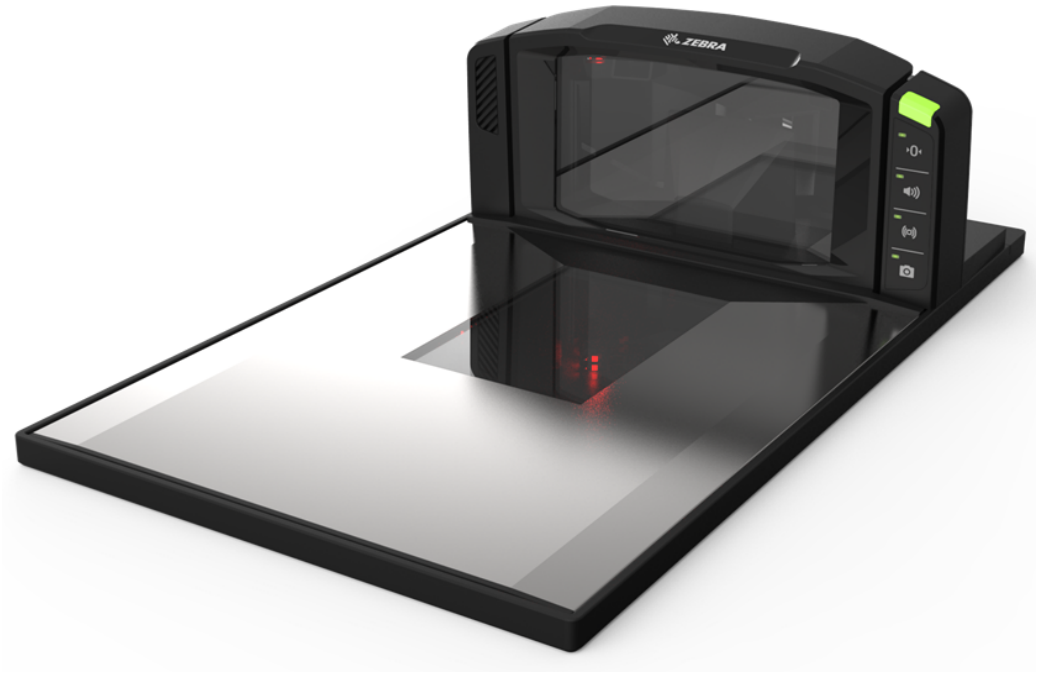
MP7000



Scanner Scale

Bar Code Programming Guide

ZEBRA

MN-002912-03

MP7000 SCANNER SCALE
BAR CODE PROGRAMMING GUIDE

MN-002912-03
Revision A
September 2017

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For the complete hardware product warranty statement, go to: http://www.zebra.com/warranty.

Revision History

Changes to the original guide are listed below:

Change	Date	Description
MN-002912-01 Rev. A	6/2017	Initial Release
MN-002912-02 Rev. A	8/2017	Added note to Code 39 Stitching. Removed: - Parameter #730/Coupon Report - Parameter #85/UCC Coupon Extended Code - Coupon Code Symbol Code Identifier
MN-002912-03 Rev. A	9/2017	Updated QR Code default

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ABOUT THIS GUIDE

Introduction

This guide includes the programming barcodes to configure the MP7000 Scanner Scale.

Chapter Descriptions

Topics covered in this guide are as follows:

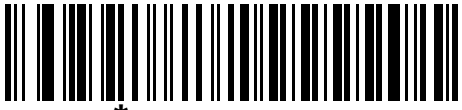
- *Chapter 1, USB Interface* provides barcodes to set up the scanner with a USB host.
- *Chapter 2, RS-232 Interface* provides barcodes to set up the scanner with an RS-232 host, such as point-of-sale devices, host computers, or other devices with an available RS-232 port.
- *Chapter 3, IBM RS-485 Interface Bar Codes* provides barcodes to set up the scanner with IBM RS-485 Point of Sale (POS) systems.
- *Chapter 4, Scale Configuration* provides barcodes to configure and calibrate the scale.
- *Chapter 5, 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 MP7X00.
- *Chapter 6, Image Capture Preferences* describes imaging preference features and provides programming barcodes for selecting these features.
- *Chapter 7, EAS Parameters* describes the EAS features, and provides programming barcodes for selecting these features.
- *Chapter 8, Auxiliary Scanner Bar Codes* includes the parameter barcodes in this chapter configure the MP7X00 for connection to an auxiliary scanner.
- *Chapter 9, 123Scan and Software Tools* describes the 123Scan utility.
- *Chapter 10, SSI Interface* Customers using RS-232 OPOS require the Simple Serial Interface (SSI), which provides a communications link between Zebra scanners, and a serial host.
- *Chapter 11, SNAPI Interface* includes information about the USB-SNAPI Interface.
- *Chapter 12, Symbologies* describes all symbology features and provides programming barcodes for selecting these features for the MP7X00.

- *Chapter 13, Driver's License Set Up* describes how to program the MP7X00 to read and use the data contained in the 2D barcodes on US driver's licenses, and AAMVA compliant ID cards.
- *Appendix A, Standard Parameter Defaults* provides a table of all host devices and miscellaneous scanner defaults.
- *Appendix B, Numeric Bar Codes* includes the numeric barcodes to scan for parameters requiring specific numeric values.
- *Appendix C, Alphanumeric Bar Codes* includes the alphanumeric barcodes to scan for parameters requiring specific alphanumeric values.
- *Appendix D, ASCII Character Sets* provides tables for ASCII character values and other character sets.
- *Appendix E, Programming Reference* provides tables for Symbol code identifiers, AIM code identifiers, and modifier characters.
- *Appendix F, Country Codes* provides barcodes for programming the country keyboard type for the USB keyboard (HID) device and the keyboard wedge host.
- *Appendix G, Country Code Pages* provides barcodes for selecting code pages for the country keyboard type.
- *Appendix H, CJK Decode Control* describes control parameters for Unicode/CJK (Chinese, Japanese, Korean) barcode decode through USB HID Keyboard Emulation mode.
- *Appendix I, Sample Bar Codes* includes sample barcodes of various code types.

Notational Conventions

The following conventions are used in this document:

- *Italics* are used to highlight the following:
  - Chapters and sections in this and related documents
  - 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.



- Symbols:

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

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

IMPORTANT This symbol points out meaningful advice.

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

Related Documents and Software

The following documents provide more information about the MP7X00 and other reference information.

- *MP7000 Scanner Scale Integrator Guide*, p/n MN-002914-xx, provides installation information, interface setups, scale calibration procedure, beeper and LED indicators, warning and error messages, and information about using the MP7X000.
- *MP7000 Scanner Scale Regulatory Guide*, p/n MN-002939-xx, provides Regulatory information, Health and Safety Recommendations, Weights & Measures Scale Certifications, CMM Disclosure, and Waste Electrical and Electronic Equipment instructions.
- *Taiwan RoHS*, p/n MN-003071-xxZHTW.
- *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 guides, go to: http://www.zebra.com/support.

CHAPTER 1 USB INTERFACE

Introduction

This chapter includes the programming barcodes for the USB host interface. The MP70XX connects directly to a USB host. An additional power supply may be required (PWR-BGA12v50W0WW - power supply; CBL-DC-388A1-01 - DC cable). Only a USB Power Plus host can power the MP70XX using a Zebra Power Plus cable, without an external power supply.

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

For detailed technical information about the MP7X000 including installation, setting up interfaces, calibrating the scale, and operation refer to the *MP7000 Scanner Scale Integrator Guide* (p/n MN-002914-xx).

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.

To return all features to default values, see *Default Parameters on page 5-4*. 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 set the USB keystroke delay to medium, scan the **Medium Delay (20 msec)** barcode under *USB Keystroke Delay on page 1-11*. The scanner issues a fast warble beep and the LED turns bright green momentarily, then returns to a darker 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.

USB Parameter Defaults

Table 1-1 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 5-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 1-1 *USB Interface Parameter Defaults*

Parameter	Default	Page Number
USB Host Parameters		
USB Device Type	IBM Table-top	*1-3*
USB Country Keyboard Types - Country Codes	US English (North American)	*F-2*
USB Keystroke Delay	No Delay	*1-11*
USB Caps Lock Override	Disable	*1-14*
Scan Disable Mode	Full Disable	*1-16*
Bar Codes with Unknown Characters	Send Bar Codes with Unknown Characters	*1-19*
USB Convert Unknown to Code 39	Disable	*1-21*
USB Fast HID	Disable	*1-23*
USB Polling Interval	8 msec	*1-25*
Keypad Emulation	Disable	*1-34*
Quick Keypad Emulation	Disable	*1-36*
Keypad Emulation with Leading Zero	Disable	*1-38*
USB FN1 Substitution	Disable	*1-40*
Function Key Mapping	Disable	*1-42*
Simulated Caps Lock	Disable	*1-44*
Convert Case	No Case Conversion	*1-46*
USB Static CDC	Enable	*1-49*
TGCS (IBM) USB Direct I/O Beep	Honor	*1-51*
TGCS (IBM) USB Beep Directive	Ignore	*1-53*
TGCS (IBM) USB Bar Code Configuration Directive	Ignore	*1-55*

Table 1-1 *USB Interface Parameter Defaults (Continued)*

Parameter	Default	Page Number
TGCS (IBM) USB Specification Version	Version 0 (Original)	*1-57*
IBM USB Scale Default Response Status	Disabled	*1-59*

USB Host Parameters

USB Device Type

Scan one of the following barcodes to select the USB device type.

- IBM Table-top USB - default (*page 1-4*)
- IBM Hand-held USB (*page 1-5*)
- IBM OPOS - IBM Hand-held USB with Full Scan Disable (*page 1-6*)
- HID Keyboard Emulation (*page 1-7*)
- USB CDC Host (*page 1-8*)
- Symbol Native API (SNAPI) with Imaging Interface (*page 1-9*).
- Symbol Native API (SNAPI) without Imaging Interface (*page 1-10*).

NOTES

1. When changing USB device types, the scanner resets and issues the standard startup beep sequences.
2. When connecting two scanners to a host, IBM does not allow selecting two of the same device type. If you require two connections, select **IBM Table-top USB** for the MP7XXX and **IBM Hand-held USB** for the second scanner.
3. Select **IBM Hand-held USB** to disable data transmission when an IBM register issues a Scan Disable command. Aim, illumination, and decoding is still permitted. Select **OPOS (IBM Hand-held with Full Disable**) to completely shut off the scanner when an IBM register issues a Scan Disable command, including aim, illumination, decoding, and data transmission.
4. Before scanning *USB CDC Host on page 1-8*, install the appropriate USB CDC Driver on the host to ensure the scanner does not stall during power up (due to a failure to enumerate USB). Go to www.zebra.com/support, Support & Downloads > Barcode Scanners > USB CDC Driver, select the appropriate Windows platform, and download either Zebra_CDC_ACM_Driver_(x64)v2.15.0004.exe (64bit) or Zebra_CDC_ACM_Driver(x86)_v2.15.0004.exe (32bit.

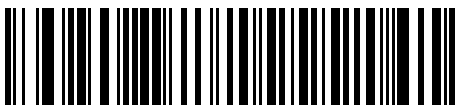
   To recover a stalled scanner:

   Install the USB CDC Driver

   or

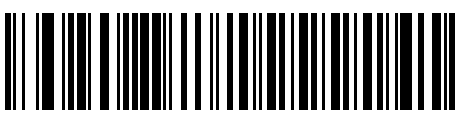
   Unplug the USB cable and add power. Scan **Set Factory Defaults on page 5-4*, *Restore Defaults on page 5-5*, **IBM Table-top USB on page 1-4*, or another USB host.

USB Device Type (continued)



***IBM Table-top USB**

USB Device Type (continued)

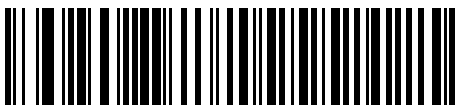


IBM Hand-held USB

USB Device Type (continued)

IBM OPOS
(IBM Hand-held with Full Disable)

USB Device Type (continued)



HID Keyboard Emulation

USB Device Type (continued)

USB CDC Host

USB Device Type (continued)

Symbol Native API (SNAPI) with Imaging Interface

USB Device Type (continued)

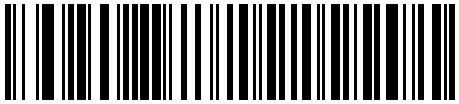
Symbol Native API (SNAPI) without Imaging Interface

USB Country Keyboard Types - Country Codes

See *Appendix F, Country Codes* for barcodes and other detailed information for country keyboard types.

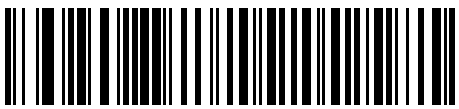
USB Keystroke Delay

Scan one of the following barcodes to set the delay, in milliseconds, between emulated keystrokes. Select a longer delay for hosts that require slower data transmission.



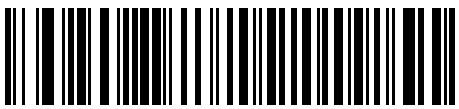
***No Delay**

USB Keystroke Delay (continued)



Medium Delay (20 msec)

USB Keystroke Delay (continued)



Long Delay (40 msec)

USB Caps Lock Override

This option applies only to the USB Keyboard HID device. Scan **Override Caps Lock Key** to preserve the case of the data regardless of the state of the **Caps Lock** key. This setting is always enabled for the Japanese Windows (ASCII) keyboard type and can not be disabled.

Override Caps Lock Key
(Enable)

USB Caps Lock Override (continued)

***Do Not Override Caps Lock Key (Disable)**

Scan Disable Mode

Parameter # 1214

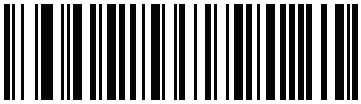
This parameter determines the behavior of the MP7X00 when it receives a *Scan Disable* directive from the connected host.

- *Full Disable - Scanning barcodes is disabled.
- Transmit Disable **-** The MP7X00 may scan barcodes, but transmission of barcode data is disabled.
- Auto Disable - MP7X00 disables scanning after transmission of a barcode, and remains disabled until the host sends a *Scan Enable.*

NOTE This feature is currently supported by IBM Table Top USB, IBM Hand-held USB, and all IBM 46XX interfaces.

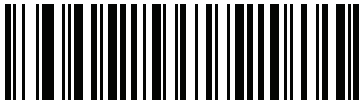
*** Full Disable**
(0)

Scan Disable Mode (continued)



Transmit Disable
(1)

Scan Disable Mode (continued)



Auto Disable
(2)

Bar Codes with Unknown Characters

This option applies only to the USB Keyboard HID and IBM devices. Unknown characters are characters the host does not recognize. Scan **Send Bar Codes With Unknown Characters** to send all barcode data except for unknown characters. The scanner issues no error beeps.

Scan **Do Not Send Bar Codes With Unknown Characters** for IBM devices to prevent sending barcodes containing at least one unknown character to the host, or for USB Keyboard HID devices to send the barcode characters up to the unknown character. The scanner issues an error beep.

***Send Bar Codes with Unknown Characters**

Bar Codes with Unknown Characters (continued)

Do Not Send Bar Codes with Unknown Characters

USB Convert Unknown to Code 39

This option applies only to the IBM hand-held, IBM table-top, and OPOS devices. Scan one of the following barcodes to enable or disable converting unknown barcode type data to Code 39.

Enable Convert Unknown to Code 39

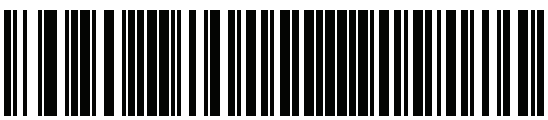
USB Convert Unknown to Code 39 (continued)

***Disable Convert Unknown to Code 39**

USB Fast HID

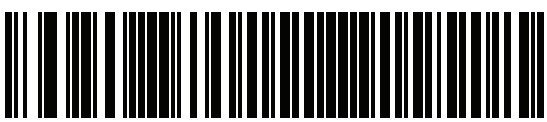
Scan **Enable USB Fast HID** to transmit USB HID data at a faster rate.

NOTE Disable this if there are problems with transmission.



Enable USB Fast HID

USB Fast HID (continued)



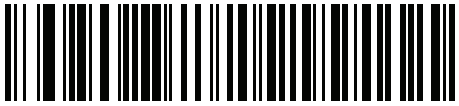
***Disable USB Fast HID**

USB Polling Interval

Scan one of the following barcodes to set the polling interval, which is the rate at which data transmits between the scanner and host computer. A lower number indicates a faster data rate.

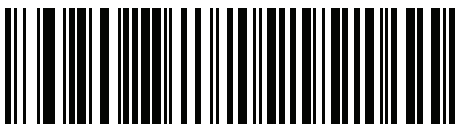
NOTE When changing the USB polling interval, the scanner restarts and issues a power-up beep sequence.

IMPORTANT Ensure the host supports the selected data rate.



1 msec

USB Polling Interval (continued)



2 msec

USB Polling Interval (continued)

3 msec

USB Polling Interval (continued)

4 msec

USB Polling Interval (continued)

5 msec

USB Polling Interval (continued)

6 msec

USB Polling Interval (continued)

7 msec

USB Polling Interval (continued)

***8 msec**

USB Polling Interval (continued)

9 msec

Keypad Emulation

Scan **Enable Keypad Emulation** to send all characters as ASCII sequences over the numeric keypad. For example, ASCII A transmits as “ALT make” 0 6 5 “ALT Break”.

NOTE If your keyboard type is not listed in the country code list (see *Country Codes on page F-1*), disable *Quick Keypad Emulation* and enable **Keypad Emulation**.

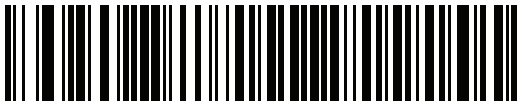
Enable Keypad Emulation

Keypad Emulation (continued)

***Disable Keypad Emulation**

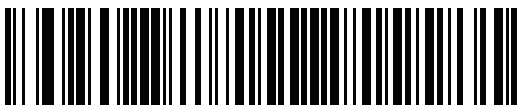
Quick Keypad Emulation

This option applies only to the USB Keyboard HID device when *Keypad Emulation* is enabled. Scan **Enable Quick Keypad Emulation** for a quicker method of emulation using the numeric keypad where ASCII sequences are only sent for ASCII characters not found on the keyboard.



Enable Quick Keypad Emulation

Quick Keypad Emulation (continued)



***Disable Quick Keypad Emulation**

Keypad Emulation with Leading Zero

Scan **Enable Keypad Emulation with Leading Zero** to send character sequences sent over the numeric keypad as ISO characters which have a leading zero. For example, ASCII A transmits as “ALT MAKE” 0 0 6 5 “ALT BREAK”.

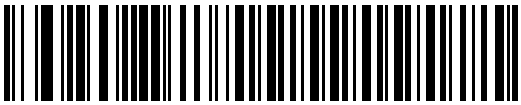
Enable Keypad Emulation with Leading Zero

Keypad Emulation with Leading Zero (continued)

***Disable Keypad Emulation with Leading Zero**

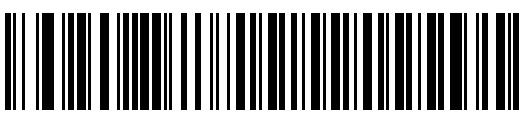
USB Keyboard FN1 Substitution

This option applies only to the USB Keyboard HID device. Scan **Enable USB Keyboard FN1 Substitution** to replace any FN1 character in a GS1 128 barcode with a user-selected Key Category and value. See *FN1 Substitution Values on page 5-86* to set the Key Category and Key Value.



Enable USB Keyboard FN1 Substitution

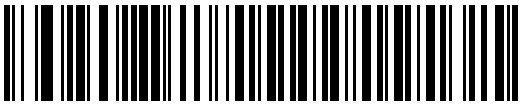
USB Keyboard FN1 Substitution (continued)



***Disable USB Keyboard FN1 Substitution**

Function Key Mapping

ASCII values under 32 are normally sent as a control-key sequence (see *Table D-1 on page D-1*). Scan **Enable Function Key Mapping** to send the keys in bold in place of the standard key mapping. Table entries that do not have a bold equivalent remain the same regardless of whether you enable this parameter.



Enable Function Key Mapping

Function Key Mapping (continued)

*Disable Function Key Mapping

Simulated Caps Lock

Scan **Enable Simulated Caps Lock** to invert upper and lower case characters on the barcode as if the Caps Lock state is enabled on the keyboard. This inversion occurs regardless of the keyboard's **Caps Lock** state.

✓ ***NOTE*** Simulated Caps Lock applies to ASCII characters only.

✓ ***NOTE*** Do not enable this if *USB Caps Lock Override on page 1-14* is enabled.

Enable Simulated Caps Lock

Simulated Caps Lock (continued)

***Disable Simulated Caps Lock**

Convert Case

Scan one of the following barcodes to convert all barcode data to the selected case.

NOTE Convert Case applies to ASCII characters only.

***No Case Conversion**

Convert Case (continued)

Convert All to Upper Case

Convert Case (continued)

Convert All to Lower Case

USB Static CDC

When disabled, each device connected consumes another COM port (first device = COM1, second device = COM2, third device = COM3, etc.)

When enabled, each device connects to the same COM port.

***Enable USB Static CDC**

USB Static CDC (continued)

Disable USB Static CDC

TGCS (IBM) USB Direct I/O Beep

The host can send a direct I/O beep request to the scanner. If you select **Ignore Direct I/O Beep**, the scanner does not sound beeps on this command. All directives are still acknowledged to the USB host as if they were processed.

Honor Direct IO Beep

TGCS (IBM) USB Direct I/O Beep (continued)

***Ignore Direct IO Beep**

TGCS (IBM) USB Beep Directive

The host can send a beeper configuration request to the scanner. Scan **Ignore Beep Directive** to prevent the scanner from processing the host request. All directives are still acknowledged to the USB host as if they were processed.

***Honor Beep Directive**

TGCS (IBM) USB Beep Directive (continued)

Ignore Beep Directive

TGCS (IBM) USB Bar Code Configuration Directive

The host can enable and disable code types. Scan **Ignore Bar Code Configuration Directive** to prevent the scanner from processing the host request. All directives are still acknowledged to the USB host as if they were processed.

Honor Bar Code Configuration Directive

TGCS (IBM) USB Bar Code Configuration Directive (continued)

***Ignore Bar Code Configuration Directive**

TGCS (IBM) USB Specification Version

Select **IBM Specification Level Version 0 (Original)** to send the following code types as unknown:

- Data Matrix
- GS1 Data Matrix
- QR Code
- GS1 QR
- MicroQR Code
- Aztec

Select **IBM Specification Level Version 2.2** to send the code types with the appropriate IBM identifiers.

***IBM Specification Level Version 0 (Original)**

TGCS (IBM) USB Specification Version (continued)

IBM Specification Level Version 2.2

IBM USB Scale Default Response Status

Parameter #1286

An MP7001 (MP7X00 configured with a scale) sends a 2-byte scale status to the IBM USB Point of Sale (POS) system as the default setting. This parameter allows a user to program the MP7001 scanner/scale to send either 2-byte scale status, or a 3-byte scale extended status.

- *2-byte Scale Status - Extended Scale Status Disabled: The 2-byte scale status sent to the IBM POS consists of the information shown in *Table 1-2* and *Table 1-3*.

Table 1-2 *Scale Status Byte 0*

Bit Position	Description
0	Flash update in progress (if flash update is implemented).
1	Configuration data response frame.
2	Extended status response frame.
3	Not defined (always 0).
4	Not defined (always 0).
5	Not defined (always 0).
6	Unacceptable command.
7	Device not ready to receive weigh commands.

Table 1-3 *Scale Status Byte 1*

Bit Position	Description
0	0: US weigh mode. 1: Metric weigh mode.
1	0: Four digit weight. 1: Five digit weight.
2	Weight data not include/scale in motion.
3	Data value error (weight digits not in range 0-9).
4	Read error (timeout occurred trying to obtain valid weight/status).
5	Remote display required but not detected.
6	Scale hardware error.
7	Undefined command received (command reject).

- 3-byte Scale Status - Extended Scale Status Enabled: When enabled, the MP7001 scanner/scale sends an additional scale status byte to the IBM POS with the information shown in *Table 1-4*.

Table 1-4 *Scale Status Byte 2*

Bit Position	Description
0	Configuration successful.
1	Scale under zero.
2	Scale over capacity.
3	Scale center-of-zero.
4	Scale requires zeroing.
5	Scale warm up in progress.
6	Duplicate weight (United Kingdom mode only).
7	Not defined (always 0).

NOTE Some IBM POS applications require a 3-byte extended scale status for better price/weight transaction performance.

***2-byte IBM USB Scale Status - Extended Scale Status Disabled (0)**

IBM USB Scale Default Response Status (continued)

3-byte IBM USB Scale Status - Extended Scale Status Enabled (1)

ASCII Character Sets

See *Appendix D, ASCII Character Sets* for the following information:

- *Table D-1, ASCII Character Set on page D-1*
- *Table D-2, ALT Key Character Set on page D-6*
- *Table D-3, GUI Key Character Set on page D-7*
- *Table D-4, PF Key Character Set on page D-9*
- *Table D-5, F Key Character Set on page D-10*
- *Table D-6, Numeric Key Character Set on page D-11*
- *Table D-7, Extended Key Character Set on page D-12*

CHAPTER 2 RS-232 INTERFACE

Introduction

This chapter describes how to set up the scanner with an RS-232 host. The scanner uses the RS-232 interface to connect to point-of-sale devices, host computers, or other devices with an available RS-232 port (e.g., com port).

