In this mode the scanner provides the following feedback.

**Table 5-2  Macro PDF User Indications**

<table>
<thead>
<tr>
<th>User Scans</th>
<th>Passthrough All Symbols</th>
<th>Transmit Any Symbol in Set</th>
<th>Buffer All Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beep</td>
<td>T</td>
<td>Beep</td>
</tr>
<tr>
<td>Last Macro PDF in set</td>
<td>Decode beep</td>
<td>Y</td>
<td>Decode beep</td>
</tr>
<tr>
<td>Any Macro PDF in set except last</td>
<td>Decode beep</td>
<td>Y</td>
<td>Decode beep</td>
</tr>
<tr>
<td>Macro PDF is not in current set</td>
<td>Decode beep</td>
<td>Y</td>
<td>2 long low</td>
</tr>
<tr>
<td>Invalid Macro PDF formatting</td>
<td>Decode beep</td>
<td>Y</td>
<td>2 long low</td>
</tr>
<tr>
<td>Macro PDF from set was already scanned</td>
<td>Decode beep</td>
<td>Y</td>
<td>4 long low</td>
</tr>
<tr>
<td>Out of Macro PDF memory</td>
<td>N/A</td>
<td></td>
<td>3 long low</td>
</tr>
<tr>
<td>A non-Macro PDF scanned during a set</td>
<td>N/A</td>
<td>-</td>
<td>4 long low</td>
</tr>
<tr>
<td>Flush Macro PDF</td>
<td>Low high</td>
<td>N</td>
<td>5 long low</td>
</tr>
<tr>
<td>Abort Macro PDF</td>
<td>High low</td>
<td>N</td>
<td>High low</td>
</tr>
</tbody>
</table>

**Notes:**
1. The beep only sounds if the *BEEPER_ON signal is connected.
2. The T columns indicate whether the symbol transmitted to the host (N = No transmission).
Macro PDF Transmit / Decode Mode Symbols

Parameter # 188
SSI # BCh

Scan one of the following barcodes to select an option for managing Macro PDF decoding. In **Buffer All Symbols** the scanner can manage sets of up to 50 maximum-sized Macro PDF symbols. In all other modes there is no limit to the size of the MacroPDF set.

- **Buffer All Symbols / Transmit Macro PDF When Complete** - Transmit all decode data from a Macro PDF sequence only when the entire sequence is scanned and decoded. Use the beeper and LED signals provided with the decoder when using this mode to ensure proper feedback. If the decode data exceeds the limit of 50 symbols, there is no transmission because the entire sequence was not scanned. Use the parameter *Flush Macro Buffer on page 5-82* to purge the buffer.

- **Transmit Any Symbol in Set / No Particular Order** - Transmit data from each Macro PDF symbol as decoded, regardless of the sequence (although some error handling is performed; see *Table 5-2*). When selecting this mode, enable *Transmit Macro PDF Control Header on page 5-81*. Also use the beeper and LED signals provided with the decoder to ensure proper feedback.

- **Passthrough All Symbols** - Transmit and decode all Macro PDF symbols and perform no processing. In this mode the host is responsible for detecting and parsing the Macro PDF sequences.

Use this mode when the scanner’s BEEPER_ON signal is not used to drive a beeper. In the other modes, some Macro PDF scanning sequences provide audible feedback only, so if BEEPER_ON is not used no user feedback is provided. In *Table 5-2*, all actions marked **No Transmission** provide no feedback unless the BEEPER_ON signal is used. By using **Passthrough All Symbols** mode every user decode is transmitted to the host where the host software can provide the appropriate feedback.
Transmit Macro PDF Control Header

Parameter # 184
SSI # B8h

Enable this to transmit the control header, which contains the segment index and the file ID, in Macro PDF symbols. For example, the field may be: \92800000\725\120\343. The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID.

Enable this when selecting Transmit Any Symbol in Set / No Particular Order for the Macro PDF Transmit / Decode Mode Symbols on page 5-80, and disable this when selecting Buffer All Symbols / Transmit Macro PDF When Complete. This parameter has no effect when Passthrough All Symbols is selected.

---

*Enable Macro PDF Control Header Transmit (1)

---

Disable Macro PDF Control Header Transmit (0)

---

Escape Characters

Parameter # 233
SSI # E9h

This enables the backslash (\) character as an Escape character for systems that can process transmissions containing special data sequences. Scan one of the following barcodes to either format special data according to the GLI (Global Label Identifier) protocol, or to disable this parameter. This parameter only affects the data portion of a Macro PDF symbol transmission; the Macro PDF Control Header (if enabled) is always sent with GLI formatting.

---

GLI Protocol (2)

---

*None (0)
Flush Macro Buffer

Scan the following barcode to flush the buffer of all decoded Macro PDF data stored to that point, transmit it to the host device, and abort from Macro PDF mode.

---

Abort Macro PDF Entry

Scan the following barcode to clear all currently-stored Macro PDF data in the buffer without transmission and abort from Macro PDF mode.

---

Postal Codes

**US Postnet**
Parameter # 89
SSI # 59h

Scan one of the following barcodes to enable or disable US Postnet.

---
**US Planet**

Parameter # 90  
SSI # 5Ah  

Scan one of the following barcodes to enable or disable US Planet.

- Enable US Planet  
  (1)

- *Disable US Planet  
  (0)

**Transmit US Postal Check Digit**

Parameter # 95  
SSI # 5Fh  

Scan one of the following barcodes to select whether to transmit US Postal data, which includes both US Postnet and US Planet, with or without the check digit.

- *Transmit US Postal Check Digit  
  (1)

- Do Not Transmit US Postal Check Digit  
  (0)
UK Postal
Parameter # 91
SSI # 5Bh
Scan one of the following barcodes to enable or disable UK Postal.

Enable UK Postal (1)

*Disable UK Postal (0)

Transmit UK Postal Check Digit
Parameter # 96
SSI # 60h
Scan one of the following barcodes to select whether to transmit UK Postal data with or without the check digit.

*Transmit UK Postal Check Digit (1)

Do Not Transmit UK Postal Check Digit (0)
Japan Postal
Parameter # 290
SSI # F0h, 22h

Scan one of the following barcodes to enable or disable Japan Postal.

Enable Japan Postal
(1)

*Disable Japan Postal
(0)

Australia Post
Parameter # 291
SSI # F0h, 23h

Scan one of the following barcodes to enable or disable Australia Post.

Enable Australia Post
(1)

*Disable Australia Post
(0)
Australia Post Format

Parameter # 718

SSI # F1h, CEh

Scan one of the following barcodes to select a format for Australia Post:

- **Autodiscriminate** (or Smart mode) - Decode the Customer Information Field using the N and C Encoding Tables.
- **Raw Format** - Output raw bar patterns as a series of numbers 0 through 3.
- **Alphanumeric Encoding** - Decode the Customer Information Field using the C Encoding Table.
- **Numeric Encoding** - Decode the Customer Information Field using the N Encoding Table.

**NOTE** This option increases the risk of misdecodes because the encoded data format does not specify the Encoding Table used for encoding.

For more information on Australia Post Encoding Tables, refer to the *Australia Post Customer Barcoding Technical Specifications* available at www.auspost.com.au.

- *Autodiscriminate*
  (0)

- Raw Format
  (1)

- Alphanumeric Encoding
  (2)

- Numeric Encoding
  (3)
Netherlands KIX Code
Parameter # 326
SSI # F0h, 46h

Scan one of the following barcodes to enable or disable Netherlands KIX Code.