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

If your host does not appear in *Table 2-2*, refer to the documentation for the host device to set communication parameters to match the host.

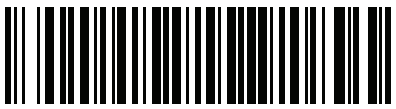
For detailed technical information about the scanner including installation, setting up interfaces, calibrating the scale, and operation refer to the *MP7000 Scanner Scale Integrator Guide (p/n MN-002914-xx)*. Also see *Appendix D, ASCII Character Sets* for the character sets

✓ ***NOTE*** The scanner uses TTL RS-232 signal levels, which interface with most system architectures. For system architectures requiring RS-232C signal levels, Zebra offers different cables providing TTL-to-RS-232C conversion. Contact the Zebra Customer Support Center online at: www.zebra.com/support for more information.

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.

To return all features to default values, see *Default Parameters on page 5-4*. Throughout the programming barcode menus, asterisks (*) indicate default values.



* Indicates default — ***Enable Parameter** — Feature/option

Scanning Sequence Examples

In most cases scanning one barcode sets the parameter value. For example, to set the baud rate to 19,200, scan the **Baud Rate 19,200** barcode under *Baud Rate on page 2-18*. The scanner issues a fast warble beep and the LED turns bright green momentarily, then returns to a darker 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.

RS-232 Parameter Defaults

Table 2-1 lists defaults for RS-232 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 5-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 2-1 *RS-232 Interface Parameter Defaults*

Parameter	Default	Page Number
RS-232 Host Parameters		
RS-232 Host Types	Standard	*2-7*
Baud Rate	9600	*2-18*
Parity	None	*2-23*
Stop Bits	1 Stop Bit	*2-26*
Data Bits	8-bit	*2-28*
Check Receive Errors	Enable	*2-30*
Hardware Handshaking	None	*2-32*
Software Handshaking	None	*2-38*
Host Serial Response Timeout	2 Sec	*2-43*
RTS Line State	Low RTS	*2-48*
Beep on <BEL>	Disable	*2-50*
Intercharacter Delay	0 msec	*2-52*
Nixdorf Beep/LED Options	Normal Operation	*2-57*

Table 2-1 *RS-232 Interface Parameter Defaults (Continued)*

Parameter	Default	Page Number
Bar Codes with Unknown Characters	Send Bar Code With Unknown Characters	*2-60*
NCR Use Prefix	Enabled	*2-62*
NCR Prefix	1002 (STX)	*2-64*
NCR Suffix	1003 (ETX)	*2-65*
NCR Use Block Check Character	Enabled	*2-66*
NCR Interface	Follow System	*2-68*
NCR Scale Beep After Weight Request	Disable	*2-71*

RS-232 Host Parameters

Various RS-232 hosts use their own parameter default settings. Selecting standard, ICL, Fujitsu, Wincor-Nixdorf Mode A, Wincor-Nixdorf Mode B, OPOS/JPOS, Olivetti, Omron, Common Use Terminal Equipment (CUTE-LP/LG barcode readers), NCR, or Datalogic sets the defaults listed in *Table 2-2* and *Table 2-3*.

Table 2-2 *Terminal Specific RS-232*

Parameter	ICL	Fujitsu	Wincor-Nixdorf Mode A	Wincor-Nixdorf Mode B/OPOS/JPOS
Baud Rate	9600	9600	9600	9600
Parity	Even	None	Odd	Odd
Stop Bit Select	One	One	One	One
ASCII Format	8-Bit	8-Bit	8-Bit	8-Bit
Hardware Handshaking	RTS/CTS Option 3	None	RTS/CTS Option 3	RTS/CTS Option 3
Software Handshaking	None	None	None	None
Serial Response Timeout	9.9 Sec.	2 Sec.	None	None
RTS Line State	High	Low	Low	Low = No data to send
Beep On <BEL>	Disable	Disable	Disable	Disable
Transmit Code ID	Yes	Yes	Yes	Yes

In the Wincor-Nixdorf Mode B, if CTS is low, scanning is disabled. When CTS is high, scanning is enabled.
If you scan Wincor-Nixdorf Mode B without connecting the digital scanner to the proper host, it may appear unable to scan. If this happens, scan a different RS-232 host type within 5 seconds of cycling power to the digital scanner.

Table 2-2 *Terminal Specific RS-232 (Continued)*

Parameter	ICL	Fujitsu	Wincor-Nixdorf Mode A	Wincor-Nixdorf Mode B/OPOS/JPOS
Data Transmission Format	Data/Suffix	Data/Suffix	Data/Suffix	Data/Suffix
Prefix	None	None	None	None
Suffix	CR (1013)	CR (1013)	CR (1013)	CR (1013)

In the Wincor-Nixdorf Mode B, if CTS is low, scanning is disabled. When CTS is high, scanning is enabled.
If you scan Wincor-Nixdorf Mode B without connecting the digital scanner to the proper host, it may appear unable to scan. If this happens, scan a different RS-232 host type within 5 seconds of cycling power to the digital scanner.

Table 2-3 *Terminal Specific RS-232*

Parameter	Olivetti	Omron	CUTE	NCR	Datalogic
Baud Rate	9600	9600	9600	9600	9600
Parity	Even	None	Even	Odd	Odd
Stop Bit Select	One	One	One	One	One
ASCII Format	7-Bit	8-Bit	7-Bit	7-Bit	7-Bit
Hardware Handshaking	None	None	None	None	None
Software Handshaking	ACK/NAK	None	None	None	None
Serial Response Timeout	9.9 Sec.	9.9 Sec.	9.9 Sec.	9.9 Sec.	9.9 Sec.
RTS Line State	Low	High	High	High	High
Beep On <BEL>	Disable	Disable	Disable	Disable	Enable
Transmit Code ID	Yes	Yes	Yes	Yes	Yes
Data Transmission Format	Prefix/Data/Suffix	Data/Suffix	Prefix/Data/ Suffix	Prefix/ Suffix *	Data/Suffix
Prefix	STX (1002)	None	STX (1002)	STX *	None
Suffix	ETX (1003)	CR (1013)	CR (1013) ETX (1003)	ETX *	CR (1013)

The CUTE host disables all parameter scanning, including Set Defaults. If you inadvertently select CUTE, scan **Enable Parameter Bar Code Scanning (1) on page 5-6* then change the host selection.

Selecting ICL, Fujitsu, Wincor-Nixdorf Mode A, Wincor-Nixdorf Mode B, OPOS/JPOS, Olivetti, Omron, Common Use Terminal Equipment (CUTE-LP/LG barcode readers), NCR, or Datalogic enables the transmission of code ID characters listed in *Table 2-4* and *Table 2-5*. These code ID characters are not programmable and are separate from the Transmit Code ID feature. Do not enable the Transmit Code ID feature for these terminals.

Table 2-4 *Terminal Specific Code ID Characters*

Code Type	ICL	Fujitsu	Wincor-Nixdorf Mode A	Wincor-Nixdorf Mode B/ OPOS/JPOS
UPC-A	A	A	A	A
UPC-E	E	E	C	C
EAN-8/JAN-8	FF	FF	B	B
EAN-13/JAN-13	F	F	A	A
Bookland EAN	F	F	A	A
Code 39	C <len>	None	M	M
Code 39 Full ASCII	None	None	M	M
Trioptic	None	None	None	None
Code 32	None	None	None	None
Codabar	N <len>	None	N	N
Code 128	L <len>	None	K	K
GS1-128	L <len>	None	P	P
Code 93	None	None	L	L
I 2 of 5	I <len>	None	I	I
D 2 of 5	H <len>	None	H	H
MSI	None	None	O	O
IATA	H<len>	None	H	H
GS1 DataBar Variants	None	None	E	E
PDF417	None	None	Q	Q
MicroPDF417	None	None	S	S
Data Matrix	None	None	R	R
QR Codes	None	None	U	U
Aztec/Aztec Rune	None	None	V	V

*** 2D barcodes are not supported.**

Table 2-5 *Terminal Specific Code ID Characters*

Code Type	Olivetti	Omron	CUTE	NCR	Datalogic
UPC-A	A	A	A	**A**	**A**
UPC-E	C	E	None	E	E
EAN-8/JAN-8	B	FF	None	FF	FF
EAN-13/JAN-13	A	F	A	F	F
Bookland EAN	A	F	None	None	None
Code 39	M <len>	C <len>	3	B1	*
Code 39 Full ASCII	None	None	3	None	None
Trioptic	None	None	None	None	$T
Code 32	None	None	None	None	AE
Codabar	N <len>	N <len>	None	None	%
Code 128	K <len>	L <len>	5	B3	#
GS1-128	P <len>	L <len>	5	None	None
Code 93	L <len>	None	None	None	&
I 2 of 5	I <len>	I <len>	1	B2	i
D 2 of 5	H <len>	H <len>	2	None	None
MSI	O <len>	None	None	None	@
IATA	H<len>	H<len>	2	None	IA
GS1 DataBar Variants	None	None	None	]e0	GS1 DataBar - R4 GS1 DataBar Limited - RL GS1 DataBar Expanded - RX
PDF417	None	None	6	N/A*	P
MicroPDF417	None	None	6	N/A*	mP
Data Matrix	None	None	4	N/A*	Dm
QR Codes	None	None	7	N/A*	QR
Aztec/Aztec Rune	None	None	8	N/A*	Az

*** 2D barcodes are not supported.**

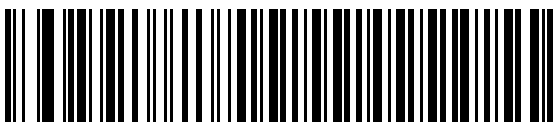
RS-232 Host Types

Scan one of the following barcodes to select the RS-232 host interface.

- Standard RS-232 - default (*page 2-7*)
- ICL RS-232 (*page 2-8*)
- Wincor-Nixdorf RS-232 Mode A (*page 2-9*)
- Wincor-Nixdorf RS-232 Mode B (*page 2-10*)
- Olivetti ORS4500 (*page 2-11*)
- Omron (*page 2-12*)
- OPOS/JPOS (*page 2-13*)
- Fujitsu RS-232 (*page 2-14*)
- CUTE [2] (*page 2-15*)
- NCR Variant - both Scanner-Only and Scanner/Scale variants (*page 2-16*)
- Datalogic Variant (*page 2-17*).

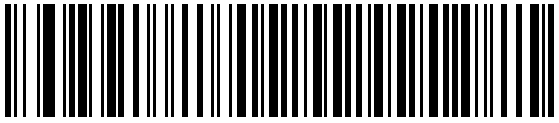
NOTES 1. Scanning **Standard RS-232** activates the RS-232 driver, but does not change port settings (e.g., parity, data bits, handshaking). Selecting another RS-232 host type barcode changes these settings.

2. The CUTE host (on *page 2-15*) disables all parameter scanning, including Set Defaults. If you inadvertently select CUTE, scan Enable Parameter Bar Code Scanning (*page 5-6*) then change the host selection.



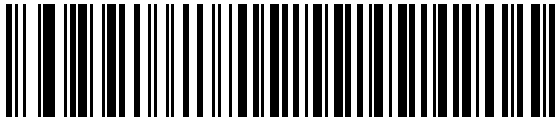
***Standard RS-232**

RS-232 Host Types (continued)



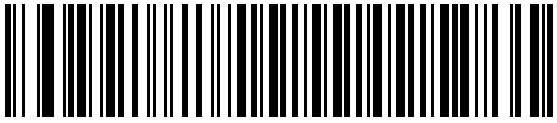
ICL RS-232

RS-232 Host Types (continued)



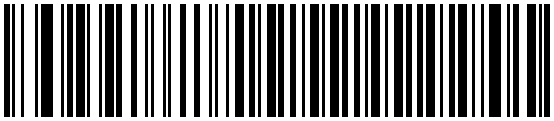
Wincor-Nixdorf RS-232 Mode A

RS-232 Host Types (continued)



Wincor-Nixdorf RS-232 Mode B

RS-232 Host Types (continued)

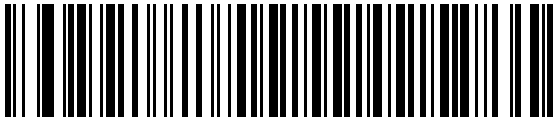


Olivetti ORS4500

RS-232 Host Types (continued)

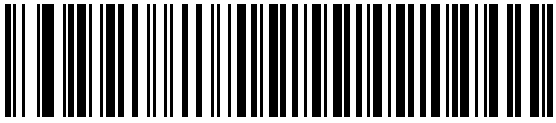
Omron

RS-232 Host Types (continued)



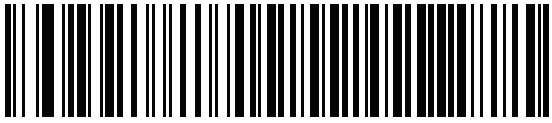
OPOS/JPOS

RS-232 Host Types (continued)



Fujitsu RS-232

RS-232 Host Types (continued)



CUTE [2]

RS-232 Host Types (continued)

Scan the barcode below to enable the NCR variant of the RS-232 host.

NCR Variant

RS-232 Host Types (continued)

RS-232 Host -Datalogic Variant

Scan the barcode below to enable the Datalogic variant of the RS-232 host.

Datalogic Variant

Baud Rate

Baud rate is the number of bits of data transmitted per second. Scan one of the following barcodes to set the scanner's baud rate to match the baud rate setting of the host device. Otherwise, data may not reach the host device or may reach it in distorted form.

NOTE The scanner does not support baud rates below 9600.

***Baud Rate 9600**

Baud Rate (continued)

Baud Rate 19,200

Baud Rate (continued)

Baud Rate 38,400

Baud Rate (continued)

Baud Rate 57,600

Baud Rate (continued)

Baud Rate 115,200

Parity

A parity check bit is the most significant bit of each ASCII coded character. Scan one of the following barcodes to select the parity type according to host device requirements:

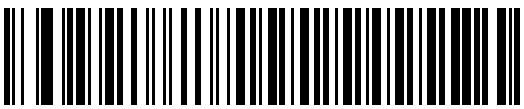
- **Odd** - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an odd number of 1 bits.
- **Even** - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an even number of 1 bits.
- **None** - No parity bit is required.

Odd

Parity (continued)

Even

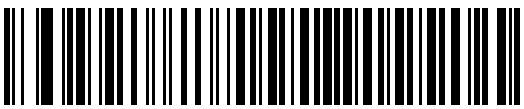
Parity (continued)



***None**

Stop Bits

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. Scan one of the following barcodes to set the number of stop bits (one or two) based on the number the receiving host can accommodate.



***1 Stop Bit**

Stop Bits (continued)

2 Stop Bits

Data Bits

This parameter allows the scanner to interface with devices requiring a 7-bit or 8-bit ASCII protocol.

7-bit

Data Bits (continued)

***8-bit**

Check Receive Errors

Scan one of the following barcodes to set whether to check the parity, framing, and overrun of received characters. The parity value of received characters is verified against the value set for *Parity on page 2-23*.

***Check For Received Errors**

Check Receive Errors (continued)

Do Not Check For Received Errors

Hardware Handshaking

The data interface consists of an RS-232 port designed to operate either with or without the hardware handshaking lines Request to Send (RTS) and Clear to Send (CTS).

If hardware handshaking and software handshaking are both enabled, hardware handshaking takes precedence.

NOTE The DTR signal is jumpered to the active state.

- **None** - This disables hardware handshaking and transmits scan data as it becomes available.
- **Standard RTS/CTS** - This sets standard RTS/CTS hardware handshaking and transmits scanned data according to the following sequence:

  a. The scanner reads the CTS line for activity:

  - If the CTS line is de-asserted, the scanner asserts the RTS line and waits up to *Host Serial Response Timeout on page 2-43* for the host to assert CTS, and then transmits data when asserted. If, after the timeout, the CTS line is not asserted, the scanner sounds a transmit error and discards the data.
  - If CTS is asserted, the scanner waits up to *Host Serial Response Timeout* for the host to de-assert CTS. If after this timeout the CTS line is still asserted, the scanner sounds a transmit error and discards the scanned data.

  b. The scanner de-asserts RTS after sending the last character of data.

  c. The host negates CTS. The scanner checks for a de-asserted CTS upon the next data transmission.

  During data transmission, if CTS is deasserted for more than 50 ms between characters, the scanner sounds a transmit error and discards the data. The data must be re-scanned.
- **RTS/CTS Option 1** - The scanner asserts RTS before transmitting and ignores the state of CTS. The scanner de-asserts RTS when transmission completes.
- **RTS/CTS Option 2** - RTS is always high or low (user-programmed logic level). However, the scanner waits for the host to assert CTS before transmitting data. If CTS is not asserted within the *Host Serial Response Timeout*, the scanner sounds a transmit error and discards the data. During data transmission, if CTS is deasserted for more than 50 ms between characters, the scanner sounds a transmit error and discards the data.
- **RTS/CTS Option 3** - This transmits scanned data according to the following sequence:

  a. The scanner asserts RTS before data transmission, regardless of the state of CTS.

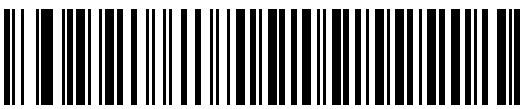
  b. The scanner waits up to the *Host Serial Response Timeout* for the host to assert CTS, and then transmits data when asserted. If, after the timeout, the CTS line is not asserted, the scanner sounds a transmit error and discards the data.

  c. The scanner de-asserts RTS after sending the last character of data.

  d. The host negates CTS. The scanner checks for a de-asserted CTS upon the next data transmission.

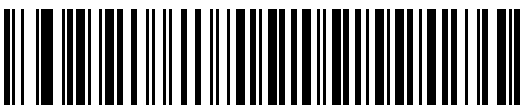
  During data transmission, if CTS is deasserted for more than 50 ms between characters, the scanner sounds a transmit error and discards the data. The data must be re-scanned.

Hardware Handshaking (continued)



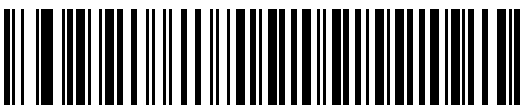
***None**

Hardware Handshaking (continued)



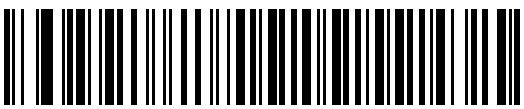
Standard RTS/CTS

Hardware Handshaking (continued)



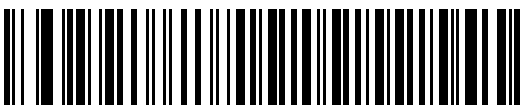
RTS/CTS Option 1

Hardware Handshaking (continued)



RTS/CTS Option 2

Hardware Handshaking (continued)



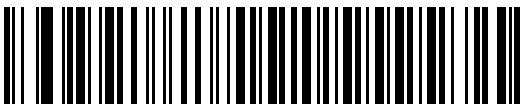
RTS/CTS Option 3

Software Handshaking

This parameter offers control of data transmission in addition to, or instead of, that offered by hardware handshaking. If software handshaking and hardware handshaking are both enabled, hardware handshaking takes precedence.

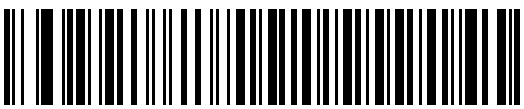
- **None** - This transmits data immediately. The scanner expects no response from the host.
- **ACK/NAK** - After transmitting data, the scanner waits for an ACK or NAK response from the host. If it receives a NAK, the scanner transmits the data again and waits for an ACK or NAK. After three unsuccessful attempts to send data after receiving NAKs, the scanner sounds a transmit error and discards the data.

  The scanner waits up to the programmable *Host Serial Response Timeout* to receive an ACK or NAK. If the scanner does not get a response in this time, it sounds a transmit error and discards the data. There are no reattempts.
- **ENQ** - The scanner waits for an ENQ character from the host before transmitting data. If it does not receive an ENQ within the *Host Serial Response Timeout*, the scanner sounds a transmit error and discards the data. The host must transmit an ENQ character at least every *Host Serial Response Timeout* to prevent transmission errors.
- **ACK/NAK with ENQ** - This combines the two previous options. An additional ENQ is not required to re-transmit data due to a NAK from the host.
- **XON/XOFF** - An XOFF character stops data transmission until the scanner receives an XON character. There are two situations for XON/XOFF:
  - The scanner receives an XOFF before it has data to send. When the scanner has data, it waits up to the *Host Serial Response Timeout* for an XON character before transmitting. If it does not receive the XON within this time, the scanner sounds a transmit error and discards the data.
  - The scanner receives an XOFF during data transmission and stops transmission after sending the current byte. When the scanner receives an XON character, it sends the rest of the data. The scanner waits indefinitely for the XON.



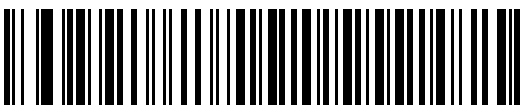
***None**

Software Handshaking (continued)



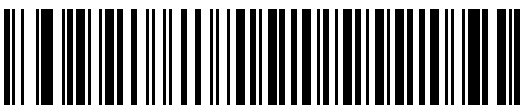
ACK/NAK

Software Handshaking (continued)



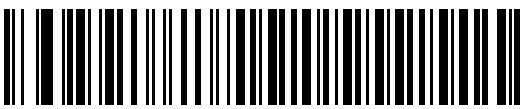
ENQ

Software Handshaking (continued)



ACK/NAK with ENQ

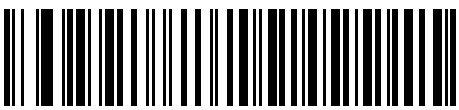
Software Handshaking (continued)



XON/XOFF

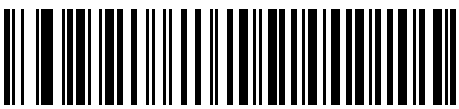
Host Serial Response Timeout

Scan one of the following barcodes to specify how long the scanner waits for an ACK, NAK, or CTS before determining that a transmission error occurred. This only applies when in one of the ACK/NAK software handshaking modes, or RTS/CTS hardware handshaking mode.



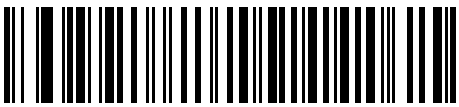
***Minimum: 2 Seconds**

Host Serial Response Timeout (continued)



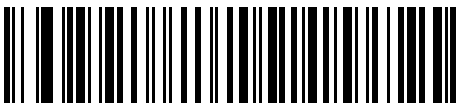
Low: 2.5 Seconds

Host Serial Response Timeout (continued)



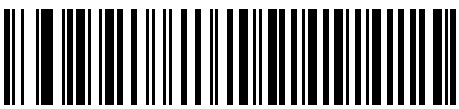
Medium: 5 Seconds

Host Serial Response Timeout (continued)



High: 7.5 Seconds

Host Serial Response Timeout (continued)



Maximum: 9.9 Seconds

RTS Line State

Scan one of the following barcodes to set the idle state of the serial host RTS line to **Low RTS** or **High RTS**.

***Host: Low RTS**

RTS Line State (continued)

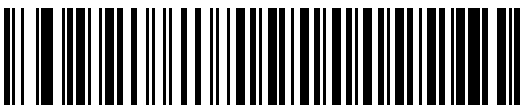
Host: High RTS

Beep on <BEL>

Scan one of the following barcodes to set whether the scanner issues a beep when it detects a <BEL> character on the RS-232 serial line. <BEL> indicates an illegal entry or other important event.

Beep On <BEL> Character (Enable)

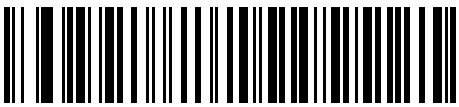
Beep on <BEL> (continued)



***Do Not Beep On <BEL> Character (Disable)**

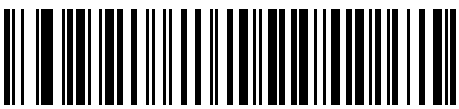
Intercharacter Delay

Scan one of the following barcodes to specify the intercharacter delay inserted between character transmissions.



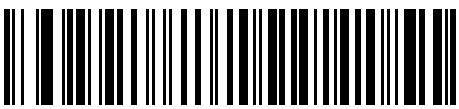
***Minimum: 0 msec**

Intercharacter Delay (continued)



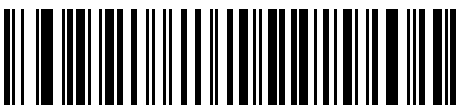
Low: 25 msec

Intercharacter Delay (continued)



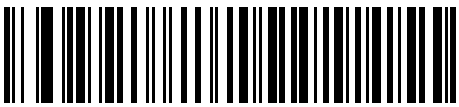
Medium: 50 msec

Intercharacter Delay (continued)



High: 75 msec

Intercharacter Delay (continued)



Maximum: 99 msec

Nixdorf Beep/LED Options

If you selected Nixdorf Mode B, scan one of the following barcodes to indicate when the scanner beeps and turns on its LED after a decode.

***Normal Operation**
(Beep/LED Immediately After Decode)

Nixdorf Beep/LED Options (continued)

Beep/LED After Transmission

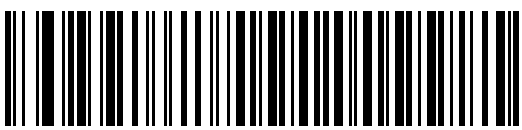
Nixdorf Beep/LED Options (continued)

Beep/LED After CTS Pulse

Bar Codes with Unknown Characters

Unknown characters are characters the host does not recognize. Scan **Send Bar Codes With Unknown Characters** to send all barcode data except for unknown characters. The scanner issues no error beeps.

Scan **Do Not Send Bar Codes With Unknown Characters** to send barcode data up to the first unknown character. The scanner issues an error beep.



***Send Bar Codes With Unknown Characters**

Bar Codes with Unknown Characters (continued)

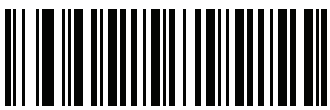
Do Not Send Bar Codes With Unknown Characters

NCR Variant Preferences

NCR Use Prefix

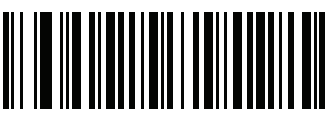
Parameter #1238

When **NCR Variant** is selected, this parameter determines whether or not the prefix is used for all communications.



Disabled
(00h)

NCR Use Prefix (continued)



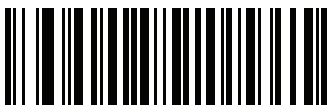
***Enabled**
(01h)

NCR Prefix

Parameter # 1282

When NCR variant is selected, and **NCR Use Prefix** is enabled, this parameter determines the Prefix Character used for all communications. The default is 1002 (STX).

To set a prefix value, scan the barcode below, then scan four numeric barcodes from *Appendix B, Numeric Bar Codes* that correspond to the desired character in *Table D-1* (*ASCII Character Set on page D-1*).



NCR Prefix

NCR Suffix

Parameter # 1283

When NCR variant is selected, this parameter determines the suffix (terminator) character used for all communications. The default is 1003 (ETX).

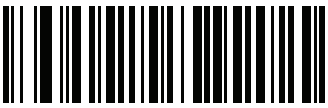
To set a prefix value, scan the barcode below, then scan four numeric barcodes from *Appendix B, Numeric Bar Codes* that correspond to the desired character in *Table D-1* (*ASCII Character Set on page D-1*).

NCR Suffix

NCR Use Block Check Character (BCC)

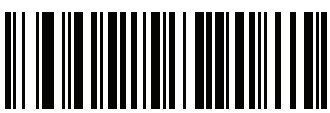
Parameter #1239

When NCR variant is selected, this parameter determines whether or not to enable the use of the *Block Check Character* (after the *Terminator* byte) for all communications.



Disabled
(00h)

NCR Use Block Check Character (BCC) (continued)



***Enabled**
(01h)

NCR Interface

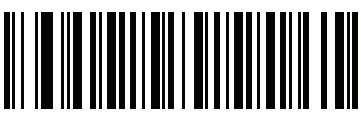
Parameter #1240

When NCR variant is selected, this parameter determines the NCR specific interface to be used for all communications. NCR supports two interfaces: scanner only, and scanner/scale.

- *Follow System: Scan this barcode for auto system detection. If the system has a scale installed, the scanner/scale interface is used; if the system has no scale installed, scanner only is used.
- Scanner Only: Scan this barcode to force the system to use the scanner only interface whether or not a scale is installed.
- Scanner/Scale: Scan this barcode to force the system to use the scanner/scale interface whether or not a scale is installed.

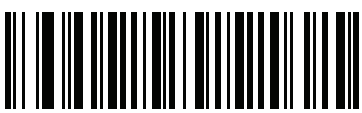
***Follow System**
(00h)

NCR Interface (continued)



Scanner Only
(01h)

NCR Interface (continued)



Scanner/Scale
(02h)

NCR Scale Beep After Weight Request

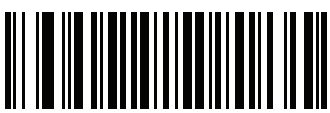
Parameter #1353

Scan **Enable NCR Scale Beep After Weight** below to sound a beep tone after a successful weight request.

- Enable NCR Scale Beep After Weight: The scale beeps a single beep tone after each successful weight request by the POS system.
- *Disable NCR Scale Beep After Weight: The scale does not beep after a weight request is made by the POS system.

***Disable NCR Beep After Weight Request (0x00h)**

NCR Scale Beep After Weight Request



Enable NCR Beep After Weight Request (0x01h)

ASCII Character Sets

See *Table D-1, ASCII Character Set on page D-1* for prefix/suffix values.

CHAPTER 3 IBM RS-485 INTERFACE BAR CODES

Introduction

This chapter includes the programming barcodes for the IBM RS-485 host interface.

For detailed technical information about the MP7X000 including installation, setting up interfaces, calibrating the scale, and operation refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx*.

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 5-4*. 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 select the Port 9B address, scan the **Hand-held Scanner Emulation (Port 9B)** barcode under *Port Address on page 3-3*. The scanner issues a fast warble beep and the LED turns bright green momentarily, then returns to a darker 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.

IBM Parameter Defaults

Table 3-1 lists defaults for IBM 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 5-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 3-1 *IBM 468X/469X Interface Parameter Defaults*

Parameter	Default	Page Number
IBM RS-485 Host Parameters		
Port Address	None	*3-3*
Scale Port Address	None	*3-7*
Convert Unknown to Code 39	Disable	*3-11*
RS-485 Beep Directive	Ignore	*3-13*
RS-485 Bar Code Configuration Directive	Ignore	*3-15*
Scan Disable Mode	Full Disable	*3-17*
IBM-485 Specification Version	Original Specification	*3-20*
IBM Commands	Ignore Unknown Commands and Reboot	*3-22*

IBM Host Parameters

Port Address

Scan one of the following barcodes to select the IBM RS-485 port.

NOTE Scanning a Port Address barcode enables the RS-485 interface on the device.

***None**

Port Address (continued)

Hand-held Scanner Emulation (Port 9B)

Port Address (continued)

Non-IBM Scanner Emulation (Port 5B)

Port Address (continued)

Table-top Scanner Emulation (Port 17)

Scale Port Address

The scale port address must be configured for the scale to operate on the IBM RS-485 bus.

***None Selected**

Scale Port Address (continued)

Port 6A

Scale Port Address (continued)

Port 6B

Scale Port Address (continued)

Port 6E

Convert Unknown to Code 39

Scan one of the following barcodes to enable or disable converting unknown barcode type data to Code 39.

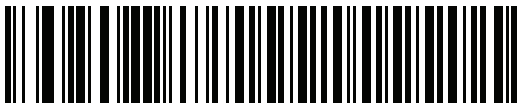
Enable Convert Unknown to Code 39

Convert Unknown to Code 39 (continued)

*Disable Convert Unknown to Code 39

RS-485 Beep Directive

The IBM RS-485 host can send a beeper configuration request to the scanner. Scan **Ignore Beep Directive** to prevent the scanner from processing the host request. All directives are still acknowledged to the host as if they were processed.



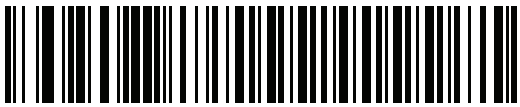
Honor Beep Directive

RS-485 Beep Directive (continued)

*Ignore Beep Directive

RS-485 Bar Code Configuration Directive

The IBM RS-485 host can enable and disable code types. Scan **Ignore Bar Code Configuration Directive** to prevent the scanner from processing the host request. All directives are still acknowledged to the IBM RS-485 host as if they were processed.



Honor Bar Code Configuration Directive

RS-485 Bar Code Configuration Directive (continued)

***Ignore Bar Code Configuration Directive**

Scan Disable Mode

Parameter # 1214

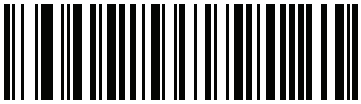
This parameter determines the behavior of the MP7X000 when it receives a *Scan Disable* directive from the connected host.

- *Full Disable: Scanning barcodes is disabled.
- Transmit Disable: The MP7X000 may scan barcodes, but transmission of barcode data is disabled.
- Auto Disable: MP7X000 disables scanning after transmission of a barcode, and remains disabled until the host sends a *Scan Enable.*

NOTE This feature is currently supported by IBM Table Top USB, IBM Hand-held USB, and all IBM 46XX interfaces.

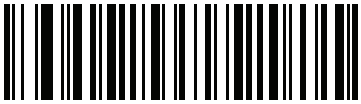
*** Full Disable**
(0)

Scan Disable Mode (continued)



Transmit Disable
(1)

Scan Disable Mode (continued)



Auto Disable
(2)

IBM-485 Specification Version

Parameter # 1729

The IBM interface specification version selected defines how code types are reported over the IBM interface.

When you scan **Original Specification**, only Symbologies that were historically supported on each individual port are reported as known. When you scan Version 2.0, all Symbologies covered in the newer IBM specification are reported as known with their respective code types.

***Original Specification**
(0)

IBM-485 Specification Version (continued)

Version 2.0
(1)

IBM Commands

Parameter # 1345

SSI # F8h 04h 41h

Scan a barcode below to set how unknown commands and reset commands from an IBM host are processed.

Honor Unknown Commands and Reboot on Reset Commands (0)

IBM Commands (continued)

***Ignore Unknown Commands and Reboot on Reset Commands (1)**

IBM Commands (continued)

Honor Unknown Commands and Do Not Reboot on Reset Commands (2)

IBM Commands (continued)

Ignore Unknown Commands and Do Not Reboot on Reset Commands (3)

CHAPTER 4 SCALE CONFIGURATION

Introduction

You can program the MP7X000 to perform various functions, or activate different features. This chapter describes each scale calibration feature, and provides programming barcodes for selecting these features.

The MP7X000 ships with the settings shown in *Table 4-1 on page 4-2* (also see *Appendix A, Standard Parameter Defaults* for all host device and miscellaneous defaults). If the default values suit requirements, programming is not necessary.

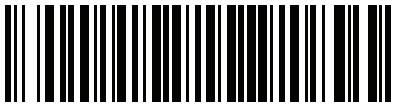
To set feature values, scan a single barcode or a short barcode sequence. The settings are stored in non-volatile memory and are preserved even when the MP7X000 is powered down.

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 5-4*. Throughout the programming barcode menus, asterisks (*) indicate default values.



* Indicates default — ***Enable Parameter** — Feature/option

Scanning Sequence Examples

In most cases scanning one barcode sets the parameter value. For example, to enable the Scale Display, scan the **Enable Scale Display Configuration** barcode listed under *Scale Display Configuration on page 4-12*.

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.

Scale Parameter Defaults

Table 4-1 lists defaults for user preferences parameters. To change the default values, scan the appropriate barcodes in this guide. These new values replace the standard default values in memory. To recall the default parameter values, scan the **Set Factory Defaults on page 5-4*.

NOTE See *Appendix A, Standard Parameter Defaults* for all user preferences, hosts, symbologies, and miscellaneous default parameters.

Table 4-1 *User Preferences Parameter Defaults*

Parameter	Parameter Number	Default	Page Number
Scale Parameters			
Legal Scale Units	995	N/A	*4-3*
Legal Scale Dampening Filter Setting	996	Low Vibration Sensitivity	*4-5*
Scale Enable	1197	Enable	*4-9*
Scale Reset	6019	N/A	*4-11*
Scale Display Configuration	986	Disable	*4-12*
Scale Enforce Zero Return	987	Disable	*4-14*
Scale Beep After Weight Request	988	Disable	*4-16*
Scale Port Address	N/A	Not Selected	See *Scale Port Address on page 3-7* for this parameter.
Ignore Scale Pole Directives	1242	Ignore	*4-18*
Maximum Initial Zero Setting Range	1285	15% maximum weight capacity	*4-20*
Maximum Scale Zeroing Weight Limit	1366	60	*4-22*
Scale Pole Display Type	1692	0/Standard	*4-23*

Legal Scale Units

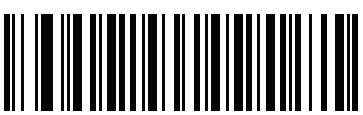
Parameter # 995

Scan a weight unit below to set the legal weight units for the MP7X000. Scan **Kilograms** for international units; scan **Pounds** for the United States.

NOTE This legal scale unit can only be programmed when the scale is placed into a legal scale calibration mode. Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for detailed information about scale calibration.

Kilograms
(0)

Legal Scale Units (continued)



Pounds
(1)

Legal Scale Dampening Filter Setting

Parameter # 996

Scan a barcode below to set the vibration sensitivity of the scale. The higher the number value, the less sensitive the scale is to vibration. The scale must be in a calibration mode to program this parameter. Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for detailed information about calibrating the scale.

Normal Vibration Sensitivity
(0)

Legal Scale Dampening Filter Setting (continued)

*** Low Vibration Sensitivity (1)**

Legal Scale Dampening Filter Setting (continued)

Very Low Vibration Sensitivity (2)

Legal Scale Dampening Filter Setting (continued)

Ultra Low Vibration Sensitivity (3)

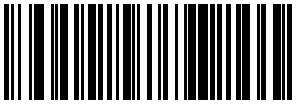
Scale Enable

Parameter # 1197

This parameter enables and disables the functionality of an already existing scale. If the scale was not properly installed, this parameter does nothing.

***Scale Enable**
(01h)

Scale Enable (continued)

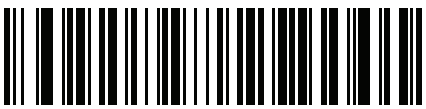


Scale Disable
(00h)

Scale Reset

Parameter # 6009

Scan **STISCLRST** to reset the scale. This parameter can be scanned in any mode of operation. If a pole display is enabled, and installed, it repeats the 7-segment test. Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for details.



STISCLRST

Scale Display Configuration

Parameter # 986

Scan **Enable Scale Display Configuration** below to enable the pole display port. Scale Display Configuration is disabled by default.

- Enable Scale Display Configuration: When a pole display is installed and connected to the MP7X000/scale, the pole display shows weight, and/or additional alphanumeric information associated with the state of the scale. If a pole display is not connected, and **Enable Scale Display Configuration** is scanned, the 7-segment display scrolls the code U23 indicating that there is a remote Scale Display communication error.
- *Disable Scale Display Configuration: Scan this parameter when no Scale Display is installed. When a Scale Display is installed and connected to the MP7X000/scale, the Scale Display remains blank. The Scale Display can be installed and programmed in any mode of operation.

Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for detailed information about the audit trail, scale calibration, and error/warning conditions.

Enable Scale Display Configuration
(1)

Scale Display Configuration (continued)

*** Disable Scale Display Configuration (0)**

Scale Enforce Zero Return

Parameter # 987

Scan a barcode to below to enable or disable enforce zero return.

- *Disable Scale Enforce Zero Return: Provides live gross weight in real time upon request from a Point-of-sale (POS) system. This is the factory default.
- Enable Scale Enforce Zero Return: The scale must return to zero weight between POS weight requests. If the scale fails to return to zero weight between POS weight requests then all subsequent weight requests are returned to the POS as an invalid weight.

Enable Scale Enforce Zero Return (1)

Scale Enforce Zero Return (continued)

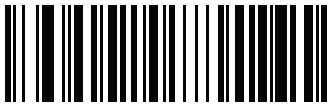
*** Disable Scale Enforce Zero Return (0)**

Scale Beep After Weight Request

Parameter # 988

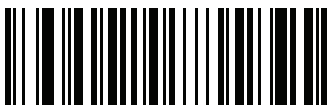
Scan **Enable Scale Beep After Weight** below to sound a beep tone after a successful weight request.

- Enable Scale Beep After Weight: The scale beeps a single beep tone after each successful weight request by the POS system. The beep tone sounds when the weight is above zero, stable, and the previous weight does not equal the present weight.
- *Disable Scale Beep After Weight: The scale does not beep after a weight request is made by the POS system. Disable is the factory default.



Enable Scale Beep After Weight
(1)

Scale Beep After Weight Request (continued)



*** Disable Scale Beep After Weight (0)**

Ignore Scale Pole Directives

Parameter #1242

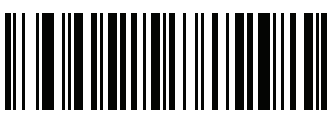
The pole display is required to be consumer facing if the POS system is not certified for displaying live gross weight.

When *Ignore Scale Pole Directives* is set to honor scale pole directives (**Honor Scale Pole Directives**), a *Remote display required but not detected* status is returned to the POS system (see bit position 5 in *Table 1-2 on page 1-59*) if the pole display configuration was set to **Enable Scale Display Configuration** (see *Scale Display Configuration on page 4-12*), and a pole display was either uninstalled, or failed at the scale display port on the MP7X000 (refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for the pole display port). The 7-segment display scrolls a U23 fault code under this condition. This prevents the POS display from showing live gross weight, and does not allow the POS to complete a price/weight transaction unless a pole display is connected, and shows live gross weight.

- *Ignore Scale Pole Directives: Always returns the status *Remote display required but not detected* to the POS system. POS weight display and/or price/weight transactions are enabled whether a pole display is installed or not.
- Honor Scale Pole Directives: Returns the status *Remote display required but not detected* to the POS system when the **Scale Display Configuration** is enabled (<Blue><Italic>page 12), and the pole display is either uninstalled, or the connection to the port is faulty. This prevents live gross weight from displaying on the POS system, and inhibits price/weight scale transactions at the POS until a pole display is installed and shows live gross weight.

***Ignore Scale Pole Directives**
(1)

Ignore Scale Pole Directives (continued)



Honor Scale Pole Directives
(0)

Maximum Initial Zero Setting Range

Parameter #1285

Initial Zero Setting - The scale indication is set to zero automatically when the scanner is powered on, and before it is ready for use.

The default *Initial Zero Setting* range is set to -5% to +15% of the maximum capacity of the scale (i.e.: -1.5 lb to 4.5 lb, -0.75 kg to 2.25 kg).

When an object is left on the scale, and within this weight range at scale power up, it automatically zeroes the weight.

When the object is removed, the scale is in a negative weight condition, and an indication is present on the display (i.e.; dashes ------, or a blank display).

There are two ways to clear this condition, depending on the weight of the object that was initially on the scale.

- After removal of a light weight object, the scale can be zeroed by touching the **Zero** button on the MP7X000 front panel which zeros from -2% to 2% of the maximum capacity (i.e.: -0.6 lb to 0.6 lb, -0.3 kg to 0.3 kg). The allowable zeroing weight limit of 0.6 lb and 0.3 kg is configurable (see *Maximum Scale Zeroing Weight Limit on page 4-22*).
- After removal of a heavy weighted object, the scale can only be zeroed by power cycling the MP7X000 to reset the scale. (Ensure no objects remain on the scale. If so, remove and reapply power.)

This parameter allows a user to reduce the overall range of *Initial Zero Setting* by scanning a parameter which adjusts the positive limit from 2% to 15% in 1% increments. In addition, this parameter is intended to compensate for scale life time drift.

- Higher values may require cause the MP7X000 scale to fail more frequently at power on, making removal of the item from the platter and rebooting necessary.
- Lower values may require more frequent scale calibrations.

If you frequently leave items on the platter during periods of non-use (like a cash drawer) you should set this value to 2 (0.9lb or 0.45kg). This prevents the need to reboot the MP7X000 due to exceeding this maximum power on weight limit (see *Table 4-2 on page 4-21*).

For example, if the maximum initial zero setting range is programmed for +2% then if a weight greater 2% (i.e.: 0.6 lb, 0.3 kg) is left on the weighing surface at power up and then removed, the scale automatically finds zero with no intervention required by the user. In most all scenarios, a user would only want to program this setting for +2%, or leave the default setting of +15%.

Scan **Set Scale Maximum Initial Zero Setting Range**, followed by two numeric barcodes from *Appendix B, Numeric Bar Codes*, that correspond to the desired percent (e.g., 2% = 02, 3% = 03, 4% = 04, 10% = 10, 15% = 15). The range is 2% to 15% (i.e.: 02 to 15). The default setting is 15% maximum weight capacity (i.e., 4.5 lb, 2.25 kg).

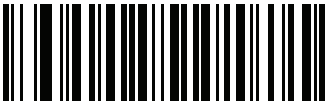
✓ ***NOTES*** 1. A lower setting may result in more frequent legal scale calibrations.

2. Regardless of this parameter value, items above 4.5 lb or 2.25 kg also cause a **u13** 7-segment display message, but in this case the user can simply remove the items to clear the fault. A power cycle is not required.

Maximum Initial Zero Setting Range (continued)

Table 4-2 *Parameter Value Settings.*

Parameter Value	Lbs	Kgs
2 (minimum)	0.6	0.30
3	0.9	0.45
4	1.2	0.60
5	1.5	0.75
6	1.8	0.90
7	2.1	1.05
8	2.4	1.20
9	2.7	1.35
10	3.0	1.50
11	3.3	1.65
12	3.6	1.80
13	3.9	1.95
14	4.2	2.10
15 (maximum/default)	4.5	2.25



Set Scale Maximum Initial Zero Setting Range

Maximum Scale Zeroing Weight Limit

Parameter #1366

This parameter defines how much weight is permitted to be *zeroed out* when the **Zero** button is pressed.

- The range of values is 0-60 (default is 60).
- In *Lbs Mode*: 0=0.00lb - 60=0.60 lb (increments of 0.01 lbs).
- In *Kgs Mode*: 0=0.00kg - 60=0.300 kg (increments of 0.005 kg).

CAUTION In *Lbs Mode* the value is equivalent to the desired weight (60=.60 lbs). In *Kgs mode* the value is twice the desired weight (60=0.300 kgs).

To set a *Weight Limit* value, scan **Set Max Scale Zeroing Weight Limit** below, then scan two numeric barcodes from *Appendix B, Numeric Bar Codes* that correspond to the desired value. Enter a leading zero for single digit numbers. For example, to set a *Weight Limit* of 0.05 lbs, scan the barcode below, then scan the **0** and **5** barcodes. To correct an error or change the selection, scan *Cancel on page B-11*.

Set Max Scale Zeroing Weight Limit

Scale Pole Display Type

Parameter # 1692

Scan a barcode below to set the Pole Display Type.

***Standard Pole Display Type**
(0)

Scale Pole Display Type (continued)

Alternate Pole Display Type (1)

CHAPTER 5 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.

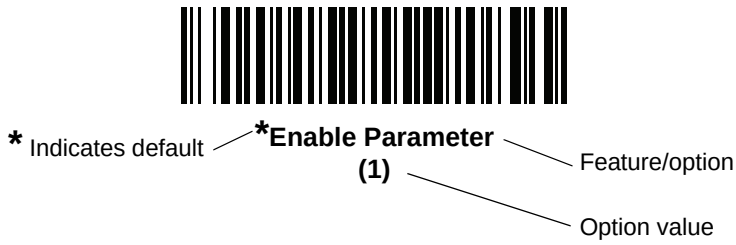
The scanner ships with the settings shown in *Table 5-1 on page 5-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

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.

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 5-4*. 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 set the beeper tone to high, scan the **High Frequency** (beeper tone) barcode listed under *Beeper Tone on page 5-15*. The scanner issues a fast warble beep and the LED turns bright green momentarily, then returns to a darker green, signifying a successful parameter entry.

Other parameters, such as **Serial Response Time-Out** or **Data Transmission Formats**, 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 5-1 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 5-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 5-1 *User Preferences Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
User Preferences				
Set Default Parameter	N/A	N/A	Set Factory Defaults	*5-4*
Parameter Bar Code Scanning	236	ECh	Enable	*5-6*
Beep After Good Decode	56	38h	Enable	*5-8*
Beeper Volume	140	8Ch	Highest	*5-10*
Beeper Tone	145	91h	Medium	*5-15*
Beeper Duration	628	F1h 74h	Medium	*5-20*
Tone/Volume Button	1287	F8h 05h 07h	Enable Tone, Enable Volume	*5-23*
Suppress Power Up Beeps	721	F1h D1h	Do Not Suppress	*5-27*
Decode Session Timeout	136	88h	9.9 Seconds	*5-29*
Timeout Between Decodes, Same Symbol	137	89h	0.5 Seconds	*5-30*
Same Symbol Report Timeout	1284	F8h 05h 04h	Disable	*5-31*
Swipe Frame Timeout	1226	F8 04h CAh	30 ms	*5-33*
Presentation Frame Timeout	1227	F8h 04h CBh	35 ms	*5-34*

[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 *User Preferences Parameter Defaults (Continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Fuzzy 1D Processing	514	F1h 02h	Enable	5-35
Cell Phone Frame Timeout	1228	F8h 04h CCh	35 ms	5-37
Mobile Phone Display Mode	716	F1h CCh	Disable	5-38
PDF Prioritization	719	F1h CFh	Disable	5-40
PDF Prioritization Timeout	720	F1h D0h	300 ms	5-40
RS-232 Device Port Configuration	1246	F8h 04h DEh	Aux 1 Sensormatic and Aux 2 RS-232 Scanner	5-43
RS-232 Auxiliary Port Scale Protocol	1247	F8h 04h DFh	SASI	5-48
Third Party Scale Parameters				5-53
Third Party Scale	1294	F8 05 0E	Disable Third Party Scale	
Third Party Scale LED Pin	1295	F8 05 0F	Active High	
Third Party Scale Zero Pin	1296	F8 05 10	Active High	
Illumination Configurations	1250	F8h 04h E2h	Full Brightness on Both Vertical and Horizontal	5-59
Product ID (PID) Type	1281	F8h 05h 01h	IBM Unique	5-66
Product ID (PID) Value	1725	F8h 06h BDh	0	5-69
ECLevel	1710	F8h 06h AEh	0	5-70
Miscellaneous Options				
Transmit Code ID Character	45	2Dh	None	5-71
Prefix Value	99, 105	63h, 69h	7013 <CR><LF>	5-74
Suffix 1 Value Suffix 2 Value	98, 104 100, 106	62h, 68h 64h, 6Ah	7013 <CR><LF>	5-74
Scan Data Transmission Format	235	EBh	Data As Is	5-78
FN1 Substitution Values	103, 109	67h, 6Dh	7013 <CR><LF>	5-86
Unsolicited Heartbeat Interval	1118	F8h 04h 5Eh	Disable	5-87
Copy Statistics to a Staging Flash Drive	1137	F8h 04h 71h	Enable	5-91

[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:

- **Set Factory Defaults** restores all factory default values listed in *Appendix A, Standard Parameter Defaults*.
- **Restore Defaults** restores the factory default values listed in *Appendix A, Standard Parameter Defaults*.