Enable Netherlands KIX Code
(1)

*Disable Netherlands KIX Code
(0)

USPS 4CB/One Code/Intelligent Mail
Parameter # 592
SSI # F1h 50h

Scan one of the following barcodes to enable or disable USPS 4CB/One Code/Intelligent Mail.

Enable USPS 4CB/One Code/Intelligent Mail
(1)

*Disable USPS 4CB/One Code/Intelligent Mail
(0)
UPU FICS Postal

Parameter # 611
SSI # F1h 63h

Scan one of the following barcodes to enable or disable UPU FICS Postal.

Enable UPU FICS Postal
(1)

*Disable UPU FICS Postal
(0)
Introduction

This chapter briefly describes the Zebra software tools available for customizing scanner operation.

123Scan

123Scan is a software tool that simplifies scanner setup and more.

Intuitive enough for first time users, the 123Scan wizard guides users through a streamlined setup process. Settings are saved in a configuration file that can be printed as a single programming barcode for scanning, emailed to a smart phone for scanning from its screen, or downloaded to the scanner using a USB cable.

Through 123Scan a user can accomplish the following.

- Configure a scanner using a wizard.
- Program the following scanner settings:
  - Beeper tone / volume settings.
  - Enable / disable symbologies.
  - Communication settings.
- Modify data before transmission to a host using:
  - Advanced Data Formatting (ADF) - Scan one barcode per trigger pull.
- Load parameter settings to a scanner via:
  - Bar code scanning.
    - Scan a paper barcode.
    - Scan a barcode from a PC screen.
    - Scan a barcode from a smart phone screen.
- Download over a USB cable:
  - Load settings to one scanner.
  - Stage up to 10 scanners simultaneously (Powered USB Hub recommended with 0.5 amp / port).
• Validate scanner setup:
  • View scanned data within the utility's Data View screen.
  • Capture an image and save to a PC within the utility's Data View screen.
  • Review settings using the Parameter Report.
  • Clone settings from an already deployed scanner from the start screen.

• Upgrade scanner firmware:
  • Load settings to one scanner.
  • Stage up to 10 scanners simultaneously (Powered USB Hub recommended with 0.5 amp / port).

• View statistics such as:
  • Asset tracking information.
  • Time and usage information.
  • Bar codes scanned by symbology.
  • Battery diagnostics (select scanners).

• Generate the following reports:
  • Barcode Report - Programming barcode, included parameter settings, and supported scanner models.
  • Parameter Report - Lists parameters programmed within a configuration file.
  • Inventory Report - Lists scanner asset tracking information.
  • Validation Report - Printout of scanned data from the Data View.
  • Statistics Report - Lists all statistics retrieved from the scanner.

For more information go to: www.zebra.com/123Scan.

**Communication with 123Scan**

Use a USB cable to connect the scanner to a Windows host computer running 123Scan.

**123Scan Requirements**

• Host computer running Windows XP, 7, 8 and 10
• Scanner
• USB cable

**123Scan Information**

For more information on 123Scan, go to: www.zebra.com/123Scan.

For a 1 minute tour of 123Scan, go to: www.zebra.com/ScannerHowToVideos.

To see a list of all of our free software tools, go to: www.zebra.com/scannersoftware.
Scanner SDK, Other Software Tools, and Videos

Tackle all your scanner programming needs with our diversified set of software tools. Whether you need to simply stage a device, or develop a fully featured application with image and data capture as well as asset management, these tools help you every step of the way.

To download any of the following free tools, go to: [www.zebra.com/scannersoftware](http://www.zebra.com/scannersoftware).

- 123Scan configuration utility
- SDKs
  - Scanner SDK for Windows
  - Scanner SDK for Linux
  - Scanner SDK for Android
  - Scanner SDK for iOS
- Drivers
  - OPOS driver
  - JPOS driver
  - USB CDC driver
  - TWAIN driver
- Scanner Management Service (SMS) for Remote Management
  - Windows
  - Linux
- How-To-Videos

Scanner Control App

The Scanner Control App (SCA) allows you to control a Bluetooth scanner from a phone or tablet without a cradle. Use this app to showcase a Zebra Bluetooth scanner’s capabilities and ease of control right from your phone.

The Scanner Control App supports Scan-To-Connect technology for one-step Bluetooth pairing, and allows you to control the following scanner functions:

- Program the beeper and LEDs
- Enable and disable symbologies
- Remotely trigger a scan

The app displays scanned barcode data, and can query scanner asset information and battery health statistics.

The Scanner Control App also works with USB connected scanners like the MP7000, assuming your Android tablet has a powered USB host port.

The Scanner Control app is available on the Android Play, iOS App, and Zebra AppGallery stores. Source code is available within the Zebra Scanner SDK for Android and iOS.

To watch a 1 minute tour of the Scanner Control App, go to: [www.zebra.com/scannercontrolapp](http://www.zebra.com/scannercontrolapp).
Advanced Data Formatting (ADF)

Advanced Data Formatting (ADF) is a means of customizing data from before transmission to the host device. Use ADF to edit scan data to suit your host application requirements. With ADF you scan one barcode per trigger pull. ADF is programmed using 123Scan.

To watch a video on Creating an Advanced Data Formatting (ADF) Rule using 123Scan, go to: www.zebra.com/ScannerHowToVideos.

For additional information, refer to the Advanced Data Formatting Programmer Guide, p/n 72E-69680-xx.
CHAPTER 7  INSTALLING THE MX101 CUSTOMER SIDE SCANNER

Introduction

This chapter provides instructions to install the MX101 Customer Side Scanner (CSS) into the MP7000 Scanner Scale.

The MX101 optional modular unit replaces the MP70XX tower cover. The modular unit is pre-assembled to install the scanner on the left side of the MP7000 Scanner Scale. The scanner can be repositioned for right side installation.

![MX101 Modular Unit Parts](image)

*Figure 7-1  MX101 Modular Unit Parts*
Installing the MX101 on the MP70XX

To install the MX101 on the customer’s left side (default) of an MP70XX without a CSS module:

1. Lift the MP70XX out of the checkstand, if already installed.

2. Remove the tower cover by lifting the center of the cover with your thumb to disengage from the tower housing, and pulling the cover back.

3. Before replacing the tower cover with the MX101 tower cover kit, route the cable into the side cable slots as shown in Figure 7-3 and connect the USB cable to the top USB port (recommended) on the MP70XX.

Figure 7-2  Removing the MP70XX Tower Cover

Figure 7-3  Connecting the Cable
4. Replace the tower cover with the MX101 tower cover kit by sliding it onto the back housing and clicking it into place.

![Figure 7-4 Replacing the MP70XX Tower Cover with MX101](image)

---

### Installing the MX101 on the Customer’s Right Side of the Tower Cover

**NOTE** The following steps to reposition the CSS from left to right side apply to an MX101 unit already integrated into the MP70XX and to a new MX101 kit to be installed for customer right side use.

**IMPORTANT** When handling the scan window, do not scratch or smudge the window.

To reposition the MX101 to the customer’s right side of the MP70XX:

1. Lift the MP70XX out of the checkstand, if already installed.

2. Remove the tower cover, if already installed, by lifting the center of the cover with your thumb to disengage from the tower housing, and pulling the cover back (see Figure 7-2 on page 7-2).
3. Remove the screws attaching the bracket to the tower cover.