***Set Factory Defaults**

Default Parameters (continued)

Restore Defaults

Parameter Bar Code 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 Bar Code Scanning**
(1)

Parameter Bar Code Scanning (continued)

Disable Parameter Bar Code Scanning
(0)

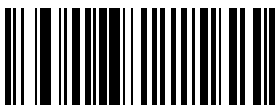
Beep After Good Decode

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 **Do Not Beep After Good Decode**, the beeper still operates during parameter menu scanning and to indicate error conditions.

***Enable Beep After Good Decode**
(1)

Parameter Bar Code Scanning (continued)



Disable Beep After Good Decode
(0)

Beeper Volume

Parameter # 140
SSI # 8Ch

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

Low Volume
(02h)

Beeper Volume (continued)

Medium Volume
(01h)

Beeper Volume (continued)

High Volume
(00h)

Beeper Volume (continued)

Higher Volume
(03h)

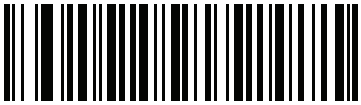
Beeper Volume (continued)

***Highest Volume**
(04h)

Beeper Tone

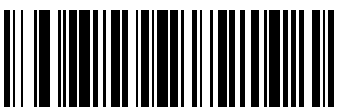
Parameter # 145
SSI # 91h

Scan one of the following barcodes to select a beeper tone for the good decode beep.



Disable Tone
(3)

Beeper Tone (continued)

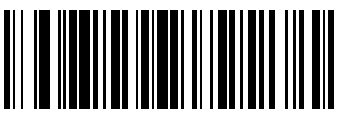


Low Tone
(2)

Beeper Tone (continued)

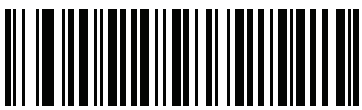
***Medium Tone**
(1)

Beeper Tone (continued)



High Tone
(0)

Beeper Tone (continued)



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)

Beeper Duration (continued)

***Medium Duration**
(1)

Beeper Duration (continued)

Long Duration
(2)

Tone/Volume Button

Parameter # 1287
SSI # F8h 05h 07h

When this parameter is enabled the physical **Volume** button on the front panel of the MP7X00 can be used to change the speaker volume and tone.

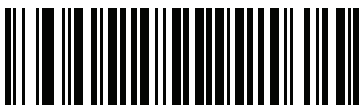
When this parameter is disabled the speaker volume and tone cannot be changed using the physical **Volume** button on the front panel of the MP7X00.

***Enable Tone, Enable Volume**
(1)

Volume Button Enable (continued)

Disable Tone, Disable Volume
(0)

Volume Button Enable (continued)



Disable Tone, Enable Volume (2)

Volume Button Enable (continued)

Enable Tone, Disable Volume (3)

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 (continued)

Suppress Power Up Beeps (1)

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 B, 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 B-11*.

Decode Session Timeout

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 0.5 seconds.

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

Timeout Between Decodes, Same Symbol

Same Symbol Report Timeout

Parameter # 1284

SSI # F8h 05h 04h

Affects how the *Timeout Between Decodes, Same Symbol* parameter is applied *(see page 5-30).*

When this parameter is disabled a barcode in the decode region decodes only once, even if the barcode remains indefinitely in the region. The user must remove the barcode, and reintroduce the barcode into the region before it decodes a second time.

When this parameter is enabled a barcode in the decode region decodes each time the same symbol timeout expires. Use **Enable** mode when using fast two-handed scanning of two of the same items. This usage scenario has a tendency to not decode the second of the two items. By enabling this mode the second item unconditionally decodes after the same symbol timeout expires. After enabling this setting the user may need to adjust the **Timeout Between Decodes, Same Symbol** parameter (*page 5-30*) so that the second item does not decode too quickly.

***Disable**
(0)

Same Symbol Report Timeout (continued)

Enable
(1)

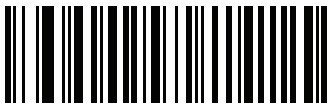
Swipe Frame Timeout

Parameter # 1226

SSI # F8 04h CAh

Specifies how much time to spend on processing the frame that is optimized to decode images where the barcode is swiped in front of the scanner. The range is 11-500 milliseconds. The default is 30 milliseconds.

Scan the barcode below, then scan three digits from *Appendix B, Numeric Bar Codes*. If a two digit timeout is desired, scan the zero barcode before scanning the two digits.



Swipe Frame Timeout (milliseconds)

Presentation Frame Timeout

Parameter # 1227

SSI # F8h 04h CBh

Specifies how much time to spend on processing the frame that is optimized to decode images where the barcode is presented to the scanner. The range is 11-500 milliseconds. The default is 35 milliseconds.

Scan the barcode below, then scan three digits from *Appendix B, Numeric Bar Codes*. If a two digit timeout is desired, scan the zero barcode before scanning the two digits.

Presentation Frame Timeout (milliseconds)

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)

Fuzzy 1D Processing (continued)

Disable Fuzzy 1D Processing
(00h)

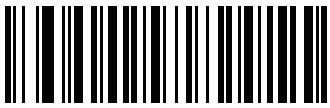
Cell Phone Frame Timeout

Parameter # 1228

SSI # F8h 04h CCh

Specifies how much time to spend on processing the frame that is optimized to decode barcodes from cell phone displays. The range is 11-500 milliseconds. The default is 35 milliseconds.

Scan the barcode below, then scan three digits from *Appendix B, Numeric Bar Codes*. If a two digit timeout is desired, scan the zero barcode before scanning the two digits.



Cell Phone Frame Timeout (milliseconds)

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 enable or disable this mode.

Enable Mobile Phone Display Mode
(03h)

Mobile Phone Display Mode (continued)

***Disable Mobile Phone Display Mode (00h)**

PDF Prioritization

Parameter # 719
SSI # F1h CFh

Scan **Enable PDF Prioritization** to delay decoding certain 1D barcodes (see *Note* below) by the value specified in *PDF Prioritization Timeout*. During that time the scanner attempts to decode a PDF417 symbol (e.g., on a US driver's license), and if successful, reports this only. If it does not decode (can not find) a PDF417 symbol, it reports the 1D symbol after the timeout. The 1D symbol must be in the scanner's field of view for the scanner to report it. This parameter does not affect decoding other symbologies.

NOTE

The 1D Code 128 barcode lengths include the following:

- 7 to 10 characters
- 14 to 22 characters
- 27 to 28 characters

In addition, a Code 39 barcode with the following lengths are considered to potentially be part of a US driver's license:

- 8 characters
- 12 characters

Enable PDF Prioritization
(1)

PDF Prioritization (continued)

*Disable PDF Prioritization
(0)

PDF Prioritization Timeout

Parameter # 720
SSI # F1h D0h

If you enabled *PDF Prioritization*, set this timeout to indicate how long the scanner attempts to decode a PDF417 symbol before reporting the 1D barcode in the field of view.

Scan the following barcode, and then scan four barcodes from *Appendix B, Numeric Bar Codes* that specify the timeout in milliseconds. For example, to enter 400 ms, scan the following barcode, and then scan 0400. The range is 0-5000 ms, and the default is 300 ms.

PDF Prioritization Timeout

RS-232 Device Port Configuration

Parameter # 1246

SSI # F8h 04h DEh

This option allows the user to select which devices to attach to the MP7X00, and to which port they are attached. Scan the appropriate barcodes that follow to select the proper configuration.

The available configurations/options are:

- *0 = Aux 1 Sensormatic, and Aux 2 RS-232 Scanner
- 1 = Aux 1 Dual Cable Scale, and Aux 2 RS-232 Scanner
- 2 = Aux 1 Sensormatic, and Aux 2 Dual Cable Scale.
- 4 = Aux 1 Third Party Scale, Aux 2 Sensormatic.

Changes to this parameter do not take effect until the next power cycle (power cycling does not apply to 123Scan). For that reason always remember to perform one of the functions below after scanning a device port parameter.

- Cycle power to the scanner (disconnect, and re-connect scanner cable).

  or

- Use the MP7X00 **Reset** button (a button combination to reboot the MP7X00).

When selecting any of the device port configuration options, ensure the devices connected to the MP7X00 correctly match the devices defined for the option. For example, if option 1 is scanned, only a dual cable scale should be connected to the Aux 1 port, and an RS-232 scanner should be connected to the Aux 2 port. Turning on the MP7X00 with connected devices that do not match the option can result in communication failures. To ensure successful operation the proper sequence for setting this option is as follows.

1. Power off the MP7X00 (disconnect the power cable).
2. Disconnect all RS-232 devices (RS-232 scanner, Sensormatic, and/or dual cable scale).
3. Power on the MP7X00(reconnect the power cable).
4. Scan the appropriate barcode option that matches the intended configuration.
5. Power off the MP7X00.
6. Connect the appropriate devices.
7. Power on the MP7X00.

Table 5-2 *Device Specific Default Values (Inherited Defaults)*

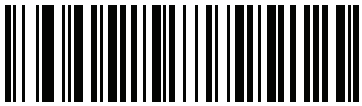
Device	Baud	Data Bits	Stop Bits	Parity
Scanner	9600	8	1	None
Sensormatic	9600	8	1	None
Dual Cable Scale: SASI Protocol[1]	9600	7	1	Even

[1]See *RS-232 Auxiliary Port Scale Protocol on page 5-48* for details on selecting a scale protocol.

Table 5-2 *Device Specific Default Values (Inherited Defaults) (Continued)*

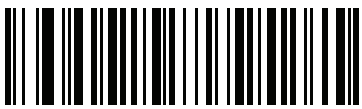
Device	Baud	Data Bits	Stop Bits	Parity
Dual Cable Scale: DIGI Protocol[1]	9600	7	2	Even
Dual Cable Scale: ICL Protocol[1]	9600	7	1	Even
Third Party Scale	NA	NA	NA	NA

[1]See *RS-232 Auxiliary Port Scale Protocol on page 5-48* for details on selecting a scale protocol.



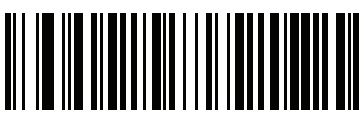
***Aux 1 Sensormatic and Aux 2 RS-232 Scanner (00h)**

RS-232 Device Port Configuration (continued)



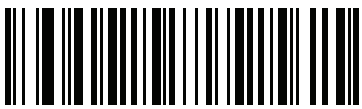
Aux 1 Dual Cable Scale and Aux 2 RS-232 Scanner (01h)

RS-232 Device Port Configuration (continued)



Aux 1 Sensormatic and Aux 2 Dual Cable Scale (02h)

RS-232 Device Port Configuration (continued)



Aux 1 Third Party Scale, Aux 2 Sensormatic (04h)

RS-232 Auxiliary Port Scale Protocol

Parameter # 1247

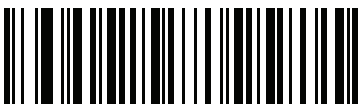
SSI # F8h 04h DFh

Scan one of the barcodes to select the desired scale protocol.

The *Dual Cable Scale* option must be used to assign a scale device to either the Aux1 or Aux2 port via the *RS232 Device Port Configuration* setting (see *page 5-43*).

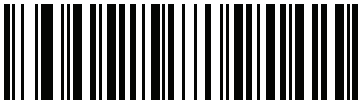
See Aux1 and Aux2 Baud Rates, Data Bits, Stop Bits and Parity settings in *Chapter 8, Auxiliary Scanner Bar Codes* for details about configuring the RS-232 ports.

- *0/0x00 = SASI
- 1/0x01 = DIGI
- 2/0x02 = ICL OMRON (Requesting zero weight is permitted)
- 3/0x03 = ICL Old OMRON (Requesting zero weight is not permitted)
- 4/0x04 = ICL Portugal (Identical to ICL / Old OMRON)



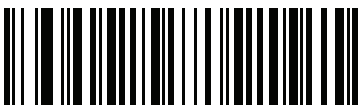
***SASI**
(0)

RS-232 Auxiliary Port Scale Protocol (continued)



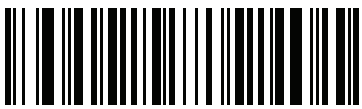
DIGI
(1)

RS-232 Auxiliary Port Scale Protocol (continued)



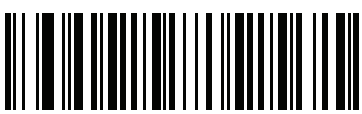
ICL OMRON
(2)

RS-232 Auxiliary Port Scale Protocol (continued)



ICL Old OMRON
(3)

RS-232 Auxiliary Port Scale Protocol (continued)



ICL Portugal
(4)

Third Party Scale Parameters

Third Party Scale

Parameter # 1294

SSI # F8 05 0E

Enable or disable **Third Party Scale** functionality. When disabled **Third Party Scale LED Pin** (parameter # 1295) and **Third Party Scale Zero Pin** (parameter # 1296) are ignored/overridden.

Enable Third Party Scale
(1)

Third Party Scale (continued)

***Disable Third Party Scale**
(0)

Third Party Scale LED Pin

Parameter # 1295

SSI # F8 05 0F

This parameter defines the polarity of the LED/Tare input pin that illuminates the scale LED. This parameter has no effect if **Third Party Scale** (parameter # 1294) is disabled.

Active Low
(0)

Third Party Scale LED Pin (continued)

***Active High**
(1)

Third Party Scale Zero Pin

Parameter # 1296

SSI # F8 05 10

This parameter defines the polarity of the zero output pin when the **Scale Zero** button is pressed. This parameter has no effect if **Third Party Scale** (parameter # 1294) is disabled.

Active Low
(0)

Third Party Scale Zero Pin (continued)

***Active High**
(1)

Illumination Configurations

Parameter # 1250
SSI # F8h 04h E2h

Allows the illumination brightness of each field of view to be controlled.

***Full Brightness on both Vertical and Horizontal**
(0)

Illumination Configurations (continued)

Dim Vertical Brightness Only (1)

Illumination Configurations (continued)

Extra Dim Vertical Brightness Only (2)

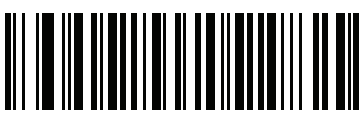
Illumination Configurations (continued)

Dim Horizontal Brightness Only (3)

Illumination Configurations (continued)

Extra Dim Horizontal Brightness Only (4)

Illumination Configurations (continued)



Dim Both Horizontal and Vertical (5)

Illumination Configurations (continued)

Extra Dim Both Horizontal and Vertical
(6)

Product ID (PID) Type

Parameter # 1281
SSI # F8h 05h 01h

Defines the PID value reported in USB enumeration.

Host Type Unique
(0)

PID Type (continued)

Product Unique (1)

PID Type (continued)

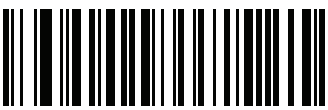
***IBM Unique**
(2)

Product ID (PID) Value

Parameter # 1725
SSI # F8h 06h BDh

Scan **Set PID Value** below to set a Product ID value. Next, scan four numeric barcodes in *Appendix B, Numeric Bar Codes* that correspond to the value. Enter a leading zero for single digit numbers. To correct an error, or change a selection, scan *Cancel on page B-11*. The range is (0,1600-1649).

NOTE This parameter is applicable to customers using a Firmware Flash Update per the Toshiba Global Commerce Solutions (TGCS) Universal Serial Bus OEM Point-of-Sale Device Interface.



Set PID Value

ECLevel

Parameter # 1710
SSI # F8h 06h AEh

Scan **Set ECLevel** below to set an ECLevel value. Next, scan five numeric barcodes in *Appendix B, Numeric Bar Codes* that correspond to the desired level. Enter a leading zero for single digit numbers. To correct an error, or change a selection, scan *Cancel on page B-11*.

NOTE This parameter is applicable to customers using a Firmware Flash Update per the Toshiba Global Commerce Solutions (TGCS) Universal Serial Bus OEM Point-of-Sale Device Interface. It allows a customer to define an ECLevel value in order to manage and control Flash Update operations on the 4690 operating system.

Contact the Zebra Customer Support Center online at: www.zebra.com/support for more information.

Set ECLevel

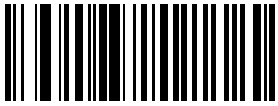
Miscellaneous Scanner Parameters

Transmit Code ID Character

Parameter # 45
SSI # 2Dh

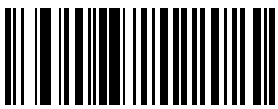
A Code ID character identifies the code type of a scanned barcode. This is useful when decoding more than one code type. In addition to any single character prefix selected, the Code ID character is inserted between the prefix and the decoded symbol.

Select no Code ID character, a Symbol Code ID character, or an AIM Code ID character. For Code ID characters, see *Symbol Code Identifiers on page E-1* and *AIM Code Identifiers on page E-2*.



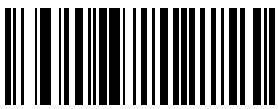
Symbol Code ID Character (2)

Transmit Code ID Character (continued)



AIM Code ID Character
(1)

Transmit Code ID Character (continued)



***None**
(0)

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 B, Numeric Bar Codes* that correspond to that value. See *Appendix D, ASCII Character Sets* for the four-digit codes.

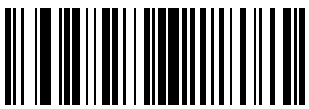
When using host commands to set the prefix or suffix, set the key category parameter to 1, and then set the 3-digit decimal value. See *Appendix D, ASCII Character Sets* for the four-digit codes.

The default prefix and suffix value is 7013 <CR><LF> (Enter key). To correct an error or change a selection, scan *Cancel on page B-11*.

NOTE To use Prefix/Suffix values, first set the *Scan Data Transmission Format on page 5-78*.

Scan Prefix
(7)

Prefix/Suffix Values (continued)

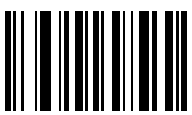


Scan Suffix 1
(6)

Prefix/Suffix Values (continued)

Scan Suffix 2
(8)

Prefix/Suffix Values (continued)



Data Format Cancel

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.

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 5-74*.

***Data As Is**
(0)

Scan Data Transmission Format (continued)

<DATA> <SUFFIX 1>
(1)

Scan Data Transmission Format (continued)

<DATA> <SUFFIX 2>
(2)

Scan Data Transmission Format (continued)

<DATA> <SUFFIX 1> <SUFFIX 2>
(3)

Scan Data Transmission Format (continued)

<PREFIX> <DATA >
(4)

Scan Data Transmission Format (continued)

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

Scan Data Transmission Format (continued)

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

Scan Data Transmission Format (continued)

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

FN1 Substitution Values

Key Category Parameter # 103
Key Category SSI # 67h
Decimal Value Parameter # 109
Decimal Value SSI # 6Dh

Keyboard wedge and USB HID keyboard hosts support a FN1 substitution feature. Enabling this substitutes any FN1 character (0x1b) in an EAN128 barcode with a value. This value defaults to 7013 <CR><LF> (Enter key).

When using host commands to set the FN1 substitution value, set the key category parameter to 1, and then set the 3-digit keystroke value. See the ASCII Character Set table for the current host interface for the desired value.

To select a FN1 substitution value via barcode menus:

1. Scan the following barcode.

Set FN1 Substitution Value

2. Locate the keystroke desired for FN1 Substitution in the ASCII Character Set table for the current host interface, and enter the 4-digit ASCII value by scanning four barcodes from *Appendix B, Numeric Bar Codes*.

To correct an error or change the selection, scan **Cancel**.

To enable FN1 substitution for USB HID keyboard, scan the **Enable FN1 Substitution** barcode on page *5-86*.

Unsolicited Heartbeat Interval

Parameter # 1118

SSI # F8h 04h 5Eh

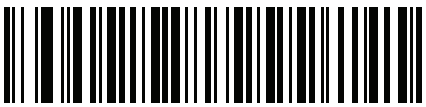
The scanner can send unsolicited heartbeat messages to assist in diagnostics. To enable this parameter and set the desired unsolicited heartbeat interval, scan one of the following time interval barcodes, or scan **Set Another Interval** followed by four barcodes from *Appendix B, Numeric Bar Codes* that correspond to the desired number of seconds. The range is 0 - 9999.

Scan **Disable Unsolicited Heartbeat Interval** to turn off the feature.

The heartbeat event is sent as decode data (with no decode beep) in the form of:

MOTEVTHB:nnn

where **nnn** is a three-digit sequence number starting at 001 and wrapping after 100.



10 Seconds
(10)

Unsolicited Heartbeat Interval (continued)

1 Minute
(60)

Unsolicited Heartbeat Interval (continued)

Set Another Interval

Unsolicited Heartbeat Interval (continued)

***Disable Unsolicited Heartbeat Interval**
(0)

Copy Statistics to a Staging Flash Drive

Parameter # 1137
SSI # F8h 04h 71h

If disabled, scan **Enable Copy Statistics to a Staging Flash Drive** to copy all data/configurations from the MP7X00 to a staging USB flash drive.

Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for detailed information about the staging flash drive cloning.

Disable Copy Statistics to a Staging Flash Drive (00h)

Copy Statistics to a Staging Flash Drive (continued)

***Enable Copy Statistics to a Staging Flash Drive (01h)**

CHAPTER 6 IMAGE CAPTURE PREFERENCES

Introduction

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

✓ ***NOTE*** Only the Symbol Native API (SNAPI) with Imaging interface supports image capture. See *USB Device Type on page 1-3* to enable this host.

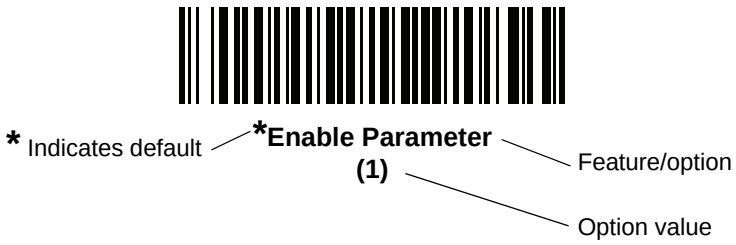
The imager ships with the settings shown in *Table 6-1 on page 6-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

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 imager 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 5-4*. 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.

Image Capture Preferences Parameter Defaults

Table 6-1 lists defaults for image capture preference 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 5-4*.
- Configure the scanner using the 123Scan[2] configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 6-1 *Image Capture Preferences Parameter Defaults*

Parameter	Parameter Number[1]	SSI Number[2]	Default	Page Number
Imaging Preferences				
Image Cropping	301	F0h 2Dh	Disable	*6-3*
Crop to Pixel Addresses	315 316 317 318	F4h F0h 3Bh F4h F0h 3Ch F4h F0h 3Dh F4h F0h 3Eh	0 top 0 left 959 bottom 1279 right	*6-5*
Image Size (Number of Pixels)	302	F0h 2Eh	Full	*6-9*
JPEG Image Options	299	F0h 2Bh	Quality	*6-12*
JPEG Size Value	561	F1h 31h	160 kB	*6-14*
JPEG Quality Value	305	F0h 31h	065	*6-15*
Image Enhancement	564	F1h 34h	Off (0)	*6-16*
Image File Format Selection	304	F0h 30h	JPEG	*6-20*
Image Rotation	665	F1h 99h	Rotate 0°	*6-23*
Image Capture Camera Selection	1715	F8h 05h B3h	Tower	*6-27*
Camera Button	1716	F8h 06h B4h	Disable	*6-29*
Camera Button Delay	1717	F8h 06h B5h	20 (2 seconds)	*6-31*

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

Image Capture Preferences

The parameters in this chapter control image capture characteristics.

Image Cropping

Parameter # 301
SSI # F0h 2Dh

Scan the **Enable Image Cropping** barcode to crop a captured image to the pixel addresses set in *Crop to Pixel Addresses on page 6-5*. Scan **Disable Image Cropping** to present the full 1280 x 960 pixels.

Enable Image Cropping
(1)

Image Cropping (continued)

***Disable Image Cropping**
(0)

Crop to Pixel Addresses

Parameter # 315
SSI # F4h F0h 3Bh (Top)
Parameter # 316
SSI # F4h F0h 3Ch (Left)
Parameter # 317
SSI # F4h F0h 3Dh (Bottom)
Parameter # 318
SSI # F4h F0h 3Eh (Right)

If you enabled *Image Cropping*, set the pixel addresses from (0,0) to (1279 x 959) to crop to.

Columns are numbered from 0 to 1279, rows from 0 to 956. Specify values for Top, Left, Bottom, and Right, where Top and Bottom correspond to row pixel addresses, and Left and Right correspond to column pixel addresses. For example, for a 4 row x 8 column image in the extreme bottom-right section of the image, set the following values:

Top = 959, Bottom = 959, Left = 1272, Right = 1279

To set the pixel addresses, scan each of the following barcodes, and then scan four numeric barcodes from *Appendix B, Numeric Bar Codes* representing the value. Leading zeros are required. For example, to crop the top pixel address to 3, scan 0, 0, 0, 3. The defaults are:

Top = 0, Bottom = 959, Left = 0, Right = 1279

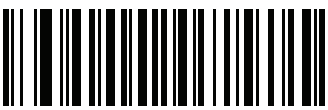
NOTE The scanner has a cropping resolution of 4 pixels. Setting the cropping area to less than 4 pixels (after resolution adjustment, see *Image Size (Number of Pixels) on page 6-9*) transfers the entire image.

Top Pixel Address
(0 - 959 Decimal)

Crop to Pixel Addresses (continued)

Left Pixel Address
(0 - 1279 Decimal)

Crop to Pixel Addresses (continued)



Bottom Pixel Address
(0 - 959 Decimal)

Crop to Pixel Addresses (continued)

Right Pixel Address
(0 - 1279 Decimal)

Image Size (Number of Pixels)

Parameter # 302
SSI # F0h 2Eh

This option alters image resolution before compression. Multiple pixels are combined to one pixel, resulting in a smaller image containing the original content with reduced resolution.

Scan one of the following barcodes to select an image size.

Table 6-2 *Image Size*

Resolution Value	Uncropped Image Size
Full	1280 x 960
1/2	640 x 480
1/4	320 x 240

***Full Resolution**
(0)

Image Size (Number of Pixels - continued)

1/2 Resolution
(1)

Image Size (Number of Pixels - continued)

1/4 Resolution
(3)

JPEG Image Options

Parameter # 299
SSI # F0h 2Bh

Scan one of the following barcodes to optimize JPEG images for either size or quality:

- **JPEG Quality Selector** - Enter a quality value via the *JPEG Quality Value* parameter; the imager then selects the corresponding image size.
- **JPEG Size Selector** - Enter a size value via the *JPEG Size Value* parameter; the imager then selects the best image quality.

***JPEG Quality Selector**
(1)

JPEG Image Options (continued)

JPEG Size Selector
(0)

JPEG Size Value

Parameter # 561
SSI # F1h 31h

Type: Word

Range: 5-350

If you selected **JPEG Size Selector**, scan the **JPEG Size Value** barcode, and then scan three numeric barcodes from *Appendix B, Numeric Bar Codes* representing the target JPEG file size in kilobytes (KB). Leading zeros are required. For example, to set an image file size value of 99, scan 0, 9, 9.

CAUTION JPEG compression may take 10 to 15 seconds based on the amount of information in the target image. Scanning **JPEG Quality Selector** (default setting) on *page 6-12* produces a compressed image that is consistent in quality and compression time.

JPEG Target File Size
(3 digits)

JPEG Quality Value

Parameter # 305
SSI # F0h 31h

If you selected **JPEG Quality Selector**, scan the **JPEG Quality Value** barcode, and then scan three barcodes from *Appendix B, Numeric Bar Codes* corresponding to a value from 5 to 100, where 100 represents the highest quality image. Leading zeros are required. For example, to set an image quality value of 55, scan 0, 5, 5. The default value is 065.

JPEG Quality Value
(5 - 100 Decimal)

Image Enhancement

Parameter # 564
SSI # F1h 34h

This parameter uses a combination of edge sharpening and contrast enhancement to produce an image that is visually pleasing.

Scan one of the following barcodes to select the level of image enhancement:

- *Off (0)
- Low (1)
- Medium (2)
- High (3)

***Off**
(0)

Image Enhancement (continued)

Low
(1)

Image Enhancement (continued)

Medium
(2)

Image Enhancement (continued)

High
(3)

Image File Format Selector

Parameter # 304
SSI # F0h 30h

Scan one of the following barcodes to select an image format appropriate for the system (BMP, TIFF, or JPEG). The imager stores captured images in the selected format.

BMP File Format
(3)

Image File Format Selector (continued)

***JPEG File Format**
(1)

Image File Format Selector (continued)

TIFF File Format
(4)

Image Rotation

Parameter # 665
SSI # F1h 99h

Scan one of the following barcodes to rotate the image 0, 90,180, or 270 degrees.

***Rotate 0°**
(0)

Image Rotation (continued)

Rotate 90^{o}
(1)

Image Rotation (continued)

Rotate 180°
(2)

Image Rotation (continued)

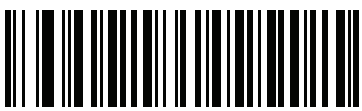
Rotate 270°
(3)

Image Capture Camera Selection

Parameter # 1715

SSI # F8h 05h B3h

Scan one of the following barcodes to select the camera with which to capture images.



***Tower**
(0)

Image Capture Camera Selection (continued)

Platter
(1)

Camera Button

Parameter # 1716
SSI # F8h 06h B4h

Scan **Enable Camera Button** to use the camera button on the front of the tower to capture images.

The parameter is only valid if the scanner is in USB SNAPI with Imaging mode (see *Symbol Native API (SNAPI) with Imaging Interface on page 1-9*).

Enable Camera Button
(1)

Camera Button (continued)

***Disable Camera Button**
(0)

Camera Button Delay

Parameter # 1717
SSI # F8h 06h B5h

This parameter controls the camera shutter delay, or the time delay between pressing the camera button and actually capturing the image. This delay allows the user time to place the item into the proper position for capturing the image. Units of time are in increments of 100 ms. Range: 0-255 ms; default = 20 (2 seconds).

Scan **Camera Shutter Delay** below to set a time delay value. Next, scan three numeric barcodes in *Appendix B, Numeric Bar Codes*. Enter a leading zero for single digit numbers. To correct an error, or change a selection, scan *Cancel on page B-11*.

Camera Shutter Delay

CHAPTER 7 EAS PARAMETERS

Introduction

You can program the MP7X00 to perform various functions, or activate different features. This chapter describes the EAS features, and provides programming barcodes for selecting these features.

The scanner ships with the settings shown in *Table 7-1 on page 7-2* (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.

To return all features to default values, see *Default Parameters on page 5-4*. 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.

User Preferences/Miscellaneous Options Parameter Defaults

Table 7-1 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 5-4*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

NOTE 1. The EAS LED, located on the front of the MP7X00, works in conjunction with the type of EAS device used. With a Sensormatic EAS system, the EAS LED is on always, and blinks when a tag is deactivated. With a Checkpoint EAS system, the EAS LED can be turned on by scanning *EAS LED On Mode on page 7-12*. The LED does not blink.

2. See *Appendix A, Standard Parameter Defaults* for all user preferences, hosts, symbologies, and miscellaneous default parameters.

Table 7-1 *EAS Parameter Defaults*

Parameter	Parameter Number	Default	Page Number
Operating Modes	977	Disable	*7-4* to *7-13*
Miscellaneous Parameters			
Sensormatic Deactivation Timeout	982	10 sec	*7-14*
Sensormatic EAS Deactivation	979	Enable	*7-15*
Sensormatic Soft Tag Beeps	984	Soft Tag Beep 1	*7-18*
Sensormatic Hard Tag Beeps	985	Hard Tag Beep 1	*7-21*
Sensormatic Detected Any Time Beep	980	Enable	*7-24*
Sensormatic Deactivation Fail Beep	1213	Disable	*7-26*
Sensormatic Request Communication Message	978	Enable	*7-28*
Sensormatic Request Voltage Message	1130	Enable	*7-30*
Sensormatic Request Scan Time Message	1136	Enable	*7-32*
Checkpoint Interlock Polarity	983	Active Low	*7-34*
EAS Deactivation Override Button	981	Enable	*7-36*

EAS Operating Modes

In addition to EAS preferences (also in this chapter) there are 10 EAS operating modes for the MP7X00, listed below. EAS operating modes control whether or not EAS functionality is enabled, and is independent of whether or not EAS equipment is connected. It is the installer's responsibility to match these modes with the installed equipment. Enabling one of these modes without EAS equipment, or with the wrong equipment installed results in EAS error messages.

- Sensormatic Auto (page *7-4*)
- Sensormatic Always Enable Deactivation (page *7-5*)
- Sensormatic Bar Code Interlock (page *7-6*)
- Sensormatic Bar Code Auto Interlock (page *7-7*)
- Sensormatic Hold Off (page *7-8*)
- Sensormatic Scan Enable Interlock (page *7-9*)
- Checkpoint Bar Code Interlock (page *7-10*)
- Checkpoint Scan Enable Interlock (page *7-11*)
- EAS LED On (page *7-12*).
- EAS Disable (page *7-13*)

Scan the appropriate barcodes on the following pages to configure the MP7X00 with these modes.

Operating Modes

Parameter # 977

Sensormatic Auto Mode

Sensormatic Auto Mode is dependent on the *Scan Enable Time* that the MP7X00 reads from the Sensormatic ScanMax Pro control box (this value is set by Sensormatic in the control box during installation).

If the *Scan Enable Time* equals 0 seconds, or 30 seconds, the MP7X00 works in **Sensormatic Scan Enable Interlock Mode** (see *page 7-9*).

Otherwise *Scan Enable Time* is from 1 second to 29 seconds. In this mode tag deactivation is active following a barcode decode, and remains active until this timer expires.

NOTE More than one tag can be deactivated during this time.

Sensormatic Auto Mode
(00h)

Sensormatic Always Enable Deactivation Mode

When **Sensormatic Always Enable Deactivation Mode** is scanned, tag deactivation is always enabled when the MP7X00 is powered on.

NOTE When the MP7X00 is in *Sensormatic Always Enable Deactivation* mode, the tags are always deactivated by the MP7X00 if the tags are in the deactivation field.

Sensormatic Always Enable Deactivation Mode (01h)

Sensormatic Bar Code Interlock Mode

Scan **Sensormatic Bar Code Interlock Mode** to enable tag deactivation only after a barcode is decoded. The tag deactivation time uses the time value set with *Sensormatic Deactivation Timeout on page 7-14*.

NOTE Additional tags can be deactivated during the deactivation time if the tags are in the deactivation field.

Sensormatic Bar Code Interlock Mode
(02h)

Bar Code Auto Interlock Mode

The MP7X00 enables deactivation only when a barcode decodes. The deactivation state only lasts 1.2 seconds to avoid subsequent tag deactivation.

Sensormatic Bar Code Auto Interlock Mode (03h)

Bar Code Hold Off Mode

Scan the barcode below to enable **Hold Off** mode. In this mode, if a tag is detected, barcodes are not decoded (no beep, no transmission to host) until the tag is deactivated.

NOTE A barcode decode does not occur if a hard tag is detected, until the hard tag is removed from the detection field.

Hold Off Mode
(04h)

Sensormatic Scan Enable Interlock Mode

When **Sensormatic Scan Enable Interlock Mode** is scanned, if the POS application sends a Scan Enable message to the MP7X00, then the tag deactivated is enabled. If the POS application sends a Scan Disable message to the MP7X00, then the tag deactivated is disabled.

Sensormatic Scan Enable Interlock Mode (05h)

Checkpoint Bar Code Interlock Mode

Scan **Checkpoint Bar Code Interlock Mode** to enable Checkpoint tag deactivation for 3 seconds after a barcode is decoded. The Checkpoint device controls all audible and visual feedback (the device does not produce any audio and visual feedback for tag detection nor tag deactivation).

This is also programmable inside the Checkpoint device by the Checkpoint installer.

Bar Code Interlock Mode
(6)

Checkpoint Scan Enable Interlock Mode

When **Checkpoint Scan Enable Interlock Mode** is scanned the following occurs:

- Tag deactivation is active after the MP7X00 receives a *Scan Enable* command from a host (POS application).
- Tag deactivation is inactive after the MP7X00 receives a *Scan Disable* command from a host (POS application).
- Tag deactivation is enabled on power on.

Checkpoint Scan Enable Interlock Mode (07h)

EAS LED On Mode

Scan **EAS LED On Mode** to turn on the EAS LED. If there is EAS equipment, it controls the EAS tag detection and deactivation by itself.

EAS LED On Mode
(09h)

EAS Disable Mode

Parameter # 977

In this mode EAS tags are not detected, or deactivated.

***Disable EAS**
(08h)

Sensormatic Deactivation Timeout

Parameter # 982

This option determines the period of time in which EAS tag deactivation is allowed following a good barcode decode. This option only applies to *Sensormatic Bar Code Interlock Mode on page 7-6*.

Scan **Sensormatic Deactivation Timeout** followed by two numeric barcodes from *Appendix B, Numeric Bar Codes* to set the EAS deactivation window to a time from 1 to 29 seconds. Single numerals must be preceded by a zero. For example, to set the deactivation time period to 8 seconds, scan **Sensormatic Deactivation Timeout**; scan 0 (zero); then scan 8.

When a tag is successfully deactivated, the deactivation time period is still active, and additional deactivations can occur.

Sensormatic Deactivation Timeout

Sensormatic EAS Deactivation

Parameter # 979

- Sensormatic Disable EAS Deactivation - scan to prevent any soft tags from being deactivated.
- *Sensormatic Enable EAS Deactivation - scan to allow soft tags to be deactivated.

Sensormatic Disable EAS Deactivation
(00h)

Sensormatic EAS Deactivation (continued)

***Sensormatic Enable EAS Deactivation**
(01h)

Sensormatic EAS Beeps

Scan a barcode in this section to set the audible alerts upon Sensormatic EAS tag detection, and/or deactivation. These modes have no affect if using Checkpoint equipment.

In all cases (except when disabled) there are several types of beeps per barcode with a tag.

Options:

- Sensormatic EAS Soft Tag Beeps
  - Disable Soft Tag Beep
  - *Sensormatic EAS Soft Tag Beep 1
  - Sensormatic EAS Soft Tag Beep 2
- Sensormatic EAS Hard Tag Beeps
  - Disable Hard Tag Beep
  - * Beep Indication Type 1
  - Beep Indication Type 2
- *Enable Detected Any Time Beep
- Disable Detected Any Time Beep
- *Disable Deactivation Fail Beep
- Enable Deactivation Fail Beep.

Table 7-2 *Sensormatic Beep Types*

Beep Type	Description	Page
EAS Soft Tag Beeps	The MP7X00 sounds a soft tag beep when a soft tag is deactivated.	*7-18*
EAS Hard Tag Beeps	The MP7X00 sounds a hard tag beep when the MP7X00 conclusively detects a hard tag.	*7-21*
Detected Any Time Beep	The MP7X00 sounds a beep when a soft/hard tag is in the detected field.	*7-24*
EAS Deactivation Fail Beeps	The MP7X00 generates a deactivation fail beep if a tag is not deactivated, and is considered live, and the type of tag (soft or hard) cannot be determined.	*7-26*

Sensormatic EAS Beeps (continued)

Sensormatic EAS Soft Tag Beeps

Parameter # 984

Disable Soft Tag Beep
(00h)

✓ ***NOTE*** When **Disable Soft Tag Beep** is scanned, no audible beep sounds when an EAS soft tag is deactivated.

Sensormatic EAS Beeps (continued)

Sensormatic EAS Soft Tag Beep 1

When **Sensormatic EAS Soft Tag Beep 1** is scanned, a low tone short beep sounds when an EAS soft tag is deactivated.

***Sensormatic EAS Soft Tag Beep 1**
(01h)

Sensormatic EAS Beeps (continued)

Sensormatic EAS Soft Tag Beep 2

When **Sensormatic EAS Soft Tag Beep 2** is scanned, a low tone medium duration beep sounds when an EAS soft tag is deactivated.

Sensormatic Soft Tag Beep 2
(02h)

Sensormatic EAS Beeps (continued)

Sensormatic EAS Hard Tag Beeps

Parameter # 985

Disable Hard Tag Beep
(00h)

Sensormatic EAS Beeps (continued)

Scan **Beep Indication Type 1** for a high tone short beep.

***Beep Indication Type 1**
(01h)

Sensormatic EAS Beeps (continued)

Scan **Beep Indication Type 2** for a high tone medium duration beep.

Beep Indication Type 2
(02h)

Sensormatic EAS Beeps (continued)

Sensormatic EAS Tag Detected Any Time Beep

Parameter # 980

***Enable Detected Any Time Beep**
(01h)

Sensormatic EAS Beeps (continued)

Disable Detected Any Time Beep
(00h)

Sensormatic EAS Beeps (continued)

Sensormatic EAS Deactivation Fail Beep

Parameter # 1213

***Disable Deactivation Fail Beep**
(00h)

Sensormatic EAS Beeps (continued)

Enable Deactivation Fail Beep (01h)

Sensormatic Request Messages

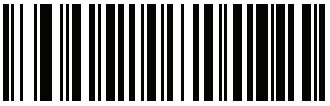
There are three EAS message types (communication, high voltage, and enable scan time) that can be selected by scanning the EAS message parameters that follow.

- Request Communication/Connection Message:
  Enabling this feature allows communication with the control box.
- Request Voltage Message:
  Enabling this feature sends messages about dangerous voltage levels.
- Request Scan Time Message:
  This message is only available in Auto Interlock Mode. The messages sent check to validate scan time is synchronized between the MP7X00 and the control box.

When any of these message types are enabled, messages are sent between the MP7X00 and the control box periodically (approximately every 2 seconds). Error messages display on the 7-segment display. Refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx,* for error messages.

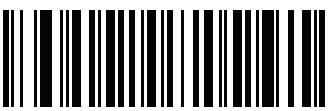
Sensormatic Request Communication/Connection Message

Parameter # 978



***Enable Communication/Connection Message**
(01h)

Sensormatic Request Communication/Connection Message (continued)



Disable Communication/Connection Message (00h)

Sensormatic Request Voltage Message

Parameter # 1130

***Enable Voltage Message**
(01h)

Sensormatic Request Voltage Message (continued)

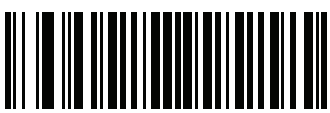
Disable Voltage Message (00h)

Sensormatic Request Scan Time Message

Parameter # 1136

***Enable Scan Time Message**
(01h)

Sensormatic Request Scan Time Message (continued)



Disable Scan Time Message
(00h)

Checkpoint Interlock Polarity

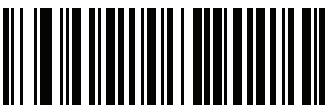
Parameter # 983

EAS Checkpoint Interlock Polarity determines the interlock pulse polarity required to deactivate a tag (the polarity must match the setting in the EAS control box).

- *Active Low - Tag deactivation is initiated by an active low pulse.
- Active High - Tag deactivation is initiated by an active high pulse.

***Active Low**
(00h)

Checkpoint Interlock Polarity (continued)



Active High
(01h)

Deactivation Override Button

Parameter # 981

The **EAS** button on the MP7X00 can be pressed to deactivate soft tags on items without decoding the barcode on the item.

Options:

- Disable EAS Deactivation Override Button - scan to disable the feature; pressing the **EAS** button has no effect.
- *Enable EAS Deactivation Override Button - scan to activate the **EAS** button.

When **Enable EAS Deactivation Override Button** is scanned, the operator can press the **EAS** button on the MP7X00 to override the EAS settings. After pressing the **EAS** button, the operator has the next 3 seconds to present a soft tag for deactivation. During this override period barcodes are not decoded. The MP7X00 exits the override mode, and returns to normal operation after either a tag deactivation, or the 3 second timeout.

Enabling this override can be useful in the following situations:

- When using Interlock mode, and a barcode cannot be scanned, the operator must physically enter the barcode data. In this case, after the operator enters the barcode data and presses the **EAS** button, s/he has the next 3 seconds to present a soft tag to deactivate.
- When a barcode is scanned but the tag was not deactivated. In this case, the operator cannot pass the item through the deactivation area a second time to deactivate the tag because the barcode would decode a second time (charging the item twice). Instead, the operator presses the **EAS** button, and for the next 3 seconds s/he can present a soft tag which will be deactivated without re-reading the barcode.

***Enable Deactivation Override Button**
(01h)

Deactivation Override Button (continued)

Disable Deactivation Override Button
(00h)

CHAPTER 8 AUXILIARY SCANNER BAR CODES

Introduction

The parameter barcodes in this chapter, and the barcode defaults in *Table 8-1*, are solely for the MP7X00. These barcodes configure the MP7X00 for connection to an auxiliary scanner. The auxiliary scanner requires its own configuration, and should be programmed with matching settings found in the auxiliary scanner's Product Reference Guide.

In addition to these settings the auxiliary scanner must be independently configured as a stand alone scanner, as though it were connected directly to a host. An auxiliary scanner connected to an MP7X00 does not assume the MP7X00 configuration.

✓ ***NOTE*** For additional information about auxiliary port configuration, see *Chapter 5, User Preferences & Miscellaneous Options*: *RS-232 Device Port Configuration* and the settings for Aux1/Aux2 Bauds, Stop Bits, Data Bits, and Parity.

For detailed technical information about the MP7X00 including installation, setting up interfaces, calibrating the scale, and operation refer to the *MP7000 Scanner Scale Integrator Guide, p/n 72E-172632-xx*.

✓ ***NOTE*** Auxiliary RS-232 scanners should only be attached/detached when the MP7X00 is powered off.

Table 8-1 *MP7X00 Auxiliary Scanner Connection Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Auxiliary Scanner Decode with Unknown Type	1124	F8h 04h 64h	Send Unknown as Code 39	*8-3*
Host Protocol	N/A	N/A	Zebra Scanner Auto Switch	*8-7*
Baud Rate[3]	N/A	N/A	9600	*8-10*
Data Bits [3]	N/A	N/A	8 Data Bits	*8-17*
Stop Bits[3]	N/A	N/A	One Stop	*8-19*
Parity[3]	N/A	N/A	No Parity	*8-21*
Host RTS State	N/A	N/A	Low RTS	*8-24*
Aux1 Baud[4]	1328	F8h 05h 30h	15/Inherit[6]	*8-26*
Aux1 Data Bits[4]	1331	F8h 05h 33h	3/Inherit[6]	*8-33*
Aux1 Stop Bits[4]	1329	F8h 05h 31h	2/Inherit[6]	*8-36*
Aux1 Parity[4]	1330	F8h 05h 32h	6/Inherit[6]	*8-39*
Aux2 Baud Rate[5]	1332	F8h 05h 34h	15/Inherit[6]	*8-45*
Aux2 Data Bits[5]	1335	F8h 05h 37h	3/Inherit[6]	*8-52*
Aux2 Stop Bits[5]	1333	F8h 05h 35h	2/Inherit[6]	*8-55*
Aux2 Parity[5]	1334	F8h 05h 36h	6/Inherit[6]	*8-58*
Beep On Aux Decode	1695	F8h 06h 9Fh	Disable	*8-64*

1 Parameter number decimal values are used for programming via RSM commands.
2 SSI number hex values are used for programming via SSI commands.
3 Applies to an attached scanner regardless of whether or not it is connected to the auxiliary 1 port or the auxiliary 2 port.

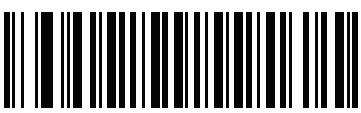
RS-232 Device Port Configuration Parameter Notes (see *RS-232 Device Port Configuration on page 5-43*):
4 Setting applies specifically to the Aux1 port.
5 Setting applies specifically to the Aux2 port.
6 Inherit means the default is based on the device assigned to the auxiliary port (see *Table 5-2 on page 5-43*).

Auxiliary Scanner Parameters

Auxiliary Scanner Decode with Unknown Type

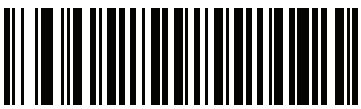
Parameter #1124
SSI # F8h 04h 64h

If an auxiliary scanner is connected via SSI over RS-232 for Zebra scanners, HID Keyboard for non-Zebra scanners, or standard RS-232, and the Send Raw Decode Data option is enabled, the MP7X00 transmits decode data with the code type set by this parameter. The default is value 1 (**Send Unknown as Code 39**).