Figure 7-5  Unscrewing the Bracket

4. Remove bracket from tower.

Figure 7-6  Removing the Bracket
5. Remove the blank side cover from the right side of the CSS tower by depressing the three snaps and pushing the cover out.

![Figure 7-7 Removing Blank Cover](image)

6. Remove the scan window cover from the left side of the CSS tower by depressing the three snaps and pushing the cover out.

![Figure 7-8 Removing the Scan Window Cover](image)
7. Snap the blank cover into the left side of the CSS tower cover.

Figure 7-9  Snapping the Blank Cover into the Left Side

8. Snap the scan window cover into the right side of the CSS tower cover.

Figure 7-10  Snapping the Scan Window Cover into the Right Side

9. Remove the scan module from the left side of the bracket.

Figure 7-11  Removing the Scan Module from Bracket
10. Insert the scan module into the right side of the bracket. Ensure the gaskets on the scan window fit securely into the bracket sockets as shown in Figure 7-12. The module should snap into place when securely seated.

Figure 7-12  Inserting the Scan Module into the Bracket

11. Follow the numbers next to each indent on the bracket to route the USB cable as shown in Figure 7-13.

Figure 7-13  Routing the USB Cable
12. Insert the USB cable into the clip on the top of the bracket as shown in Figure 7-14. Leave approximately 240 mm (9.5 in.) of the cable free to store inside the tower housing.

![Routing the USB Cable](image.png)

**Figure 7-14**  *Routing the USB Cable*

13. Insert the bracket into the tower cover (scan window on the right side) by lining up the screw holes and screw the bracket in place.

![Insert Bracket and Tighten](image.png)

**Figure 7-15**  *Insert Bracket and Tighten*

14. Route the cable into the side cable slots as shown in Figure 7-3 and connect the USB cable to the top USB port (recommended) on the MP70XX.

15. Replace the MP70XX tower cover with the MX101 tower cover kit by sliding it onto the back housing and clicking it into place (see Figure 7-4 on page 7-3).
CHAPTER 8 MAINTENANCE, TROUBLESHOOTING, AND SIGNAL DESCRIPTIONS

Introduction

This chapter provides suggested digital scanner maintenance, troubleshooting, and pinout signal descriptions.

Maintenance

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

- Do not allow abrasive material to touch the window.
- Remove any dirt particles with a damp cloth.
- Wipe the window using a dust-free soft cloth moistened with isopropyl alcohol-based cleaner. Do not let liquid pool around the window or any other area on the scanner.
- Do not spray water or other cleaning liquids directly into the window.
## Troubleshooting

**Table 8-1  Troubleshooting**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital scanner emits short low/short medium/short high beep sequence (power-up beep sequence) more than once.</td>
<td>The USB bus may put the digital scanner in a state where power to the scanner is cycled on and off more than once.</td>
<td>Normal during host reset.</td>
</tr>
<tr>
<td>Digital scanner emits illumination, but does not decode the barcode.</td>
<td>Digital scanner is not programmed for that barcode type.</td>
<td>Program the digital scanner to read that type of barcode. See Chapter 5, Symbologies.</td>
</tr>
<tr>
<td></td>
<td>Barcode symbol is unreadable.</td>
<td>Scan test symbols of the same barcode type to determine if the barcode is defaced.</td>
</tr>
<tr>
<td>Digital scanner decodes barcode, but does not transmit the data to the host.</td>
<td>USB interface cable is loose.</td>
<td>Re-connect the cable.</td>
</tr>
<tr>
<td></td>
<td>If the digital scanner emits 5 low beeps, a conversion or format error occurred.</td>
<td>Configure the digital scanner's conversion parameters properly.</td>
</tr>
<tr>
<td></td>
<td>If the digital scanner emits low/high/low beeps, it detected an invalid ADF rule.</td>
<td>Program the correct ADF rules. Refer to the Advanced Data Formatting Programmer Guide.</td>
</tr>
<tr>
<td></td>
<td>If the digital scanner emits high/low beeps, the scanner is buffering Code 39 data.</td>
<td>Normal scanning a Code 39 barcode and the Code 39 Buffering option is enabled.</td>
</tr>
<tr>
<td>Digital scanner emits low/high beeps during programming.</td>
<td>Input error or Cancel barcode was scanned.</td>
<td>Scan the correct numeric barcodes within range for the parameter programmed.</td>
</tr>
<tr>
<td>Digital scanner emits low/high/low/high beeps during programming.</td>
<td>Out of ADF parameter storage space.</td>
<td>Erase all rules and re-program with shorter rules.</td>
</tr>
</tbody>
</table>

**NOTE** If after performing these checks the digital scanner still experiences problems, contact the distributor or Zebra support. See page xvi for more information.
Report Software Version Barcode

When contacting Zebra support, a support representative may ask you to scan the barcode below to determine the version of software installed in the digital scanner.

![Report Software Version Barcode](image)

Digital Scanner Signal Descriptions

Figure 8-1  Digital Scanner Cable Pinouts

The signal descriptions in Table 8-2 apply to the connector on the MX101 digital scanner.

Table 8-2  USB Connector Pin-outs

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5VDC</td>
<td>USB 5V</td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td>USB Data-</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
<td>USB Data+</td>
</tr>
<tr>
<td>4</td>
<td>DOWNLOAD</td>
<td>Active High Download PIN</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Circuit GND</td>
</tr>
<tr>
<td>SHELL</td>
<td>GND_CHAS</td>
<td>Chassis GND</td>
</tr>
</tbody>
</table>
### Table A-1  Parameter Defaults

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USB Host Parameters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB Host Parameters</td>
<td>N/A</td>
<td>N/A</td>
<td>Symbol Native API (SNAPI) with Imaging Interface</td>
<td>3-2</td>
</tr>
<tr>
<td>TGCS (IBM) USB Specification Version</td>
<td>N/A</td>
<td>N/A</td>
<td>IBM Specification Level Version 0 (Original)</td>
<td>3-3</td>
</tr>
<tr>
<td><strong>User Preferences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set Default Parameter</td>
<td>N/A</td>
<td>N/A</td>
<td>Restore Defaults</td>
<td>4-4</td>
</tr>
<tr>
<td>Parameter Barcode Scanning</td>
<td>236</td>
<td>ECh</td>
<td>Enable</td>
<td>4-5</td>
</tr>
<tr>
<td>Lock Parameter Scanning</td>
<td>802</td>
<td>F2h 22h</td>
<td>Disable</td>
<td>4-5</td>
</tr>
<tr>
<td>Unlock Parameter Scanning</td>
<td>803</td>
<td>F2h 23h</td>
<td>Disable</td>
<td>4-5</td>
</tr>
<tr>
<td>Beep After Good Decode</td>
<td>56</td>
<td>38h</td>
<td>Enable</td>
<td>4-6</td>
</tr>
<tr>
<td>Beeper Volume</td>
<td>140</td>
<td>8Ch</td>
<td>High</td>
<td>4-7</td>
</tr>
<tr>
<td>Beeper Tone</td>
<td>145</td>
<td>91h</td>
<td>High</td>
<td>4-8</td>
</tr>
<tr>
<td>Beeper Duration</td>
<td>628</td>
<td>F1h 74h</td>
<td>Long</td>
<td>4-9</td>
</tr>
<tr>
<td>Trigger Mode</td>
<td>138</td>
<td>8Ah</td>
<td>Presentation Mode</td>
<td>4-10</td>
</tr>
<tr>
<td>Decode Aiming Pattern</td>
<td>306</td>
<td>F0h 32h</td>
<td>Disable</td>
<td>4-10</td>
</tr>
<tr>
<td>Suppress Power Up Beeps</td>
<td>721</td>
<td>F1h D1h</td>
<td>Do Not Suppress</td>
<td>4-9</td>
</tr>
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</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Default</th>
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<tr>
<td>Motion Detect Range</td>
<td>827</td>
<td>F2h 3Bh</td>
<td>Short Range</td>
<td>4-11</td>
</tr>
<tr>
<td>Decode Session Timeout</td>
<td>136</td>
<td>88h</td>
<td>9.9 Seconds</td>
<td>4-11</td>
</tr>
<tr>
<td>Timeout Between Decodes, Same Symbol</td>
<td>137</td>
<td>89h</td>
<td>0.6 Seconds</td>
<td>4-12</td>
</tr>
<tr>
<td>Timeout Between Decodes, Different Symbols</td>
<td>144</td>
<td>90h</td>
<td>0.2 Seconds</td>
<td>4-12</td>
</tr>
<tr>
<td>Mobile Phone/Display Mode</td>
<td>716</td>
<td>F1h CCh</td>
<td>Enable</td>
<td>4-13</td>
</tr>
<tr>
<td>Range Restrict</td>
<td>629</td>
<td>F1h 75h</td>
<td>3 inches</td>
<td>4-14</td>
</tr>
<tr>
<td>Presentation Mode Field of View</td>
<td>609</td>
<td>F1h 61h</td>
<td>Medium Field of View</td>
<td>4-15</td>
</tr>
<tr>
<td>Fuzzy 1D Processing</td>
<td>514</td>
<td>F1h 02h</td>
<td>Enable</td>
<td>4-15</td>
</tr>
<tr>
<td>Mirrored Image</td>
<td>624</td>
<td>F1h 70h</td>
<td>Disable</td>
<td>4-16</td>
</tr>
<tr>
<td>Decoding Illumination</td>
<td>298</td>
<td>F0h 2Ah</td>
<td>Enable</td>
<td>4-16</td>
</tr>
<tr>
<td>Illumination Brightness</td>
<td>669</td>
<td>F1h 9Dh</td>
<td>6</td>
<td>4-17</td>
</tr>
<tr>
<td>Validate Concatenated Parameter Barcodes</td>
<td>692</td>
<td>F1h B4h</td>
<td>Disable</td>
<td>4-17</td>
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**Miscellaneous Options**

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<th>Page Number</th>
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<tr>
<td>Transmit Code ID Character</td>
<td>45</td>
<td>2Dh</td>
<td>None</td>
<td>4-18</td>
</tr>
<tr>
<td>SSI Prefix Value</td>
<td>99, 105</td>
<td>63h, 69h</td>
<td>&lt;CR&gt;</td>
<td>4-19</td>
</tr>
<tr>
<td>SSI Suffix 1 Value</td>
<td>98, 104</td>
<td>62h, 68h</td>
<td>&lt;CR&gt;</td>
<td>4-19</td>
</tr>
<tr>
<td>SSI Suffix 2 Value</td>
<td>100, 106</td>
<td>64h, 6Ah</td>
<td>&lt;CR&gt;</td>
<td>4-19</td>
</tr>
<tr>
<td>Scan Data Transmission Format</td>
<td>235</td>
<td>EBh</td>
<td>Data As Is</td>
<td>4-20</td>
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**Send Versions**

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<tbody>
<tr>
<td>Software Version</td>
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<td>Manufacturing Information</td>
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<td>Camera Manufacturing Information</td>
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**Enable/Disable All Code Types**

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**1D Symbologies**

**UPC/EAN/JAN**

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<tr>
<th>Parameter</th>
<th>1</th>
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1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number</th>
<th>Default</th>
<th>Page Number</th>
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<tr>
<td>UPC-E</td>
<td>2</td>
<td>02h</td>
<td>Disable</td>
<td>5-9</td>
</tr>
<tr>
<td>UPC-E1</td>
<td>12</td>
<td>0Ch</td>
<td>Disable</td>
<td>5-9</td>
</tr>
<tr>
<td>EAN-8/JAN 8</td>
<td>4</td>
<td>04h</td>
<td>Disable</td>
<td>5-10</td>
</tr>
<tr>
<td>EAN-13/JAN 13</td>
<td>3</td>
<td>03h</td>
<td>Disable</td>
<td>5-10</td>
</tr>
<tr>
<td>Bookland EAN</td>
<td>83</td>
<td>53h</td>
<td>Disable</td>
<td>5-11</td>
</tr>
<tr>
<td>Bookland ISBN Format</td>
<td>576</td>
<td>F1h 40h</td>
<td>ISBN-10</td>
<td>5-12</td>
</tr>
<tr>
<td>ISSN EAN</td>
<td>617</td>
<td>F1h 69h</td>
<td>Disable</td>
<td>5-13</td>
</tr>
<tr>
<td>Decode UPC/EAN/JAN Supplementals (2 and 5 digits)</td>
<td>16</td>
<td>10h</td>
<td>Ignore</td>
<td>5-13</td>
</tr>
<tr>
<td>User-Programmable Supplementals</td>
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<tr>
<td>Supplemental 1:</td>
<td>579</td>
<td>F4h F1h 43h</td>
<td>N/A</td>
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<td>Supplemental 2:</td>
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<td>F4h F1h 44h</td>
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<td>UPC/EAN/JAN Supplemental Redundency</td>
<td>80</td>
<td>50h</td>
<td>10</td>
<td>5-17</td>
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<tr>
<td>UPC/EAN/JAN Supplemental AIM ID Format</td>
<td>672</td>
<td>F1h A0h</td>
<td>Combined</td>
<td>5-17</td>
</tr>
<tr>
<td>Transmit UPC-A Check Digit</td>
<td>40</td>
<td>28h</td>
<td>Enable</td>
<td>5-18</td>
</tr>
<tr>
<td>Transmit UPC-E Check Digit</td>
<td>41</td>
<td>29h</td>
<td>Enable</td>
<td>5-19</td>
</tr>
<tr>
<td>Transmit UPC-E1 Check Digit</td>
<td>42</td>
<td>2Ah</td>
<td>Enable</td>
<td>5-19</td>
</tr>
<tr>
<td>UPC-A Preamble</td>
<td>34</td>
<td>22h</td>
<td>System Character</td>
<td>5-20</td>
</tr>
<tr>
<td>UPC-E Preamble</td>
<td>35</td>
<td>23h</td>
<td>System Character</td>
<td>5-21</td>
</tr>
<tr>
<td>UPC-E1 Preamble</td>
<td>36</td>
<td>24h</td>
<td>System Character</td>
<td>5-22</td>
</tr>
<tr>
<td>Convert UPC-E to A</td>
<td>37</td>
<td>25h</td>
<td>Disable</td>
<td>5-23</td>
</tr>
<tr>
<td>Convert UPC-E1 to A</td>
<td>38</td>
<td>26h</td>
<td>Disable</td>
<td>5-23</td>
</tr>
<tr>
<td>EAN/JAN Zero Extend</td>
<td>39</td>
<td>27h</td>
<td>Disable</td>
<td>5-24</td>
</tr>
<tr>
<td>UCC Coupon Extended Code</td>
<td>85</td>
<td>55h</td>
<td>Disable</td>
<td>5-24</td>
</tr>
<tr>
<td>Coupon Report</td>
<td>730</td>
<td>F1h DAh</td>
<td>New Coupon Format</td>
<td>5-25</td>
</tr>
</tbody>
</table>