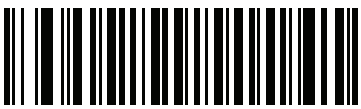
***Send Unknown as Code 39**
(01h)

Auxiliary Scanner Decode with Unknown Type (continued)



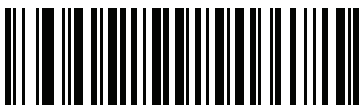
Send Unknown as Code 128 (03h)

Auxiliary Scanner Decode with Unknown Type (continued)



Send Unknown as PDF417
(11h)

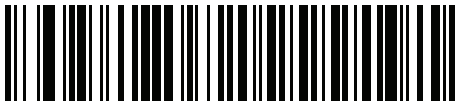
Auxiliary Scanner Decode with Unknown Type (continued)



Send Unknown as Data Matrix (1Bh)

Host Type

The MP7X00 only supports standard RS-232, Wincor-Nixdorf B for non-Zebra scanners, and additionally SSI over RS-232 for Zebra scanners. Scan one of the barcodes that follow to select RS-232 as the host interface for the Zebra auxiliary scanner.



Standard RS-232

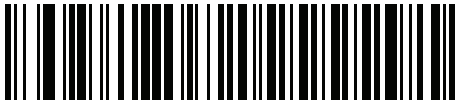
Host Type (continued)

Wincor-Nixdorf RS-232 Mode B

Host Type (continued)

Zebra Scanner Auto Switch Mode

This mode only applies to Zebra RS-232 scanners. In this mode the MP7X00 decides which protocol a scanner uses based on the primary host. For example, if the MP7X00 is using SSI over CDC it automatically switches the auxiliary serial scanner to SSI over RS-232. If the user selects Wincor-Nixdorf B, the auxiliary RS-232 port only uses the Wincor-Nixdorf B protocol, and that does not change unless another auxiliary RS-232 protocol setting is scanned.



***Zebra Scanner Auto Switch**

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the MP7X00 baud rate to match the baud rate setting of the auxiliary scanner. Otherwise, data may not reach the host device or may reach it in distorted form.

NOTE The MP7X00 does not support baud rates below 9600.

***Baud Rate 9600**

Baud Rate (continued)

Baud Rate 19200

Baud Rate (continued)

Baud Rate 38400

Baud Rate (continued)

Baud Rate 115200

Baud Rate (continued)

Baud Rate 230400

Baud Rate (continued)

Baud Rate 460800

Baud Rate (continued)

Baud Rate 921600

Data Bits

This parameter allows the MP7X00 to interface with auxiliary scanners requiring a 7-bit or 8-bit ASCII protocol.

7 Data Bits

Data Bits (continued)

*8 Data Bits

Stop Bits

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. Select the number of stop bits (one or two) based on the number the receiving terminal is programmed to accommodate. Set the number of stop bits to match auxiliary scanner requirements.

Two Stops

Stop Bits (continued)

*One Stop

Parity

A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

- Select **Odd Parity** and the parity bit has a value 0 or 1, based on data, to ensure that an odd number of 1 bits is contained in the coded character.
- Select **Even Parity** and the parity bit has a value 0 or 1, based on data, to ensure that an even number of 1 bits is contained in the coded character.
- If no parity is required, select **No Parity**.

Even Parity

Parity (continued)

Odd Parity

Parity (continued)

*No Parity

Host RTS State

This parameter sets the idle state of the auxiliary serial host RTS line. Scan a barcode below to select a **Low RTS**, or **High RTS** line state.

High RTS

Host RTS State (continued)

***Low RTS**

Aux1 Baud Rate

Parameter # 1328

SSI # F8h 05h 30h

Set this to match the device connected to the auxiliary 1 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *15/0x0Fh = Inherit
- 4/0x04 = Baud Rate 2400
- 5/0x05 = Baud Rate 4800
- 6/0x06 = Baud Rate 9600
- 7/x07 = Baud Rate 19200
- 8/0x08 = Baud Rate 38400
- 11/0x0B = Baud Rate 115200.

***Aux1 Baud Rate Inherit**
(0x0Fh)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 2400
(0x04h)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 4800
(0x05h)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 9600
(0x06h)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 19200
(0x07h)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 38400
(0x08h)

Aux1 Baud Rate (continued)

Aux1 Baud Rate 115200
(0x0Bh)

Aux1 Data Bits

Parameter # 1331

SSI # F8h 05h 33h

Set this to match the device connected to the auxiliary 1 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *3/0x03 = Inherit
- 0/0x00 = 7 Data Bits
- 1/0x01 = 8 Data Bits

***Aux1 Data Bits Inherit (0x03h)**

Aux1 Data Bits (continued)

Aux1 Data Bits 7
(0x00h)

Aux1 Data Bits (continued)

Aux1 Data Bits 8
(0x01h)

Aux1 Stop Bits

Parameter # 1329

SSI # F8h 05h 31h

Set this to match the device connected to the auxiliary 1 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *2/0x02 = Inherit
- 0/0x00 = 1 Stop Bit
- 1/0x01 = 2 Stop Bits

***Aux1 Stop Bits Inherit (0x02h)**

Aux1 Stop Bits (continued)

Aux1 Stop Bits 1
(0x00h)

Aux1 Stop Bits (continued)

Aux1 Stop Bits 2
(0x01h)

Aux1 Parity

Parameter # 1330

SSI # F8h 05h 32h

Set this to match the device connected to the auxiliary 1 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *6/0x06h = Inherit
- 0/0x00 = Odd
- 1/0x01 = Even
- 2/0x02 = Mark
- 3/0x03 = Space
- 4/0x04 = None

***Aux1 Parity Inherit (0x06h)**

Aux1 Parity (continued)

Aux1 Parity Odd
(0x00h)

Aux1 Parity (continued)

Aux1 Parity Even
(0x01h)

Aux1 Parity (continued)

Aux1 Parity Mark
(0x02h)

Aux1 Parity (continued)

Aux1 Parity Space
(0x03h)

Aux1 Parity (continued)

Aux1 Parity None
(0x04h)

Aux2 Baud Rate

Parameter # 1332

SSI # F8h 05h 34h

Set this to match the device connected to the auxiliary 2 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *15/0x0Fh = Inherit
- 4/0x04 = Baud Rate 2400
- 5/0x05 = Baud Rate 4800
- 6/0x06 = Baud Rate 9600
- 7/x07 = Baud Rate 19200
- 8/0x08 = Baud Rate 38400
- 11/0x0B = Baud Rate 115200

***Aux2 Baud Rate Inherit**
(0x0Fh)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 2400
(0x04h)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 4800
(0x05h)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 9600
(0x06h)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 19200
(0x07h)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 38400
(0x08h)

Aux2 Baud Rate (continued)

Aux2 Baud Rate 115200
(0x0Bh)

Aux2 Data Bits

Parameter # 1335
SSI # F8h 05h 37h

Set this to match the device connected to the auxiliary 2 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *3/0x03 = Inherit
- 0/0x00 = 7 Data Bits
- 1/0x01 = 8 Data Bits

***Aux2 Data Bits Inherit**
(0x03h)

Aux2 Data Bits (continued)

Aux2 Data Bits 7
(0x00h)

Aux2 Data Bits (continued)

Aux2 Data Bits 8
(0x01h)

Aux2 Stop Bits

Parameter # 1333
SSI # F8h 05h 35h

Set this to match the device connected to the auxiliary 2 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

- *2/0x02 = Inherit
- 0/0x00 = 1 Stop Bit
- 1/0x01 = 2 Stop Bits

***Aux2 Stop Bits Inherit**
(0x02h)

Aux2 Stop Bits (continued)

Aux2 Stop Bits 1
(0x00h)

Aux2 Stop Bits (continued)

Aux2 Stop Bits 2
(0x01h)

Aux2 Parity

Parameter # 1334

SSI # F8h 05h 36h

Set this to match the device connected to the auxiliary 2 port. The default value is based on the information in *Table 5-2 on page 5-43*, and in many cases matches the connected device.

***Aux2 Parity Inherit**
(0x06h)

Aux2 Parity (continued)

Aux2 Parity Odd
(0x00h)

Aux2 Parity (continued)

Aux2 Parity Even
(0x01h)

Aux2 Parity (continued)

Aux2 Parity Mark
(0x02h)

Aux2 Parity (continued)

Aux2 Parity Space
(0x03h)

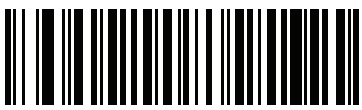
Aux2 Parity (continued)

Aux2 Parity None
(0x04h)

Beep on Aux Decode

Parameter # 1695
SSI # F8h 06h 9Fh

Scan one of the following barcodes to set whether the scanner issues a beep when it receives a decode from an attached auxiliary scanner.



Beep On Aux Decode
(1)

Beep on Aux Decode (continued)

***Do Not Beep On Aux Decode (0)**

CHAPTER 9 123SCAN AND SOFTWARE TOOLS

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:

- 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:
  - Barcode 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

- 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
- Upgrade scanner firmware:
  - Load settings to one scanner
  - Stage up to 10 scanners simultaneously with a power USB hub
- View statistics such as:
  - Asset tracking information
  - Time and usage information
  - Barcodes scanned by symbology
  - Communication diagnostics
- Generate the following reports:
  - Barcode Report - Programming barcode, included parameter settings, and supported scanner models
  - Parameter Report - Lists parameters programmed within a configuration file
  - Activity Report - Lists activities performed on a scanner(s)
  - Inventory Report - Lists scanner asset tracking information
  - Validation Report - Printout of scanned data
  - Statistics Report - Lists all statistics retrieved from the scanner

For more information go to: http://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
- Scanner
- USB cable

123Scan Information

For more information on123Scan, go to: http://www.zebra.com/123Scan.

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

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

- 123Scan configuration utility (described in this chapter)
- How-to-videos

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: http://www.zebra.com/scannersoftware.

- 123Scan configuration utility
- SDKs
  - Scanner SDK for Windows
  - Scanner SDK for Linux
  - Scanner SDK for Android
- Drivers
  - OPOS driver
  - JPOS driver
  - TWAIN driver
  - USB CDC driver
  - Virtual COM port driver
- Scanner Management Service (SMS) for Remote Management
  - Windows
  - Linux
  - IBM 4690
- How-To-Videos
- User documentation.

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's requirements. With ADF you scan one barcode per trigger pull. ADF is programmed using 123Scan.

For an ADF tutorial and a 123Scan programming example, go to the 123Scan section of our How To Videos: http://www.zebra.com/ScannerHowToVideos.

For additional information, refer to the *Advanced Data Formatting Programmer Guide.*

CHAPTER 10 SSI INTERFACE

Introduction

Customers using RS-232 OPOS require the Simple Serial Interface (SSI), which provides a communications link between Zebra scanners, and a serial host. MP7X000 includes a limited SSI implementation for special purposes. Contact the Zebra Customer Support Center online at: http://www.zebra.com/support.

All communication between the decoder and host occurs over the hardware interface lines using the SSI protocol. Refer to the *Simple Serial Interface Programmer's Guide*, p/n 72-40451-xx, for more information on SSI.

CHAPTER 11 SNAPI INTERFACE

Introduction

Customers using USB OPOS often require the USB-SNAPI Interface, which provides a communications link between Zebra scanners and a USB host. MP7X000 includes a limited SNAPI implementation for special purposes. Contact the Zebra Customer Support Center online at: www.zebra.com/support for more information.

All communication between the decoder and host occurs over the hardware interface lines using the SNAPI protocol.

CHAPTER 12 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 12-1 on page 12-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

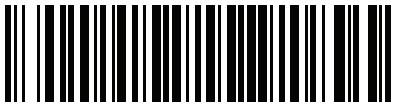
Setting Parameters

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 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 5-4*. Throughout the programming barcode menus, asterisks (*) indicate default values.



* Indicates default — ***Enable Parameter** — Feature/option

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 12-46*. The scanner issues a fast warble beep and the LED turns bright green momentarily, then returns to a darker green, signifying a successful parameter entry.

Other parameters, such as **Set Length(s) for Discrete 2 of 5,** 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 12-1 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 *Setting Parameters on page 5-1*.
- Configure the scanner using the 123Scan configuration program. See *Chapter 9, 123Scan and Software Tools*.

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

Table 12-1 *Symbology Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Enable/Disable All Code Types				*12-7*
1D Symbologies				
UPC/EAN/JAN				
UPC-A	1	01h	Enable	*12-9*
UPC-E	2	02h	Enable	*12-11*
UPC-E1	12	0Ch	Disable	*12-13*
EAN-8/JAN 8	4	04h	Enable	*12-15*
EAN-13/JAN 13	3	03h	Enable	*12-17*
Bookland EAN	83	53h	Disable	*12-19*
Bookland ISBN Format	576	F1h 40h	ISBN-10	*12-21*
ISSN EAN	617	F1h 69h	Disable	*12-23*

[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 12-1 *Symbology Parameter Defaults (Continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	16	10h	Ignore	*12-25*
User Programmable Supplementals Supplemental 1: Supplemental 2:	 579 580	 F1h 43h F1h 44h	0	*12-39*
UPC/EAN Redundancy	1225	N/A	1	*12-41*
UPC/EAN/JAN Supplemental Redundancy	80	50h	10	*12-42*
UPC/EAN/JAN Supplemental AIM ID Format	672	F1h A0h	Combined	*12-43*
Transmit UPC-A Check Digit	40	28h	Enable	*12-46*
Transmit UPC-E Check Digit	41	29h	Enable	*12-48*
Transmit UPC-E1 Check Digit	42	2Ah	Enable	*12-50*
UPC-A Preamble	34	22h	System Character	*12-52*
UPC-E Preamble	35	23h	System Character	*12-55*
UPC-E1 Preamble	36	24h	System Character	*12-58*
Convert UPC-E to A	37	25h	Disable	*12-61*
Convert UPC-E1 to A	38	26h	Disable	*12-63*
EAN/JAN Zero Extend	39	27h	Disable	*12-65*
UPC Reduced Quiet Zone	1289	F8h 05h 09h	Disable	*12-67*
UPC/EAN Random Weight Check Digit	53	35h	Disable	*12-69*
Digimarc Digital Watermarks	1687	F8h 06h 97h	Disable	*12-71*
UPC/EAN Block Life Span	1291	F8h 05h 08h	0	*12-73*
Code 128				
Code 128	8	08h	Disable	*12-74*
Set Length(s) for Code 128	209, 210	D1h, D2h	Any Length	*12-76*
GS1-128 (formerly UCC/EAN-128)	14	0Eh	Disable	*12-81*
Code 128 <FNC4>	1254	F8h 04h E6h	Ignore	*12-83*
Code 128 Stitching	72	48h	Disable	*12-85*
Code 128 Stitching Security Level	1205	F8h 04h B5h	Level 0	*12-87*
Code 128 Security Level	751	F1h EFh	Security Level 1	*12-91*

[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 12-1 *Symbology Parameter Defaults (Continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Code 128 Reduced Quiet Zone	1208	F8h 04h B8h	Disable	*12-95*
Code 39				
Code 39	0	00h	Disable	*12-97*
Trioptic Code 39	13	0Dh	Disable	*12-99*
Convert Code 39 to Code 32 (Italian Pharmacy Code)	86	56h	Disable	*12-101*
Code 32 Prefix	231	E7h	Disable	*12-103*
Set Length(s) for Code 39	18, 19	12h, 13h	Length Within Range (2-55)	*12-105*
Code 39 Check Digit Verification	48	30h	Disable	*12-109*
Transmit Code 39 Check Digit	43	2Bh	Disable	*12-111*
Code 39 Full ASCII Conversion	17	11h	Disable	*12-113*
Code 39 Security Level	750	F1h EEh	Security Level 1	*12-115*
Code 39 Stitching	70	46h	Disable	*12-119*
Code 39 Stitching Security Level	1206	F8h 04h B6h	Level 2	*12-121*
Code 39 Reduced Quiet Zone	1209	F8h 04h B9h	Disable	*12-125*
Code 93				
Code 93	9	09h	Disable	*12-127*
Set Length(s) for Code 93	26, 27	1Ah, 1Bh	Length Within Range (4-55)	*12-129*
Code 93 Stitching	1224	F8h 04h C8h	Disable	*12-134*
Code 93 Reduce Quiet Zone	1223	F8h 04h C7h	Disable	*12-136*
Interleaved 2 of 5 (ITF)				
Interleaved 2 of 5 (ITF)	6	06h	Disable	*12-138*
Set Lengths for Interleaved 2 of 5	22, 23	16h, 17h	1 Discrete Length Length (14)	*12-140*
Interleaved 2 of 5 Check Digit Verification	49	31h	Disable	*12-145*
Transmit Interleaved 2 of 5 Check Digit	44	2Ch	Disable	*12-148*
Convert Interleaved 2 of 5 to EAN 13	82	52h	Disable	*12-150*
Interleaved 2 of 5 Security Level	1121	F8h 04h 61h	Security Level 1	*12-152*

[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 12-1 *Symbology Parameter Defaults (Continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Interleaved 2 of 5 Stitching	1204	F8h 04h B4h	Disable	*12-156*
Interleaved 2 of 5 Reduced Quiet Zone	1210	F8h 04h BAh	Disable	*12-158*
Discrete 2 of 5 (DTF)				
Discrete 2 of 5	5	05h	Disable	*12-160*
Set Length(s) for Discrete 2 of 5	20, 21	14h 15h	One Discrete Length (12)	*12-162*
Codabar (NW - 7)				
Codabar	7	07h	Disable	*12-167*
Set Lengths for Codabar	24, 25	18h, 19h	Length Within Range (5-55)	*12-169*
CLSI Editing	54	36h	Disable	*12-173*
NOTIS Editing	55	37h	Disable	*12-175*
Codabar Upper or Lower Case Start/ Stop Characters Detection	855	F2h 57h	Lower Case	*12-177*
MSI				
MSI	11	0Bh	Disable	*12-179*
Set Length(s) for MSI	30, 31	1Eh, 1Fh	Length Within Range (4-55)	*12-181*
MSI Check Digits	50	32h	One	*12-185*
Transmit MSI Check Digit	46	2Eh	Disable	*12-187*
MSI Check Digit Algorithm	51	33h	Mod 10/Mod 10	*12-189*
MSI Reduced Quiet Zone	1392	F8h 05h 70h	Disable	*12-191*
Chinese 2 of 5				
Chinese 2 of 5	408	F0h 98h	Disable	*12-193*
Inverse 1D	586	F1h 4Ah	Regular	*12-195*
GS1 DataBar				
GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional	338	F0h 52h	Disable	*12-198*
GS1 DataBar Limited	339	F0h 53h	Disable	*12-200*

[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 12-1 *Symbology Parameter Defaults (Continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
GS1 DataBar Expanded, GS1 DataBar Expanded Stacked	340	F0h 54h	Disable	*12-202*
Convert GS1 DataBar to UPC/EAN/JAN	397	F0h 8Dh	Disable	*12-204*
GS1 DataBar Security Level	1706	F8h 06h AAh	Security Level 1	*12-206*
GS1 DataBar Limited Margin Check	728	F1h D8h	Level 3	*12-210*
Symbology-Specific Security Features				
Redundancy Level	78	4Eh	1	*12-214*
Security Level	77	4Dh	Security Level 1	*12-219*
1D Quiet Zone Level	1288	F8h 05h 08h	Level 1	*12-223*
Intercharacter Gap Size	381	F0h 7Dh	Normal	*12-227*
2D Symbologies				
PDF417	15	0Fh	Disable	*12-229*
MicroPDF417	227	E3h	Disable	*12-231*
Code 128 Emulation	123	7Bh	Disable	*12-233*
Data Matrix	292	F0h 24h	Disable	*12-235*
GS1 Data Matrix	1336	F8h 05h 38h	Disable	*12-237*
Data Matrix Inverse	588	F1h 4Ch	Regular Only	*12-239*
QR Code	293	F0h 25h	Disable	*12-242*
GS1 QR	1343	F8h 05h 3Fh	Disable	*12-244*
MicroQR	573	F1h 3Dh	Disable	*12-246*
Aztec	574	F1h 3Eh	Disable	*12-248*
Aztec Inverse	589	F1h 4Dh	Regular Only	*12-250*
Han Xin	1167	F8h 04h 8Fh	Disable	*12-253*
Han Xin Inverse	1168	F8h 04h 90h	Regular	*12-255*
Macro PDF				
Flush Macro PDF Buffer	N/A	N/A	N/A	*12-259*
Abort Macro PDF Entry	N/A	N/A	N/A	*12-260*

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

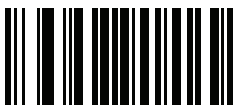
Enable/Disable All Code Types

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.

Disable All Code Types

Enable/Disable All Code Types (continued)



Enable All Code Types

UPC/EAN/JAN

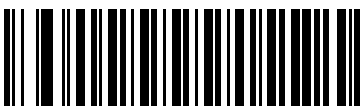
UPC-A

Parameter # 1
SSI # 01h

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

***Enable UPC-A**
(1)

UPC-A (continued)



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)

UPC-E (continued)

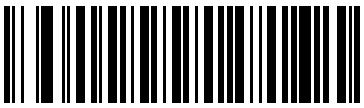
Disable UPC-E
(0)

UPC-E1

Parameter # 12
SSI # 0Ch

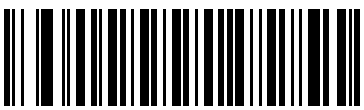
Scan one of the following barcodes to enable or disable UPC-E1.

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



Enable UPC-E1
(1)

UPC-E1 (continued)



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

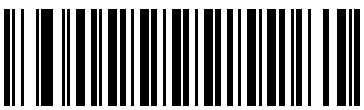
EAN-8/JAN-8

Parameter # 4
SSI # 04h

Scan one of the following barcodes to enable or disable EAN-8/JAN-8.

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

EAN-8/JAN-8 (continued)



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)

EAN-13/JAN-13 (continued)

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)

Bookland EAN (continued)

***Disable Bookland EAN**
(0)

✓ ***NOTE*** If you enable Bookland EAN, select a *Bookland ISBN Format*. Also set *Decode UPC/EAN/JAN Supplementals on page 12-25* 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 12-19*, select one of the following formats for Bookland data:

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

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

Bookland ISBN Format (continued)

Bookland ISBN-13
(1)

NOTE For Bookland EAN to function properly, first enable Bookland EAN using *Bookland EAN on page 12-19*, and then set *Decode UPC/EAN/JAN Supplementals on page 12-25* 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)

ISSN EAN (continued)

***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 12-42* 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 12-42* 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 12-19* to enable Bookland EAN, and select a format using *Bookland ISBN Format on page 12-21*.

- **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 12-39*.
- **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 12-39***.**
- **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 12-39*.
- **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 12-39*.

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

Decode UPC/EAN/JAN Supplementals (continued)

Decode UPC/EAN/JAN With Supplementals Only (1)

Decode UPC/EAN/JAN Supplementals (continued)

***Ignore UPC/EAN/JAN Supplementals**
(0)

Decode UPC/EAN/JAN Supplementals (continued)

Autodiscriminate UPC/EAN/JAN with Supplementals (2)

Decode UPC/EAN/JAN Supplementals (continued)

Enable 378/379 Supplemental Mode (4)

Decode UPC/EAN/JAN Supplementals (continued)

Enable 978/979 Supplemental Mode (5)

Decode UPC/EAN/JAN Supplementals (continued)

Enable 977 Supplemental Mode
(7)

Decode UPC/EAN/JAN Supplementals (continued)

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

Decode UPC/EAN/JAN Supplementals (continued)

Enable 491 Supplemental Mode (8)

Decode UPC/EAN/JAN Supplementals (continued)

Enable Smart Supplemental Mode (3)

Decode UPC/EAN/JAN Supplementals (continued)

Supplemental User Programmable Type 1 (9)

Decode UPC/EAN/JAN Supplementals (continued)

Supplemental User Programmable Type 1 and 2 (10)

Decode UPC/EAN/JAN Supplementals (continued)

Smart Supplemental Plus User Programmable 1 (11)

Decode UPC/EAN/JAN Supplementals (continued)

Smart Supplemental Plus User Programmable 1 and 2 (12)

User Programmable Supplementals

Supplemental 1: Parameter # 579
SSI # F1h 43h
Supplemental 2: Parameter # 580
SSI # F1h 44h

If you selected a Supplemental User Programmable option from *Decode UPC/EAN/JAN Supplementals on page 12-25*, scan **User Programmable Supplemental 1**, and then scan three barcodes from *Appendix B, 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 B, Numeric Bar Codes*. The default is 0 (zero).

User Programmable Supplemental 1

User Programmable Supplementals (continued)

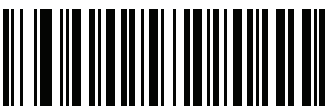
User Programmable Supplemental 2

UPC/EAN Redundancy

Parameter # 1225

This option adjusts the number of additional times to decode a UPC/EAN symbol before decode data is transmitted. The range is from zero to five times. The default is 1.

Scan **UPC/EAN Redundancy** below to set a decode redundancy value. Next, scan one numeric barcode in *Appendix B, Numeric Bar Codes*. Enter a leading zero for single digit numbers. To correct an error, or change a selection, scan *Cancel on page B-11*.



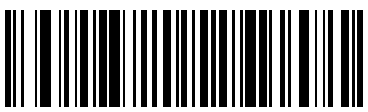
UPC/EAN Redundancy
(Range 0-5)

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 2-25. 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 B, Numeric Bar Codes*. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan *Cancel on page B-11*.