**Code 128**

| Code 128                                       | 8                | 08h        | Enable      | 5-26        |

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
### Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Length(s) for Code 128</td>
<td>209, 210</td>
<td>D1h, D2h</td>
<td>Any Length</td>
<td>5-26</td>
</tr>
<tr>
<td>GS1-128 (formerly UCC/EAN-128)</td>
<td>14</td>
<td>0Eh</td>
<td>Disable</td>
<td>5-27</td>
</tr>
<tr>
<td>ISBT 128</td>
<td>84</td>
<td>54h</td>
<td>Disable</td>
<td>5-28</td>
</tr>
<tr>
<td>ISBT Concatenation</td>
<td>577</td>
<td>F1h 41h</td>
<td>Disable</td>
<td>5-28</td>
</tr>
<tr>
<td>Check ISBT Table</td>
<td>578</td>
<td>F1h 42h</td>
<td>Enable</td>
<td>5-29</td>
</tr>
<tr>
<td>ISBT Concatenation Redundancy</td>
<td>223</td>
<td>DFh</td>
<td>10</td>
<td>5-29</td>
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**Code 39**

<table>
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<tr>
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<th>Default</th>
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<tr>
<td>Code 39</td>
<td>0</td>
<td>00h</td>
<td>Disable</td>
<td>5-30</td>
</tr>
<tr>
<td>Trioptic Code 39</td>
<td>13</td>
<td>0Dh</td>
<td>Disable</td>
<td>5-30</td>
</tr>
<tr>
<td>Convert Code 39 to Code 32 (Italian Pharmacy Code)</td>
<td>86</td>
<td>56h</td>
<td>Disable</td>
<td>5-31</td>
</tr>
<tr>
<td>Code 32 Prefix</td>
<td>231</td>
<td>E7h</td>
<td>Disable</td>
<td>5-31</td>
</tr>
<tr>
<td>Set Length(s) for Code 39</td>
<td>18, 19</td>
<td>12h, 13h</td>
<td>2 to 55</td>
<td>5-32</td>
</tr>
<tr>
<td>Code 39 Check Digit Verification</td>
<td>48</td>
<td>30h</td>
<td>Disable</td>
<td>5-33</td>
</tr>
<tr>
<td>Transmit Code 39 Check Digit</td>
<td>43</td>
<td>2Bh</td>
<td>Disable</td>
<td>5-34</td>
</tr>
<tr>
<td>Code 39 Full ASCII Conversion</td>
<td>17</td>
<td>11h</td>
<td>Disable</td>
<td>5-34</td>
</tr>
<tr>
<td>Code 39 Buffering</td>
<td>113</td>
<td>71h</td>
<td>Disable</td>
<td>5-35</td>
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**Code 93**

<table>
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<th>Default</th>
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<tr>
<td>Code 93</td>
<td>9</td>
<td>09h</td>
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</tr>
<tr>
<td>Set Length(s) for Code 93</td>
<td>26, 27</td>
<td>1Ah, 1Bh</td>
<td>4 to 55</td>
<td>5-37</td>
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**Code 11**

<table>
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<th>Default</th>
<th>Page Number</th>
</tr>
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<tr>
<td>Code 11</td>
<td>10</td>
<td>0Ah</td>
<td>Disable</td>
<td>5-39</td>
</tr>
<tr>
<td>Set Lengths for Code 11</td>
<td>28, 29</td>
<td>1Ch, 1Dh</td>
<td>4 to 55</td>
<td>5-39</td>
</tr>
<tr>
<td>Code 11 Check Digit Verification</td>
<td>52</td>
<td>34h</td>
<td>Disable</td>
<td>5-41</td>
</tr>
<tr>
<td>Transmit Code 11 Check Digit(s)</td>
<td>47</td>
<td>2Fh</td>
<td>Disable</td>
<td>5-42</td>
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**Interleaved 2 of 5 (ITF)**

<table>
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<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
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<tbody>
<tr>
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<td>6</td>
<td>06h</td>
<td>Disable</td>
<td>5-42</td>
</tr>
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</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
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</thead>
<tbody>
<tr>
<td>Set Lengths for I 2 of 5</td>
<td>22, 23</td>
<td>16h, 17h</td>
<td>1 Length; Length = 14</td>
<td>5-43</td>
</tr>
<tr>
<td>I 2 of 5 Check Digit Verification</td>
<td>49</td>
<td>31h</td>
<td>Disable</td>
<td>5-45</td>
</tr>
<tr>
<td>Transmit I 2 of 5 Check Digit</td>
<td>44</td>
<td>2Ch</td>
<td>Disable</td>
<td>5-45</td>
</tr>
<tr>
<td>Convert I 2 of 5 to EAN 13</td>
<td>82</td>
<td>52h</td>
<td>Disable</td>
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<td>05h</td>
<td>Disable</td>
<td>5-46</td>
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<tr>
<td>Set Length(s) for D 2 of 5</td>
<td>20, 21</td>
<td>14h 15h</td>
<td>1 to 55</td>
<td>5-47</td>
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<td><strong>Codabar (NW - 7)</strong></td>
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<td>Codabar</td>
<td>7</td>
<td>07h</td>
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<td>5-48</td>
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<tr>
<td>Set Lengths for Codabar</td>
<td>24, 25</td>
<td>18h, 19h</td>
<td>5 to 55</td>
<td>5-49</td>
</tr>
<tr>
<td>CLSI Editing</td>
<td>54</td>
<td>36h</td>
<td>Disable</td>
<td>5-51</td>
</tr>
<tr>
<td>NOTIS Editing</td>
<td>55</td>
<td>37h</td>
<td>Disable</td>
<td>5-51</td>
</tr>
<tr>
<td>Codabar Upper or Lower Case Start/Stop Characters Detection</td>
<td>855</td>
<td>F2h 57h</td>
<td>Upper Case</td>
<td>5-52</td>
</tr>
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<td><strong>MSI</strong></td>
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<td>11</td>
<td>0Bh</td>
<td>Disable</td>
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</tr>
<tr>
<td>Set Length(s) for MSI</td>
<td>30, 31</td>
<td>1Eh, 1Fh</td>
<td>4 to 55</td>
<td>5-53</td>
</tr>
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<td>MSI Check Digits</td>
<td>50</td>
<td>32h</td>
<td>One</td>
<td>5-54</td>
</tr>
<tr>
<td>Transmit MSI Check Digit</td>
<td>46</td>
<td>2Eh</td>
<td>Disable</td>
<td>5-55</td>
</tr>
<tr>
<td>MSI Check Digit Algorithm</td>
<td>51</td>
<td>33h</td>
<td>Mod 10/Mod 10</td>
<td>5-55</td>
</tr>
<tr>
<td><strong>Chinese 2 of 5</strong></td>
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<tr>
<td>Chinese 2 of 5</td>
<td>408</td>
<td>F0h 98h</td>
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<td>5-56</td>
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<td><strong>Matrix 2 of 5</strong></td>
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<tr>
<td>Matrix 2 of 5</td>
<td>618</td>
<td>F1h 6Ah</td>
<td>Disable</td>
<td>5-56</td>
</tr>
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<td>Set Lengths for Matrix 2 of 5</td>
<td>619 620</td>
<td>F1h 6Bh F1h 6Ch</td>
<td>Any Length</td>
<td>5-57</td>
</tr>
<tr>
<td>Matrix 2 of 5 Check Digit</td>
<td>622</td>
<td>F1h 6Eh</td>
<td>Disable</td>
<td>5-58</td>
</tr>
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</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number</th>
<th>Default</th>
<th>Page Number</th>
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<tbody>
<tr>
<td>Transmit Matrix 2 of 5 Check Digit</td>
<td>623</td>
<td>F1h 6Fh</td>
<td>Disable</td>
<td>5-59</td>
</tr>
<tr>
<td>Korean 3 of 5</td>
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<tr>
<td>Korean 3 of 5</td>
<td>581</td>
<td>F1h 45h</td>
<td>Disable</td>
<td>5-59</td>
</tr>
<tr>
<td>Inverse 1D</td>
<td>586</td>
<td>F1h 4Ah</td>
<td>Regular</td>
<td>5-60</td>
</tr>
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<td>GS1 DataBar</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional</td>
<td>338</td>
<td>F0h 52h</td>
<td>Enable</td>
<td>5-61</td>
</tr>
<tr>
<td>GS1 DataBar Limited</td>
<td>339</td>
<td>F0h 53h</td>
<td>Disable</td>
<td>5-61</td>
</tr>
<tr>
<td>GS1 DataBar Expanded, GS1 DataBar Expanded Stacked</td>
<td>340</td>
<td>F0h 54h</td>
<td>Disable</td>
<td>5-62</td>
</tr>
<tr>
<td>Convert GS1 DataBar to UPC/EAN/JAN</td>
<td>397</td>
<td>F0h 8Dh</td>
<td>Disable</td>
<td>5-62</td>
</tr>
<tr>
<td>GS1 DataBar Limited Margin Check</td>
<td>728</td>
<td>F1h D8h</td>
<td>Level 3</td>
<td>5-63</td>
</tr>
<tr>
<td>Symbology-Specific Security Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redundancy Level</td>
<td>78</td>
<td>4Eh</td>
<td>1</td>
<td>5-64</td>
</tr>
<tr>
<td>Security Level</td>
<td>77</td>
<td>4Dh</td>
<td>1</td>
<td>5-66</td>
</tr>
<tr>
<td>Intercharacter Gap Size</td>
<td>381</td>
<td>F0h 7Dh</td>
<td>Normal</td>
<td>5-67</td>
</tr>
<tr>
<td>Composite Codes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite CC-C</td>
<td>341</td>
<td>F0h 55h</td>
<td>Disable</td>
<td>5-67</td>
</tr>
<tr>
<td>Composite CC-A/B</td>
<td>342</td>
<td>F0h 56h</td>
<td>Disable</td>
<td>5-68</td>
</tr>
<tr>
<td>Composite TLC-39</td>
<td>371</td>
<td>F0h 73h</td>
<td>Disable</td>
<td>5-68</td>
</tr>
<tr>
<td>UPC Composite Mode</td>
<td>344</td>
<td>F0h 58h</td>
<td>UPC Never Linked</td>
<td>5-69</td>
</tr>
<tr>
<td>Composite Beep Mode</td>
<td>398</td>
<td>F0h 8Eh</td>
<td>Beep As Each Code Type is Decoded</td>
<td>5-70</td>
</tr>
<tr>
<td>GS1-128 Emulation Mode for UCC/EAN Composite Codes</td>
<td>427</td>
<td>F0h ABh</td>
<td>Disable</td>
<td>5-72</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.  
2. SSI number hex values are used for programming via SSI commands.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number</th>
<th>SSI Number</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2D Symbologies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDF417</td>
<td>15</td>
<td>0Fh</td>
<td>Disable</td>
<td>5-71</td>
</tr>
<tr>
<td>MicroPDF417</td>
<td>227</td>
<td>E3h</td>
<td>Disable</td>
<td>5-71</td>
</tr>
<tr>
<td>Code 128 Emulation</td>
<td>123</td>
<td>7Bh</td>
<td>Disable</td>
<td>5-70</td>
</tr>
<tr>
<td>Data Matrix</td>
<td>292</td>
<td>F0h 24h</td>
<td>Disable</td>
<td>5-73</td>
</tr>
<tr>
<td>Data Matrix Inverse</td>
<td>588</td>
<td>F1h 4Ch</td>
<td>Regular Only</td>
<td>5-73</td>
</tr>
<tr>
<td>Decode Data Matrix Mirror Images</td>
<td>537</td>
<td>F1h 19h</td>
<td>Auto</td>
<td>5-74</td>
</tr>
<tr>
<td>Maxicode</td>
<td>294</td>
<td>F0h 26h</td>
<td>Disable</td>
<td>5-75</td>
</tr>
<tr>
<td>QR Code</td>
<td>293</td>
<td>F0h 25h</td>
<td>Disable</td>
<td>5-75</td>
</tr>
<tr>
<td>QR Inverse</td>
<td>587</td>
<td>F1h 4Bh</td>
<td>Regular</td>
<td>5-76</td>
</tr>
<tr>
<td>MicroQR</td>
<td>573</td>
<td>F1h 3Dh</td>
<td>Disable</td>
<td>5-77</td>
</tr>
<tr>
<td>Aztec</td>
<td>574</td>
<td>F1h 3Eh</td>
<td>Disable</td>
<td>5-77</td>
</tr>
<tr>
<td>Aztec Inverse</td>
<td>589</td>
<td>F1h 4Dh</td>
<td>Inverse Autodetect</td>
<td>5-78</td>
</tr>
<tr>
<td><strong>Macro PDF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macro PDF Transmit/Decode Mode</td>
<td>188</td>
<td>BCh</td>
<td>Passthrough Mode</td>
<td>5-80</td>
</tr>
<tr>
<td>Symbols</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmit Macro PDF Control Header</td>
<td>184</td>
<td>B8h</td>
<td>Enable</td>
<td>5-81</td>
</tr>
<tr>
<td>Escape Characters</td>
<td>233</td>
<td>E9h</td>
<td>None</td>
<td>5-81</td>
</tr>
<tr>
<td>Flush Macro PDF Buffer</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>5-82</td>
</tr>
<tr>
<td>Abort Macro PDF Entry</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>5-82</td>
</tr>
<tr>
<td><strong>Postal Codes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US Postnet</td>
<td>89</td>
<td>59h</td>
<td>Disable</td>
<td>5-82</td>
</tr>
<tr>
<td>US Planet</td>
<td>90</td>
<td>5Ah</td>
<td>Disable</td>
<td>5-83</td>
</tr>
<tr>
<td>Transmit US Postal Check Digit</td>
<td>95</td>
<td>5Fh</td>
<td>Enable</td>
<td>5-83</td>
</tr>
<tr>
<td>UK Postal</td>
<td>91</td>
<td>5Bh</td>
<td>Disable</td>
<td>5-84</td>
</tr>
<tr>
<td>Transmit UK Postal Check Digit</td>
<td>96</td>
<td>60h</td>
<td>Enable</td>
<td>5-84</td>
</tr>
<tr>
<td>Japan Postal</td>
<td>290</td>
<td>F0h 22h</td>
<td>Disable</td>
<td>5-85</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
Table A-1  Parameter Defaults (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter Number 1</th>
<th>SSI Number 2</th>
<th>Default</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Post</td>
<td>291</td>
<td>F0h 23h</td>
<td>Disable</td>
<td>5-85</td>
</tr>
<tr>
<td>Australia Post Format</td>
<td>718</td>
<td>F1h C Eh</td>
<td>Autodiscriminate</td>
<td>5-86</td>
</tr>
<tr>
<td>Netherlands KIX Code</td>
<td>326</td>
<td>F0h 46h</td>
<td>Disable</td>
<td>5-87</td>
</tr>
<tr>
<td>USPS 4CB/One Code/Intelligent Mail</td>
<td>592</td>
<td>F1h 50h</td>
<td>Disable</td>
<td>5-87</td>
</tr>
<tr>
<td>UPU FICS Postal</td>
<td>611</td>
<td>F1h 63h</td>
<td>Disable</td>
<td>5-88</td>
</tr>
</tbody>
</table>