UPC/EAN/JAN Supplemental Redundancy

UPC/EAN/JAN Supplemental AIM ID Format

Parameter # 672
SSI # F1h A0h

If *Transmit Code ID Character on page 5-71* 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 or 4><data>]E<1 or 2>[supplemental data]

- **Combined** – Transmit UPC/EAN/JAN with supplementals with one AIM ID and one transmission, i.e.:

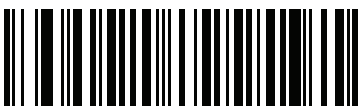
  ]E3<data+supplemental data>

- **Separate Transmissions** - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs and separate transmissions, i.e.:

  ]E<0 or 4><data>
  ]E<1 or 2>[supplemental data]

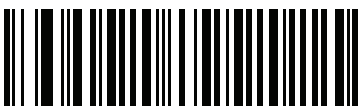
Separate
(0)

UPC/EAN/JAN Supplemental AIM ID Format (continued)



***Combined**
(1)

UPC/EAN/JAN Supplemental AIM ID Format (continued)



Separate Transmissions (2)

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.

***Transmit UPC-A Check Digit**
(1)

Transmit UPC-A Check Digit (continued)

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)

Transmit UPC-E Check Digit (continued)

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)

Transmit UPC-E1 Check Digit (continued)

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)

UPC-A Preamble (continued)

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

UPC-A Preamble (continued)

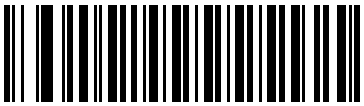
System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)

UPC-E Preamble

Parameter # 35
SSI # 23h

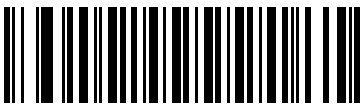
Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E preamble to match the host system:

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



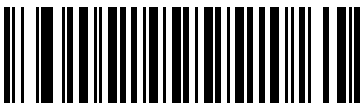
No Preamble (<DATA>)
(0)

UPC-E Preamble (continued)



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

UPC-E Preamble (continued)



System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)

UPC-E1 Preamble

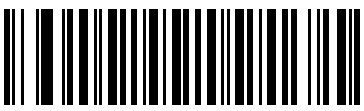
Parameter # 36
SSI # 24h

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.

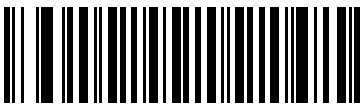
No Preamble (<DATA>)
(0)

UPC-E1 Preamble (continued)



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

UPC-E1 Preamble (continued)



System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)
(2)

Convert UPC-E to UPC-A

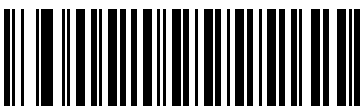
Parameter # 37
SSI # 25h

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)

Convert UPC-E to UPC-A (continued)



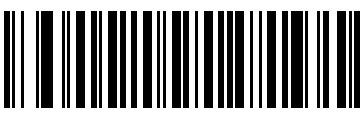
***Do Not Convert UPC-E to UPC-A (Disable)**
(0)

Convert UPC-E1 to UPC-A

Parameter # 38
SSI # 26h

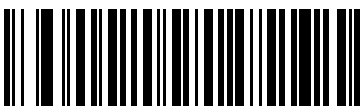
Scan **Convert UPC-E1 to UPC-A (Enable)** to convert UPC-E1 decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).

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)

Convert UPC-E1 to UPC-A (continued)



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

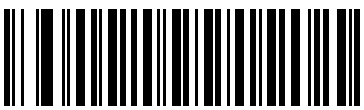
EAN/JAN Zero Extend

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)

EAN/JAN Zero Extend (continued)



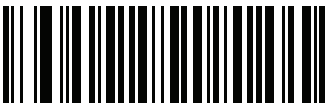
***Disable EAN/JAN Zero Extend**
(0)

UPC Reduced Quiet Zone

Parameter # 1289

SSI # F8h 05h 09h

Scan one of the following barcodes to enable or disable decoding UPC barcodes with reduced quiet zones (the margins on either side of the barcode). If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.



Enable UPC Reduced Quiet Zone
(1)

UPC Reduced Quiet Zone (continued)

***Disable UPC Reduced Quiet Zone**
(0)

UPC/EAN Random Weight Check Digit

Parameter # 53

SSI # 35h

Enable or disable *Price Check Digit Calculation* for a *Variable Weight Item*. A *Variable Weight* barcode is a UPCA/EAN13 barcode starting with digit 2.

***Disable UPC/EAN Random Weight Check Digit**
(0x00h)

UPC/EAN Random Weight Check Digit (continued)

Enable UPC/EAN Random Weight Check Digit (0x01h)

Digimarc Digital Watermarks

Parameter # 1687
SSI # F8h 06h 97h

To enable or disable the Digimarc Digital Watermarks code scan the appropriate barcode below.

Enable Digimarc Digital Watermarks/DW (1)

Digimarc Digital Watermarks (continued)

***Disable Digimarc Digital Watermarks/DW (0)**

UPC/EAN Block Life Span

Parameter # 1291

SSI # F8h 05h 08h

Each UPC/EAN block is tagged with time at which it was decoded. This parameter determines the maximum time difference (in msec) of two UPC/EAN blocks that form a barcode. If the time difference is larger than this threshold, the two blocks are not used to construct a barcode. This threshold is the value of this parameter multiplied by 10 ms. Range: 0-50; Byte parameter. The default is 0.

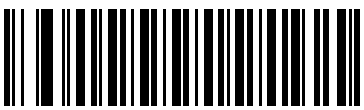
To set a UPC/EAN Block Life Span value, scan the following barcode, and then scan two barcodes from *Appendix B, Numeric Bar Codes*. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan *Cancel on page B-11*.

Set UPC/EAN Block Life Span

Code 128

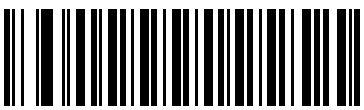
Parameter # 8
SSI # 08h

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



Enable Code 128
(1)

Code 128 (continued)



*Disable Code 128
(0)

Set Lengths for Code 128

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

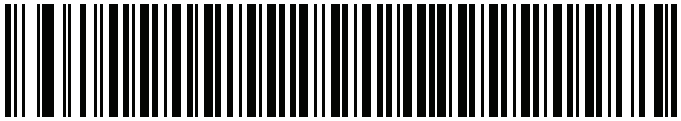
The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 128 to any length, one or two discrete lengths, or lengths within a specific range. Length ranges: L1 is 0-55; L2 is 0-55. The default is **Any Length**.

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

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

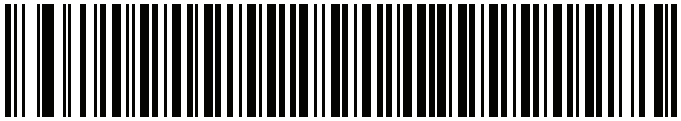
- **One Discrete Length** - Decode only Code 128 symbols containing a selected length. Select the length using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode only Code 128 symbols with 14 characters, scan **Code 128 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-11*.
- **Two Discrete Lengths** - Decode only Code 128 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Length Within Range** - Decode Code 128 symbols with a specific length range. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Any Length** - Decode Code 128 symbols containing any number of characters within the scanner's capability.

Set Lengths for Code 128 (continued)



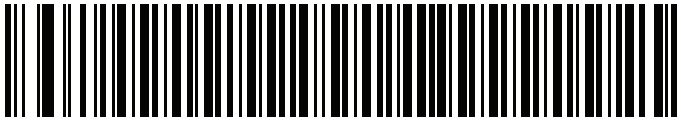
Code 128 - One Discrete Length

Set Lengths for Code 128 (continued)



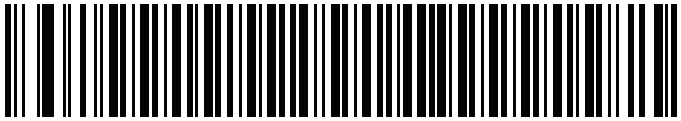
Code 128 - Two Discrete Lengths

Set Lengths for Code 128 (continued)



Code 128 - Length Within Range

Set Lengths for Code 128 (continued)



*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)

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

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

Code 128 <FNC4>

Parameter # 1254
SSI # F8h 04h E6h

This feature applies to Code 128 barcodes with an embedded <FNC4> character. Select **Ignore Code 128 <FNC4>** to strip the <FNC4> character from the decode data. The remaining characters are sent to the host unchanged. When disabled, the <FNC4> character is processed normally as per Code 128 standard.

Honor Code 128 <FNC4>
(1)

Code 128 <FNC4> (continued)

***Ignore Code 128 <FNC4>**
(0)

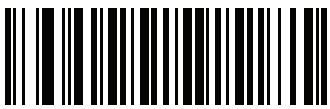
Code 128 Stitching

Parameter # 72
SSI # 72 48h

This parameter enables/disables Code 128 stitching. Enabling this parameter is helpful for decoding longer barcodes.

Enable Code 128 Stitching

Code 128 Stitching (continued)



***Disable Code 128 Stitching**

Code 128 Stitching Security Level

Parameter # 1205
SSI # F8h 04h B5h

This parameter sets the security level for Code 128 barcodes. Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security, and digital scanner aggressiveness, so choose only that level of security necessary for any given application.

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

IMPORTANT Selecting this option is an extreme measure against mis-decoding severely out of spec barcodes. Selecting this level of security significantly impairs the decoding ability of the digital scanner. If you need this level of security, try to improve the quality of the barcodes.

***Level 0**

Code 128 Stitching Security Level (continued)

Level 1

Code 128 Stitching Security Level (continued)

Level 2

Code 128 Stitching Security Level (continued)

Level 3

Code 128 Security Level

Parameter # 751

SSI # F1h EFh

Code 128 barcodes are vulnerable to misdecodes, particularly when Code 128 Lengths is set to **Any Length**. The scanner offers four levels of decode security for Code 128 barcodes. There is an inverse relationship between security and scanner aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **Code 128 Security Level 0** - The scanner operates in its most aggressive state, while providing sufficient security in decoding most in-spec barcodes.
- **Code 128 Security Level 1** - This option eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Code 128 Security Level 2** - This option applies greater barcode security requirements if **Security Level 1** fails to eliminate misdecodes.
- **Code 128 Security Level 3** - If you selected **Security Level 2**, and misdecodes still occur, select this security level to apply the highest safety requirements.

✓ ***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.

Code 128Security Level 0
(0)

Code 128 Security Level (continued)

***Code 128 Security Level 1**
(1)

Code 128 Security Level (continued)

Code 128 Security Level 2
(2)

Code 128 Security Level (continued)

Code 128 Security Level 3
(3)

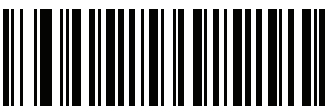
Code 128 Reduced Quiet Zone

Parameter # 1208
SSI # F8h 04h B8h

Scan one of the following barcodes to enable or disable decoding Code 128 barcodes with reduced quiet zones (the margins on either side of the barcode). If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.

Enable Code 128 Reduced Quiet Zone
(1)

Code 128 Reduced Quiet Zone (continued)



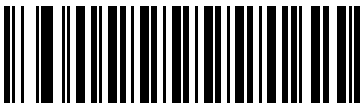
***Disable Code 128 Reduced Quiet Zone**
(0)

Code 39

Parameter # 0
SSI # 00h

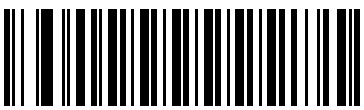
NOTE Because Code 39 is a variable length barcode without a checking character, stitching might yield a misdecode, especially when encoded content has repeat patterns or characters. It is recommended to limit the decode length range as much as possible when stitching is enabled. This is accomplished by setting lengths for Code 39 one or two discrete lengths.

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



Enable Code 39
(1)

Code 39 (continued)



***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
(01h)

Trioptic Code 39 (continued)

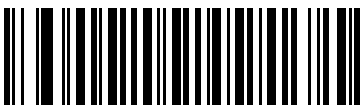
***Disable Trioptic Code 39**
(00h)

Convert Code 39 to Code 32

Parameter # 86
SSI # 56h

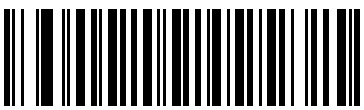
Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan one of the following barcodes to enable or disable converting Code 39 to Code 32.

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



Enable Convert Code 39 to Code 32 (1)

Convert Code 39 to Code 32 (continued)



***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.

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

Enable Code 32 Prefix
(1)

Code 32 Prefix (continued)

***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. Length ranges: L1 is 0-80; L2 is 0-80. The default is **Length Within Range** (2-55).

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 B, 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 B-11*.
- **Two Discrete Lengths** - Decode only Code 39 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Length Within Range** - Decode Code 39 symbols with a specific length range. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Any Length** - Decode Code 39 symbols containing any number of characters within the scanner's capability.

Code 39 - One Discrete Length

Set Lengths for Code 39 (continued)

Code 39 - Two Discrete Lengths

Set Lengths for Code 39 (continued)

***Code 39 - Length Within Range**

Set Lengths for Code 39 (continued)

Code 39 - Any Length

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.

Enable Code 39 Check Digit (1)

Code 39 Check Digit Verification (continued)

***Disable Code 39 Check Digit**
(0)

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)

Transmit Code 39 Check Digit (continued)

***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)

Code 39 Full ASCII Conversion (continued)

***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 D-1 on page D-1*.

Code 39 Security Level

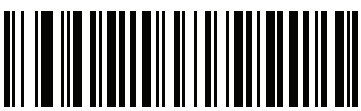
Parameter # 750

SSI # F1h EEh

The scanner offers four levels of decode security for Code 39 barcodes. There is an inverse relationship between security and scanner aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **Code 39 Security Level 0:** The scanner operates in its most aggressive state, while providing sufficient security in decoding most in-spec barcodes.
- **Code 39 Security Level 1:** This default setting eliminates most misdecodes.
- **Code 39 Security Level 2:** This option applies greater barcode security requirements if **Security Level 1** fails to eliminate misdecodes.
- **Code 39 Level 3:** If you selected **Security Level 2**, and misdecodes still occur, select this security level to apply the highest safety requirements.

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.



Code 39 Security Level 0
(0)

Code 39 Security Level (continued)

***Code 39 Security Level 1**
(1)

Code 39 Security Level (continued)

Code 39 Security Level 2
(2)

Code 39 Security Level (continued)

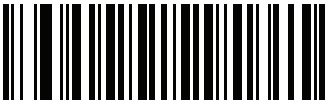
Code 39 Security Level 3
(3)

Code 39 Stitching

Parameter # 70
SSI # 46h

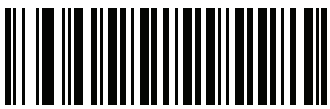
This parameter enables/disables Code 39 stitching. Enabling this parameter is helpful for decoding longer barcodes.

NOTE Because Code 39 is a variable length barcode without a checking character, stitching might yield a misdecode, especially when encoded content has repeat patterns or characters. It is suggested to limit the decode length range as much as possible when enabling stitching. This is accomplished by setting 1 or 2 discrete lengths (see *Set Lengths for Code 39 on page 12-105*).



Enable Code 39 Stitching

Code 39 Stitching (continued)



***Disable Code 39 Stitching**

Code 39 Stitching Security Level

Parameter # 1206
SSI # F8h 04h B6h

This parameter sets the security level for Code 39 barcodes. Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security, and digital scanner aggressiveness, so choose only that level of security necessary for any given application.

For fastest and most secure decoding, it is recommended to limit bar code lengths to one or two discrete values; especially valid for symbols with no checksum.

- Security Level 0 - Allows the digital scanner to operate in its most aggressive state
- Security Level 1 - Less aggressive but more secure decoding than Level 0 This setting eliminates some misdecodes.
- Security Level 2 - More secure than Level 1, but slightly less aggressive. This default setting eliminates most misdecodes.
- Security Level 3 - This setting allows secure decoding for bar codes with a physical length less than 4" at any orientation. For bar codes without check sum, limiting the length is highly recommended to minimize the possibility of a short read. If Security Level 2 does not eliminate misdecodes select this security level

IMPORTANT Selecting this option is an extreme measure against mis-decoding severely out of spec barcodes. Selecting this level of security significantly impairs the decoding ability of the digital scanner. If you need this level of security, try to improve the quality of the barcodes.

Level 0

Code 39 Stitching Security Level (continued)

Level 1

Code 39 Stitching Security Level (continued)

*Level 2

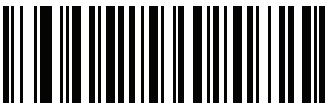
Code 39 Stitching Security Level (continued)

Level 3

Code 39 Reduced Quiet Zone

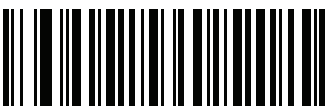
Parameter # 1209
SSI # F8h 04h B9h

Scan one of the following barcodes to enable or disable decoding Code 39 barcodes with reduced quiet zones (the margins on either side of the barcode). If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.



Enable Code 39 Reduced Quiet Zone
(1)

Code 39 Reduced Quiet Zone (continued)

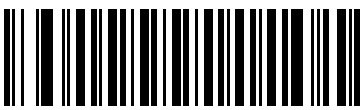


***Disable Code 39 Reduced Quiet Zone**
(0)

Code 93

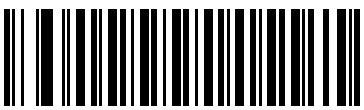
Parameter # 9
SSI # 09h

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



Enable Code 93
(1)

Code 93 (continued)



***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. Length ranges: L1 is 0-80; L2 is 0-80. The default is **Length Within Range** (4-55).

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 93 symbols containing a selected length. Select the length using the barcodes in *Appendix B, 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 B-11*.
- **Two Discrete Lengths** - Decode only Code 93 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Length Within Range** - Decode Code 93 symbols with a specific length range. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **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

Set Lengths for Code 93 (continued)

Code 93 - Two Discrete Lengths

Set Lengths for Code 93 (continued)

*Code 93 - Length Within Range

Set Lengths for Code 93 (continued)

Code 93 - Any Length

Code 93 Stitching

Parameter # 1224
SSI # F8h 04h C8h

This parameter enables Code 93 stitching. This is helpful for decoding longer barcodes.

Enable Code 93 Stitching

Code 93 Stitching (continued)

***Disable Code 93 Stitching**

Code 93 Reduced Quiet Zone

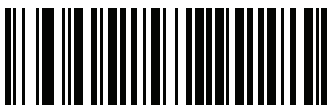
Parameter # 1223

SSI # F8h 04h C7h

Scan one of the following barcodes to enable or disable decoding Code 93 barcodes with reduced quiet zones (the margins on either side of the barcode). If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.

Enable Code 93 Reduced Quiet Zone

Code 93 Reduced Quiet Zone (continued)

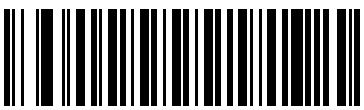


***Disable Code 93 Reduced Quiet Zone**

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)

Interleaved 2 of 5 (ITF) (continued)

***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 Interleaved 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. Length ranges: L1 is 0-55; L2 is 0-55. The default is **One Discrete 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 Interleaved 2 of 5 symbols containing a selected length. Select the length using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode only Interleaved 2 of 5 symbols with 14 characters, scan **Interleaved 2 of 5 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-11*.
- **Two Discrete Lengths** - Decode only Interleaved 2 of 5 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode only Interleaved 2 of 5 symbols containing either 2 or 14 characters, scan **Interleaved 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 B-11*.
- **Length Within Range** - Decode Interleaved 2 of 5 symbols with a specific length range. Select lengths using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode Interleaved 2 of 5 symbols containing between 4 and 12 characters, scan **Interleaved 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 B-11*.
- **Any Length** - Decode Interleaved 2 of 5 symbols containing any number of characters within the scanner's capability.

NOTE Due to the construction of the Interleaved 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 (Interleaved 2 of 5 - One Discrete Length, Two Discrete Lengths) for Interleaved 2 of 5 applications, or increase the *Interleaved 2 of 5 Security Level on page 12-152*.

Set Lengths for Interleaved 2 of 5 (continued)

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

Set Lengths for Interleaved 2 of 5 (continued)

Interleaved 2 of 5 - Two Discrete Lengths

Set Lengths for Interleaved 2 of 5 (continued)

Interleaved 2 of 5 - Length Within Range

Set Lengths for Interleaved 2 of 5 (continued)

Interleaved 2 of 5 - Any Length

Interleaved 2 of 5 Check Digit Verification

Parameter # 49
SSI # 31h

Scan one of the following barcodes to check the integrity of all Interleaved 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.

***Disable**
(0)

Interleaved 2 of 5 Check Digit Verification (continued)

USS Check Digit
(1)

Interleaved 2 of 5 Check Digit Verification (continued)

OPCC Check Digit
(2)

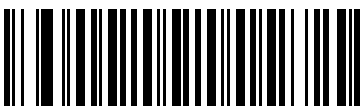
Transmit Interleaved 2 of 5 Check Digit

Parameter # 44
SSI # 2Ch

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

Transmit Interleaved 2 of 5 Check Digit (Enable) (1)

Transmit Interleaved 2 of 5 Check Digit (continued)



***Do Not Transmit Interleaved 2 of 5 Check Digit (Disable)**
(0)

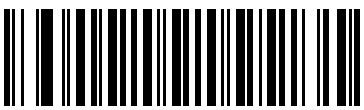
Convert Interleaved 2 of 5 to EAN-13

Parameter # 82
SSI # 52h

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

Convert Interleaved 2 of 5 to EAN-13 (Enable)
(1)

Convert Interleaved 2 of 5 to EAN-13 (continued)



***Do Not Convert Interleaved 2 of 5 to EAN-13 (Disable)**
(0)

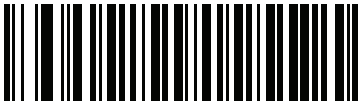
Interleaved 2 of 5 Security Level

Parameter # 1121
SSI # F8h 04h 61h

Interleaved 2 of 5 barcodes are vulnerable to misdecodes, particularly when Interleaved 2 of 5 Lengths is set to **Any Length**. The scanner offers four levels of decode security for Interleaved 2 of 5 barcodes. There is an inverse relationship between security and scanner aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

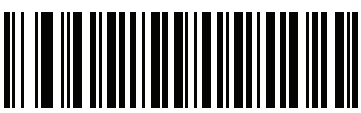
- **Interleaved 2 of 5 Security Level 0:** The scanner operates in its most aggressive state, while providing sufficient security in decoding most in-spec barcodes.
- **Interleaved 2 of 5 Security Level 1:** A barcode must be successfully read twice, and satisfy certain safety requirements before being decoded. This default setting eliminates most misdecodes.
- **Interleaved 2 of 5 Security Level 2:** This option applies greater barcode security requirements if **Security Level 1** fails to eliminate misdecodes.
- **Interleaved 2 of 5 Security Level 3:** If you selected **Security Level 2**, and misdecodes still occur, select this security level. The highest safety requirements are applied. A barcode must be successfully read three times before being decoded.

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.



Interleaved 2 of 5 Security Level 0
(0)

Interleaved 2 of 5 Security Level (continued)

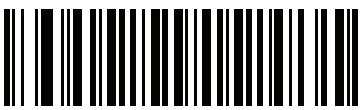


***Interleaved 2 of 5 Security Level 1**
(1)

Interleaved 2 of 5 Security Level (continued)

Interleaved 2 of 5 Security Level 2 (2)

Interleaved 2 of 5 Security Level (continued)



Interleaved 2 of 5 Security Level 3 (3)

Interleaved 2 of 5 Stitching

Parameter # 1204
SSI # F8h 04h B4h

This parameter enables Interleaved 2 of 5 stitching. This helpful for decoding longer barcodes.

Enable Interleaved 2 of 5 Stitching

Interleaved 2 of 5 Stitching (continued)

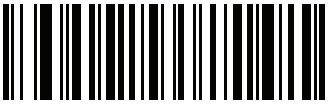
***Disable Interleaved 2 of 5 Stitching**

Interleaved 2 of 5 Reduced Quiet Zone

Parameter # 1210

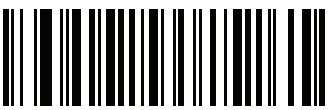
SSI # F8h 04h BAh

Scan one of the following barcodes to enable or disable decoding Interleaved 2 of 5 barcodes with reduced quiet zones (the margins on either side of the barcode). If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.



Enable Interleaved 2 of 5 Reduced Quiet Zone (1)

Interleaved 2 of 5 Reduced Quiet Zone (continued)



***Disable Interleaved 2 of 5 Reduced Quiet Zone**
(0)

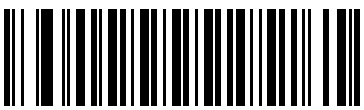
Discrete 2 of 5 (DTF)

Parameter # 5
SSI # 05h

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

Enable Discrete 2 of 5 (1)

Discrete 2 of 5 (DTF) (continued)



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

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 Discrete 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. Length ranges: L1 is 0-55; L2 is 0-55. The default is **One Discrete 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 Discrete 2 of 5 symbols containing a selected length. Select the length using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode only Discrete 2 of 5 symbols with 14 characters, scan **Discrete 2 of 5 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-11*.
- **Two Discrete Lengths** - Decode only Discrete 2 of 5 symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode only Discrete 2 of 5 symbols containing either 2 or 14 characters, scan **Discrete 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 B-11*.
- **Length Within Range** - Decode Discrete 2 of 5 symbols with a specific length range. Select lengths using the barcodes in *Appendix B, Numeric Bar Codes*. For example, to decode Discrete 2 of 5 symbols containing between 4 and 12 characters, scan **Discrete 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 B-11*.
- **Any Length** - Decode Discrete 2 of 5 symbols containing any number of characters within the scanner's capability.