1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.
## Symbol Code Identifiers

### Table B-1  Symbol Code Characters

<table>
<thead>
<tr>
<th>Code Character</th>
<th>Code Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13</td>
</tr>
<tr>
<td>B</td>
<td>Code 39, Code 32</td>
</tr>
<tr>
<td>C</td>
<td>Codabar</td>
</tr>
<tr>
<td>D</td>
<td>Code 128, ISBT 128, ISBT 128 Concatenated</td>
</tr>
<tr>
<td>E</td>
<td>Code 93</td>
</tr>
<tr>
<td>F</td>
<td>Interleaved 2 of 5</td>
</tr>
<tr>
<td>G</td>
<td>Discrete 2 of 5, or Discrete 2 of 5 IATA</td>
</tr>
<tr>
<td>H</td>
<td>Code 11</td>
</tr>
<tr>
<td>J</td>
<td>MSI</td>
</tr>
<tr>
<td>K</td>
<td>GS1-128</td>
</tr>
<tr>
<td>L</td>
<td>Bookland EAN</td>
</tr>
<tr>
<td>M</td>
<td>Trioptic Code 39</td>
</tr>
<tr>
<td>N</td>
<td>Coupon Code</td>
</tr>
<tr>
<td>R</td>
<td>GS1 DataBar Family</td>
</tr>
<tr>
<td>S</td>
<td>Matrix 2 of 5</td>
</tr>
<tr>
<td>T</td>
<td>UCC Composite, TLC 39</td>
</tr>
<tr>
<td>U</td>
<td>Chinese 2 of 5</td>
</tr>
</tbody>
</table>
Table B-1  Symbol Code Characters (continued)

<table>
<thead>
<tr>
<th>Code Character</th>
<th>Code Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Korean 3 of 5</td>
</tr>
<tr>
<td>X</td>
<td>ISSN EAN, PDF417, Macro PDF417, Micro PDF417</td>
</tr>
<tr>
<td>z</td>
<td>Aztec, Aztec Rune</td>
</tr>
<tr>
<td>P00</td>
<td>Data Matrix</td>
</tr>
<tr>
<td>P01</td>
<td>QR Code, MicroQR</td>
</tr>
<tr>
<td>P02</td>
<td>Maxicode</td>
</tr>
<tr>
<td>P03</td>
<td>US Postnet</td>
</tr>
<tr>
<td>P04</td>
<td>US Planet</td>
</tr>
<tr>
<td>P05</td>
<td>Japan Postal</td>
</tr>
<tr>
<td>P06</td>
<td>UK Postal</td>
</tr>
<tr>
<td>P08</td>
<td>Netherlands KIX Code</td>
</tr>
<tr>
<td>P09</td>
<td>Australia Post</td>
</tr>
<tr>
<td>P0A</td>
<td>USPS 4CB/One Code/Intelligent Mail</td>
</tr>
<tr>
<td>P0B</td>
<td>UPU FICS Postal</td>
</tr>
</tbody>
</table>

AIM Code Identifiers

Each AIM Code Identifier contains the three-character string \[ \text{Jcm} \] where:

\[ \text{J} \quad = \text{Flag Character (ASCII 93)} \]
\[ \text{c} \quad = \text{Code Character (see Table B-2)} \]
\[ \text{m} \quad = \text{Modifier Character (see Table B-3)} \]

Table B-2  Aim Code Characters

<table>
<thead>
<tr>
<th>Code Character</th>
<th>Code Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Code 39, Code 39 Full ASCII, Code 32</td>
</tr>
<tr>
<td>C</td>
<td>Code 128, ISBT 128, ISBT 128 Concatenated, GS1-128, Coupon (Code 128 portion)</td>
</tr>
<tr>
<td>d</td>
<td>Data Matrix</td>
</tr>
<tr>
<td>E</td>
<td>UPC/EAN, Coupon (UPC portion)</td>
</tr>
<tr>
<td>e</td>
<td>GS1 DataBar Family</td>
</tr>
<tr>
<td>F</td>
<td>Codabar</td>
</tr>
<tr>
<td>G</td>
<td>Code 93</td>
</tr>
</tbody>
</table>
The modifier character is the sum of the applicable option values based on Table B-3.

### Table B-2  Aim Code Characters (continued)

<table>
<thead>
<tr>
<th>Code Character</th>
<th>Code Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Code 11</td>
</tr>
<tr>
<td>I</td>
<td>Interleaved 2 of 5</td>
</tr>
<tr>
<td>L</td>
<td>PDF417, Macro PDF417, Micro PDF417</td>
</tr>
<tr>
<td>L2</td>
<td>TLC 39</td>
</tr>
<tr>
<td>M</td>
<td>MSI</td>
</tr>
<tr>
<td>Q</td>
<td>QR Code, MicroQR</td>
</tr>
<tr>
<td>S</td>
<td>Discrete 2 of 5, IATA 2 of 5</td>
</tr>
<tr>
<td>U</td>
<td>Maxicode</td>
</tr>
<tr>
<td>z</td>
<td>Aztec, Aztec Rune</td>
</tr>
<tr>
<td>X</td>
<td>Bookland EAN, ISSN EAN, Trioptic Code 39, Chinese 2 of 5, Matrix 2 of 5, Korean 3 of 5, US Postnet, US Planet, UK Postal, Japan Postal, Australia Post, Netherlands KIX Code, USPS 4CB/One Code/ Intelligent Mail, UPU FICS Postal</td>
</tr>
</tbody>
</table>

### Table B-3  Modifier Characters

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Option Value</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 39</td>
<td>0</td>
<td>No check character or Full ASCII processing.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Reader has checked one check character.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Reader has checked and stripped check character.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Reader has performed Full ASCII character conversion.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Reader has performed Full ASCII character conversion and checked one check character.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Reader has performed Full ASCII character conversion and checked and stripped check character.</td>
</tr>
</tbody>
</table>

Example: A Full ASCII barcode with check character W, **A+I+MI+DW**, is transmitted as **JA7AIMID** where 7 = (3+4).

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Option Value</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trioptic Code 39</td>
<td>0</td>
<td>No option specified at this time. Always transmit 0.</td>
</tr>
</tbody>
</table>

Example: A Trioptic barcode 412356 is transmitted as **JX0412356**

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Option Value</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 128</td>
<td>0</td>
<td>Standard data packet, no Function code 1 in first symbol position.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Function code 1 in first symbol character position.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Function code 1 in second symbol character position.</td>
</tr>
</tbody>
</table>

Example: A Code (EAN) 128 barcode with Function 1 character **FNC1** in the first position, AIMID is transmitted as **JC1AIMID**
### Table B-3  Modifier Characters (continued)

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Option Value</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 2 of 5</td>
<td>0</td>
<td>No check digit processing.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Reader has validated check digit.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Reader has validated and stripped check digit.</td>
</tr>
<tr>
<td>Example: An I 2 of 5 barcode without check digit, 4123, is transmitted as <strong>I0</strong>4123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codabar</td>
<td>0</td>
<td>No check digit processing.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Reader has checked check digit.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Reader has stripped check digit before transmission.</td>
</tr>
<tr>
<td>Example: A Codabar barcode without check digit, 4123, is transmitted as <strong>F0</strong>4123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 93</td>
<td>0</td>
<td>No options specified at this time. Always transmit 0.</td>
</tr>
<tr>
<td>Example: A Code 93 barcode 012345678905 is transmitted as <strong>G0</strong>012345678905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSI</td>
<td>0</td>
<td>Check digits are sent.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>No check digit is sent.</td>
</tr>
<tr>
<td>Example: An MSI barcode 4123, with a single check digit checked, is transmitted as <strong>M1</strong>4123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D 2 of 5</td>
<td>0</td>
<td>No options specified at this time. Always transmit 0.</td>
</tr>
<tr>
<td>Example: A D 2 of 5 barcode 4123, is transmitted as <strong>S0</strong>4123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UPC/EAN</td>
<td>0</td>
<td>Standard data packet in full EAN format, i.e., 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Two digit supplemental data only.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Five digit supplemental data only.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from supplemental symbol.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>EAN-8 data packet.</td>
</tr>
<tr>
<td>Example: A UPC-A barcode 012345678905 is transmitted as <strong>E0</strong>012345678905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bookland EAN</td>
<td>0</td>
<td>No options specified at this time. Always transmit 0.</td>
</tr>
<tr>
<td>Example: A Bookland EAN barcode 123456789X is transmitted as <strong>X0</strong>123456789X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISSN EAN</td>
<td>0</td>
<td>No options specified at this time. Always transmit 0.</td>
</tr>
<tr>
<td>Example: An ISSN EAN barcode 123456789X is transmitted as <strong>X0</strong>123456789X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code 11</td>
<td>0</td>
<td>Single check digit</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Two check digits</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Check characters validated but not transmitted.</td>
</tr>
</tbody>
</table>
Table B-3  Modifier Characters  (continued)

<table>
<thead>
<tr>
<th>Code Type</th>
<th>Option Value</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS1 DataBar Family</td>
<td>No option specified at this time. Always transmit 0. GS1 DataBar-14 and GS1 DataBar Limited transmit with an Application Identifier “01”. Note: In GS1-128 emulation mode, GS1 DataBar is transmitted using Code 128 rules (i.e., JC1). Example: A GS1 DataBar-14 barcode 0110012345678902 is transmitted as 0110012345678902.</td>
<td></td>
</tr>
<tr>
<td>EAN.UCC Composites (GS1 DataBar, GS1-128, 2D portion of UPC composite)</td>
<td>Native mode transmission. Note: UPC portion of composite is transmitted using UPC rules.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Standard data packet.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Data packet containing the data following an encoded symbol separator character.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GS1-128 emulation Note: UPC portion of composite is transmitted using UPC rules.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Data packet is a GS1-128 symbol (i.e., data is preceded with JC1).</td>
<td></td>
</tr>
<tr>
<td>PDF417, Micro PDF417</td>
<td>Reader set to conform to protocol defined in 1994 PDF417 symbology specifications. Note: When this option is transmitted, the receiver cannot reliably determine whether ECI have been invoked or whether data byte 92DEC has been doubled in transmission.</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC are not doubled. Note: When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.</td>
<td></td>
</tr>
<tr>
<td>Example: A PDF417 barcode ABCD, with no transmission protocol enabled, is transmitted as JL2ABCD.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code Type</td>
<td>Option Value</td>
<td>Option</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Data Matrix</td>
<td>0</td>
<td>ECC 000-140, not supported.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>ECC 200.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>ECC 200, FNC1 in first or fifth position.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>ECC 200, FNC1 in second or sixth position.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>ECC 200, ECI protocol implemented.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>ECC 200, FNC1 in first or fifth position, ECI protocol implemented.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>ECC 200, FNC1 in second or sixth position, ECI protocol implemented.</td>
</tr>
<tr>
<td>MaxiCode</td>
<td>0</td>
<td>Symbol in Mode 4 or 5.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Symbol in Mode 2 or 3.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Symbol in Mode 4 or 5, ECI protocol implemented.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.</td>
</tr>
<tr>
<td>QR Code</td>
<td>0</td>
<td>Model 1 symbol.</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Model 2 / MicroQR symbol, ECI protocol not implemented.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Model 2 symbol, ECI protocol implemented.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.</td>
</tr>
<tr>
<td>Aztec</td>
<td>0</td>
<td>Aztec symbol.</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Aztec Rune symbol.</td>
</tr>
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</table>
APPENDIX C  NUMERIC BAR CODES

Numeric Barcodes

For parameters requiring specific numeric values, scan the appropriately numbered barcode(s).
Numeric Barcodes (continued)

To correct an error or change a selection, scan the barcode below.

Cancel
APPENDIX D  ALPHANUMERIC BAR CODES

________________________________________
Cancel
To correct an error or change a selection, scan the following barcode.

________________________________________
Alphanumeric Barcodes

________________________________________
Space

________________________________________
#
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
NOTE Do not confuse the following barcodes with those on the numeric keypad.

0

1

2

3

4

5
Alphanumeric Barcodes (continued)

End of Message

Cancel
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)

S

T

U

V

W

X
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)

- k
- l
- m
- n
- o
- p
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
Alphanumeric Barcodes (continued)
D - 18 MX101 Customer Side Scanner for the MP7000 Scanner Scale PRG
IMPORTANT  To read a sample barcode the parameter must be enabled. To enable a parameter scan the appropriate enable barcode in Chapter 5, Symbologies.

UPC/EAN

UPC-A, 100%
UPC/EAN (continued)

UPC-A with 2-digit Add-on
UPC/EAN (continued)

UPC-A with 5-digit Add-on
UPC/EAN (continued)

UPC-E
UPC/EAN (continued)

UPC-E with 2-digit Add-on
UPC/EAN (continued)

UPC-E with 5-digit Add-on
UPC/EAN (continued)

EAN-8
UPC/EAN (continued)

EAN-13, 100%
UPC/EAN (continued)

EAN-13 with 2-digit Add-on
UPC/EAN (continued)

EAN-13 with 5-digit Add-on
Code 128
Code 128 (continued)

GS1-128
Code 39
E - 14 MX101 Customer Side Scanner for the MP7000 Scanner Scale PRG

Code 93
Code 11 with 2 Check Digits
Interleaved 2 of 5
MSI with 2 Check Digits
Chinese 2 of 5
Matrix 2 of 5
GS1 DataBar

GS1 DataBar Omnidirectional (formerly GS1 DataBar-14)
GS1 DataBar (continued)

GS1 DataBar Truncated
GS1 DataBar (continued)

GS1 DataBar Stacked
GS1 DataBar (continued)

GS1 DataBar Stacked Omnidirectional
GS1 DataBar (continued)

GS1 DataBar Limited
GS1 DataBar (continued)

GS1 DataBar Expanded
GS1 DataBar (continued)

GS1 DataBar Expanded Stacked
2D Symbologies

PDF417
2D Symbologies (continued)

Data Matrix
2D Symbologies (continued)
2D Symbologies (continued)

QR Code
2D Symbologies (continued)
2D Symbologies (continued)

MicroQR
2D Symbologies (continued)

Aztec
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