NOTE Due to the construction of the Discrete 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 (Discrete 2 of 5 - One Discrete Length, Two Discrete Lengths) for Discrete 2 of 5 applications.

Set Lengths for Discrete 2 of 5 (continued)

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

Set Lengths for Discrete 2 of 5 (continued)

Discrete 2 of 5 - Two Discrete Lengths

Set Lengths for Discrete 2 of 5 (continued)

Discrete 2 of 5 - Length Within Range

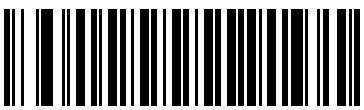
Set Lengths for Discrete 2 of 5 (continued)

Discrete 2 of 5 - Any Length

Codabar (NW - 7)

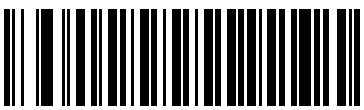
Parameter # 7
SSI # 07h

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



Enable Codabar
(1)

Codabar (NW - 7) (continued)



***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. Length ranges: L1 is 0-80; L2 is 0-80. The default is **Length Within Range** (5-55).

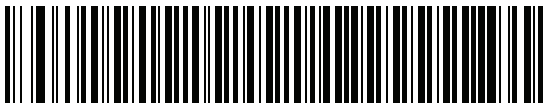
NOTE When setting lengths, enter a leading zero for single digit numbers.

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 B, 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 B-11*.
- **Two Discrete Lengths** - Decode only Codabar symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Length Within Range** - Decode Codabar symbols with a specific length range. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Any Length** - Decode Codabar symbols containing any number of characters within the scanner's capability.

Codabar - One Discrete Length

Set Lengths for Codabar (continued)



Codabar - Two Discrete Lengths

Set Lengths for Codabar (continued)

***Codabar - Length Within Range**

Set Lengths for Codabar (continued)

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)

CLSI Editing (continued)

***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)

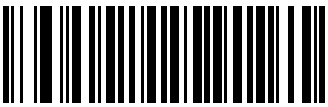
NOTIS Editing (continued)

***Disable NOTIS Editing**
(0)

Codabar Upper or Lower Case Start/Stop Characters

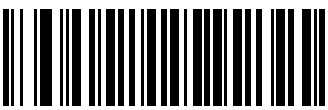
Parameter # 855
SSI # F2h 57h

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



***Lower Case**
(1)

Codabar Upper or Lower Case Start/Stop Characters (continued)

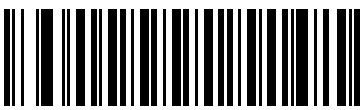


Upper Case
(0)

MSI

Parameter # 11
SSI # 0Bh

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



Enable MSI
(1)

MSI (continued)

***Disable MSI**
(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. Length ranges: L1 is 0-80; L2 is 0-80. The default is **Length Within Range** (4-55).

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 B, 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 B-11*.
- **Two Discrete Lengths** - Decode only MSI symbols containing either of two lengths. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **Length Within Range** - Decode MSI symbols with a specific length range. Select lengths using the barcodes in *Appendix B, 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 B-11*.
- **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.

MSI - One Discrete Length

Set Lengths for MSI (continued)

MSI - Two Discrete Lengths

Set Lengths for MSI (continued)

***MSI - Length Within Range**

Set Lengths for MSI (continued)

MSI - Any Length

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 12-189* to select second digit algorithms.

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

MSI Check Digits (continued)

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)

Transmit MSI Check Digit(s) (continued)

***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)

MSI Check Digit Algorithm (continued)

***MOD 10/MOD 10**
(1)

MSI Reduced Quiet Zone

Parameter # 1392

SSI # F8h 05h 70h

Scan one of the following barcodes to enable or disable decoding MSI barcodes with reduced quiet zones. If you select **Enable**, select a *1D Quiet Zone Level on page 12-223*.

***Disable MSI Reduced Quiet Zone**
(0)

MSI Reduced Quiet Zone (continued)

Enable MSI Reduced Quiet Zone (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)

Chinese 2 of 5 (continued)

***Disable Chinese 2 of 5**
(0)

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.

***Regular**
(0)

Inverse 1D (continued)

Inverse Only
(1)

Inverse 1D (continued)

Inverse Autodetect (2)

GS1 DataBar

The variants of GS1 DataBar are GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, DataBar Expanded, GS1 DataBar Expanded Stacked and DataBar Limited. 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

NOTE When GS1 DataBar Omnidirectional is enabled the variants are also enabled.

Parameter # 338
SSI # F0h 52h

Enable GS1 DataBar Omnidirectional (1)

GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional (continued)

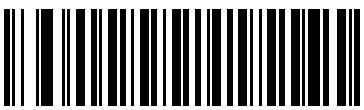
***Disable GS1 DataBar Omnidirectional**
(0)

GS1 DataBar Limited

Parameter # 339
SSI # F0h 53h

Enable GS1 DataBar Limited
(1)

GS1 DataBar Limited (continued)



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

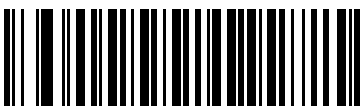
GS1 DataBar Expanded, GS1 DataBar Expanded Stacked

NOTE When GS1 DataBar Expanded is enabled GS1 DataBar Expanded Stacked is also enabled.

Parameter # 340
SSI # F0h 54h

Enable GS1 DataBar Expanded (1)

GS1 DataBar Expanded, GS1 DataBar Expanded Stacked (continued)



***Disable GS1 DataBar 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-14 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)

Convert GS1 DataBar to UPC/EAN/JAN (continued)

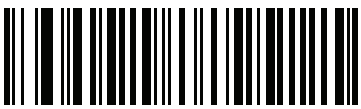
***Disable Convert GS1 DataBar to UPC/EAN/JAN**
(0)

GS1 DataBar Security Level

Parameter # 1706
SSI # F8h 06h AAh

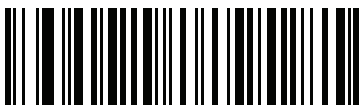
The scanner offers four levels of decode security for GS1 DataBar (GS1 DataBar Omnidirectional, GS1 DataBar Limited, GS1 DataBar Expanded) barcodes.

- **Security Level 0** - The scanner operates in its most aggressive state, while providing sufficient security decoding most in-spec barcodes.
- **Security Level 1** - This setting eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Security Level 2** - Select this option with greater barcode security requirements 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 to apply the highest safety requirements.



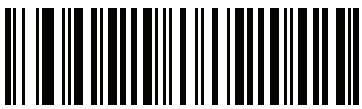
GS1 DataBar Security Level 0
(0)

GS1 DataBar Security Level (continued)



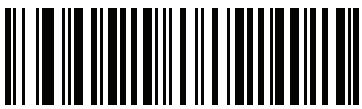
***GS1 DataBar Security Level 1**
(1)

GS1 DataBar Security Level (continued)



GS1 DataBar Security Level 2 (2)

GS1 DataBar Security Level (continued)



GS1 DataBar Security Level 3 (3)

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 (continued)

GS1 DataBar Limited Margin Check Level 2 (2)

GS1 DataBar Limited Margin Check (continued)

***GS1 DataBar Limited Margin Check Level 3 (3)**

GS1 DataBar Limited Margin Check (continued)

GS1 DataBar Limited Margin Check Level 4 (4)

Symbology-Specific Security Features

Redundancy Level

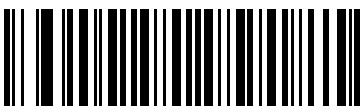
Parameter # 78
SSI # 4Eh

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)
  - Discrete 2 of 5 (8 characters or less)
  - Interleaved 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)
  - Discrete 2 of 5 (8 characters or less)
  - Interleaved 2 of 5 (8 characters or less)
- **Redundancy Level 4** - The scanner must read all code types three times before decoding.

Redundancy Level (continued)

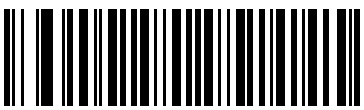


***Redundancy Level 1**
(1)

Redundancy Level (continued)

Redundancy Level 2
(2)

Redundancy Level (continued)



Redundancy Level 3
(3)

Redundancy Level (continued)

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.

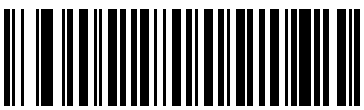
> ***NOTE*** Selecting this option is an extreme measure against mis-decoding severely out-of-spec barcodes, and significantly impairs the decoding ability of the scanner. If this level of security is required, try to improve the quality of the barcodes.

Security Level 0
(0)

Security Level (continued)

***Security Level 1**
(1)

Security Level (continued)



Security Level 2
(2)

Security Level (continued)

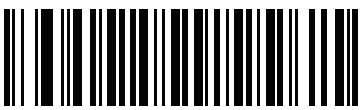
Security Level 3
(3)

1D Quiet Zone Level

Parameter # 1288
SSI # F8h 05h 08h

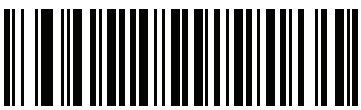
This feature sets the level of aggressiveness when decoding barcodes with a reduced quiet zone (the margin on either side of a barcode), and applies to symbologies enabled by a Reduced Quiet Zone parameter. Because higher levels increase the decoding time and risk of misdecodes, Zebra strongly recommends enabling only the symbologies which require higher quiet zone levels, and leaving Reduced Quiet Zone disabled for all other symbologies. Options are:

- **1D Quiet Zone Level 0** - The scanner performs normally in terms of quiet zone.
- **1D Quiet Zone Level 1** - The scanner performs more aggressively in terms of quiet zone.
- **1D Quiet Zone Level 2** - The scanner only requires a quiet zone at the end of barcode for decoding.
- **1D Quiet Zone Level 3** - The scanner decodes anything in terms of quiet zone or end of barcode.



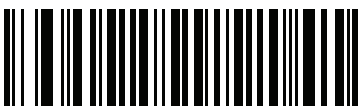
1D Quiet Zone Level 0
(0)

1D Quiet Zone Level (continued)



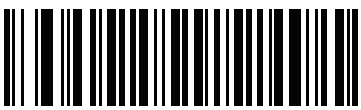
***1D Quiet Zone Level 1**
(1)

1D Quiet Zone Level (continued)



1D Quiet Zone Level 2
(2)

1D Quiet Zone Level (continued)



1D Quiet Zone Level 3
(3)

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)

Intercharacter Gap Size (continued)

Large Intercharacter Gaps (10)

2D Symbologies

PDF417

Parameter # 15
SSI # 0Fh

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

Enable PDF417
(1)

PDF417 (continued)

***Disable PDF417**
(0)

MicroPDF417

Parameter # 227
SSI # E3h

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

Enable MicroPDF417
(01h)

Enable/Disable MicroPDF417 (continued)

***Disable MicroPDF417**
(00h)

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 Characters on page E-2* for this parameter to work.

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

-]C1 if the first codeword is 903-905
-]C2 if the first codeword is 908 or 909
-]C0 if the first codeword is 910 or 911

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

-]L3 if the first codeword is 903-905
-]L4 if the first codeword is 908 or 909
-]L5 if the first codeword is 910 or 911

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

Enable Code 128 Emulation (1)

Code 128 Emulation (continued)

***Disable Code 128 Emulation**
(0)

Data Matrix

Parameter # 292
SSI # F0h, 24h

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

Enable Data Matrix
(1)

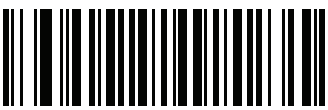
Data Matrix (continued)

***Disable Data Matrix**
(0)

GS1 Data Matrix

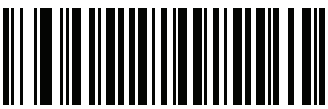
Parameter # 1336
SSI # F8h 05h 38h

Scan one of the following barcodes to enable or disable GS1 Data Matrix.



Enable GS1 Data Matrix
(1)

GS1 Data Matrix (continued)



***Disable GS1 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)

Data Matrix Inverse (continued)

Inverse Only
(1)

Data Matrix Inverse (continued)

Inverse Autodetect (2)

QR Code

Parameter # 293
SSI # F0h, 25h

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

Enable QR Code
(1)

QR Code (continued)

*Disable QR Code
(0)

GS1 QR

Parameter # 1343
SSI # F8h 05h 3Fh

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

Enable GS1 QR
(1)

GS1 QR (continued)

***Disable GS1 QR**
(0)

MicroQR

Parameter # 573
SSI # F1h 3Dh

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

Enable MicroQR
(1)

MicroQR (continued)

***Disable MicroQR**
(0)

Aztec

Parameter # 574
SSI # F1h 3Eh

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

Enable Aztec
(1)

Aztec (continued)

*Disable Aztec
(0)

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.

***Regular Only**
(0)

Aztec Inverse (continued)

Inverse Only
(1)

Aztec Inverse (continued)

Inverse Autodetect
(2)

Han Xin

Parameter # 1167
SSI # F8h 04h 8Fh

Scan one of the following barcodes to enable or disable Han Xin.

Enable Han Xin
(1)

Han Xin (continued)

***Disable Han Xin**
(0)

Han Xin Inverse

Parameter # 1168
SSI # F8h 04h 90h

Scan one of the following barcodes to select a Han Xin inverse decoder setting:

- **Regular Only** - The scanner decodes Han Xin barcodes with normal reflectance only.
- **Inverse Only** - The scanner decodes Han Xin barcodes with inverse reflectance only.
- **Inverse Autodetect** - The scanner decodes both regular and inverse Han Xin barcodes.

***Regular Only**
(0)

Han Xin Inverse (continued)

Inverse Only
(1)

Han Xin Inverse (continued)

Inverse Autodetect (2)

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 12-2 *Macro PDF User Indications*

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

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).

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.

Flush Macro PDF Buffer

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.

Abort Macro PDF Entry

CHAPTER 13 DRIVER'S LICENSE SET UP

Introduction

The scanner uses internally embedded algorithms to parse out barcode information from standard US driver's licenses and certain other American Association of Motor Vehicle Administrators (AAMVA) compliant ID cards. Scanning these barcodes produces formatted data for use in age verification, credit card application information, and more.

This chapter describes how to program the scanner to read and use the data contained in the 2D barcodes on US driver's licenses and AAMVA compliant ID cards.

Table 13-1 *DL Parsing Parameter Table*

Parameter	Default	Page Number
DL Parsing Parameters		
Driver's License Parsing	No Driver's License Parsing	*13-2*
Parsing Driver's License Data Fields	N/A	*13-4*
Driver's License Parse Field Bar Codes	N/A	*13-5*
AAMVA Parse Field Bar Codes	N/A	*13-18*
Set Default Parameter	N/A	*13-88*
Output Gender as M or F	N/A	*13-89*
Date Format	CCYYMMDD	*13-90*
No Separator	N/A	*13-102*
Send Keystroke Control Characters Keyboard Characters	N/A	*13-103* *13-103* *13-134*
Parsing Rule Example	N/A	*13-231*
Embedded Driver's License Parsing ADF Example	N/A	*13-252*

Driver’s License Parsing

To enable driver's license parsing on the scanner, scan the **Embedded Driver's License Parsing** barcode. This does not require Zebra software (.DLL).

Scan the barcodes on the following pages in the order indicating the sequence of data fields that the scanner outputs. See *Parsing Driver’s License Data Fields (Embedded Driver's License Parsing) on page 13-4* for more information.

***No Driver’s License Parsing**

Embedded Driver’s License Parsing

Embedded Driver’s License Parsing

Parsing Driver’s License Data Fields (Embedded Driver's License Parsing)

To program a parsing rule:

1. Scan *Begin New Driver’s License Parse Rule on page 13-5*.
2. Scan any of the field barcodes on the following pages, or ***Send Keystroke (Control Characters and Keyboard Characters) on page 13-103***.
3. After entering the entire rule, scan *Save Driver’s License Parse Rule on page 13-6* to save the rule.

NOTE The scanner stores only one driver’s license parsing rule in memory at a time. Saving a new rule replaces the prior rule.

To abort the programming sequence at any time during programming, scan *Quit Entering Driver’s License Rule on page 13-7*. Any previously saved rule is retained.

To erase a saved rule, scan *Erase Driver’s License Parse Rules on page 13-8*.

Embedded Driver's License Parsing Criteria - Code Type

After specifying the fields and their order for the parsed driver's license, you can also apply standard ADF rules to the parsed data using the **Parsed Driver’s License** criterion barcode in the *Advanced Data Formatting Programmer Guide.*

NOTE Only create standard ADF rules on parsed driver's license data when configured for Embedded Driver's License Parsing.

See *Embedded Driver's License Parsing ADF Example on page 13-252* for a sample ADF rule using this code type criterion.

Driver’s License Parse Field Bar Codes

Begin New Driver’s License Parse Rule

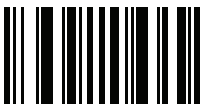
Driver’s License Parse Field Bar Codes (continued)

Save Driver’s License Parse Rule

Driver’s License Parse Field Bar Codes (continued)

Quit Entering Driver’s License Rule

Driver’s License Parse Field Bar Codes (continued)



Erase Driver’s License Parse Rules

Driver’s License Parse Field Bar Codes (continued)

The parse fields currently supported begin below. Not all IDs present data in the same format. For example, some IDs may have separate fields for first name, last name, and middle initial, and others may have a single field with the entire name. In addition, some IDs may expire on the subject's birth date and the actual expiration date field may only indicate the year. In order to present data in a consistent format, the following nine barcodes return data that may be calculated from the actual data contained within the ID barcode.

First Name

Driver’s License Parse Field Bar Codes (continued)

Middle Name/Initial

Driver’s License Parse Field Bar Codes (continued)

Last Name

Driver’s License Parse Field Bar Codes (continued)

Name Suffix

Driver’s License Parse Field Bar Codes (continued)

Name Prefix

Driver’s License Parse Field Bar Codes (continued)

Expiration Date

Driver’s License Parse Field Bar Codes (continued)

Birth Date

Driver’s License Parse Field Bar Codes (continued)

Issue Date

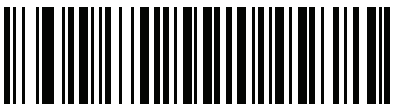
Driver’s License Parse Field Bar Codes (continued)

ID Number (Formatted)

AAMVA Parse Field Bar Codes

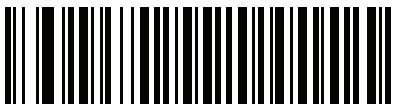
AAMVA Issuer ID

AAMVA Parse Field Bar Codes (continued)



Full Name

AAMVA Parse Field Bar Codes (continued)

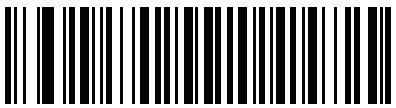


Last Name

AAMVA Parse Field Bar Codes (continued)

First Name

AAMVA Parse Field Bar Codes (continued)



Middle Name / Initial

AAMVA Parse Field Bar Codes (continued)

Name Suffix

AAMVA Parse Field Bar Codes (continued)

Name Prefix

AAMVA Parse Field Bar Codes (continued)

Mailing Address Line 1

AAMVA Parse Field Bar Codes (continued)

Mailing Address Line 2

AAMVA Parse Field Bar Codes (continued)

Mailing Address City

AAMVA Parse Field Bar Codes (continued)

Mailing Address State

AAMVA Parse Field Bar Codes (continued)

Mailing Address Postal Code

AAMVA Parse Field Bar Codes (continued)

Home Address Line 1

AAMVA Parse Field Bar Codes (continued)

Home Address Line 2

AAMVA Parse Field Bar Codes (continued)

Home Address City

AAMVA Parse Field Bar Codes (continued)

Home Address State

AAMVA Parse Field Bar Codes (continued)

Home Address Postal Code

AAMVA Parse Field Bar Codes (continued)

License ID Number

AAMVA Parse Field Bar Codes (continued)

License Class

AAMVA Parse Field Bar Codes (continued)

License Restrictions

AAMVA Parse Field Bar Codes (continued)

License Endorsements

AAMVA Parse Field Bar Codes (continued)

Height (Feet and/or Inches)

AAMVA Parse Field Bar Codes (continued)

Height (Centimeters)

AAMVA Parse Field Bar Codes (continued)

Weight (Pounds)

AAMVA Parse Field Bar Codes (continued)

Weight (Kilograms)

AAMVA Parse Field Bar Codes (continued)

Eye Color

AAMVA Parse Field Bar Codes (continued)

Hair Color

AAMVA Parse Field Bar Codes (continued)

License Expiration Date

AAMVA Parse Field Bar Codes (continued)

Birth Date

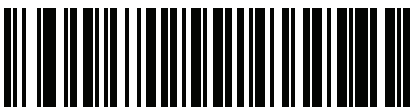
AAMVA Parse Field Bar Codes (continued)

Gender

AAMVA Parse Field Bar Codes (continued)

License Issue Date

AAMVA Parse Field Bar Codes (continued)



License Issue State

AAMVA Parse Field Bar Codes (continued)

Social Security Number

AAMVA Parse Field Bar Codes (continued)

Permit Class

AAMVA Parse Field Bar Codes (continued)

Permit Expiration Date

AAMVA Parse Field Bar Codes (continued)

Permit ID Number

AAMVA Parse Field Bar Codes (continued)

Permit Issue Date

AAMVA Parse Field Bar Codes (continued)

Permit Restrictions

AAMVA Parse Field Bar Codes (continued)

Permit Endorsements

AAMVA Parse Field Bar Codes (continued)

AKA Social Security Name

AAMVA Parse Field Bar Codes (continued)

AKA Full Name

AAMVA Parse Field Bar Codes (continued)

AKA Last Name

AAMVA Parse Field Bar Codes (continued)

AKA First Name

AAMVA Parse Field Bar Codes (continued)

AKA Middle Name / Initial

AAMVA Parse Field Bar Codes (continued)

AKA Name Suffix

AAMVA Parse Field Bar Codes (continued)

AKA Name Prefix

AAMVA Parse Field Bar Codes (continued)

AKA Birth Date

AAMVA Parse Field Bar Codes (continued)

Issue Timestamp

AAMVA Parse Field Bar Codes (continued)

Number of Duplicates

AAMVA Parse Field Bar Codes (continued)

Medical Codes

AAMVA Parse Field Bar Codes (continued)

Organ Donor

AAMVA Parse Field Bar Codes (continued)

Nonresident

AAMVA Parse Field Bar Codes (continued)

Customer ID

AAMVA Parse Field Bar Codes (continued)

Weight Range

AAMVA Parse Field Bar Codes (continued)

Document Discriminator

AAMVA Parse Field Bar Codes (continued)

Country

AAMVA Parse Field Bar Codes (continued)

Federal Commission Codes

AAMVA Parse Field Bar Codes (continued)

Place of Birth

AAMVA Parse Field Bar Codes (continued)

Audit Information

AAMVA Parse Field Bar Codes (continued)

AAMVA Parse Field Bar Codes (continued)

Race / Ethnicity

AAMVA Parse Field Bar Codes (continued)

Std Vehicle Class

AAMVA Parse Field Bar Codes (continued)

Std Endorsements

AAMVA Parse Field Bar Codes (continued)

Std Restrictions

AAMVA Parse Field Bar Codes (continued)

Class Description

AAMVA Parse Field Bar Codes (continued)

Endorsement Description

AAMVA Parse Field Bar Codes (continued)

Restrictions Description

AAMVA Parse Field Bar Codes (continued)

Height in Inches

AAMVA Parse Field Bar Codes (continued)

Height in Centimeters

Parser Version ID Bar Codes

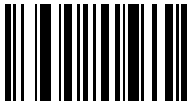
Include this field to emit embedded parser software version identification.

Parser Version ID

User Preferences

Set Default Parameter

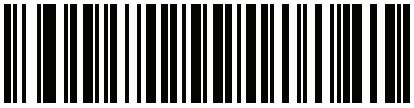
Scan this barcode to return all parameters to the default values listed in *Table A-1 on page A-1*.



***Set All Defaults**

Output Gender as M or F

Scan this barcode to report the gender as **M** or **F** instead of a numeric value**.**



Output gender as M or F

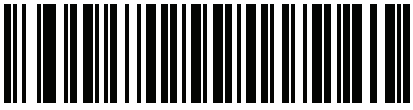
Date Format

Use these barcodes to select the date format that is displayed. Date fields include the following:

- **CCYY** = 4-digit year (**CC**=2-digit century [00-99], **YY**=2-digit year in the century [00-99])
- **MM** = 2-digit month [01-12]
- **DD** = 2-digit day of the month [00-31]

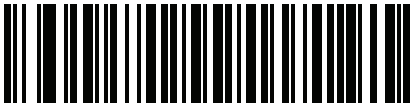
The default is Date Format **CCYYMMDD**.

NOTE To specify a date separator, i.e., a character separating each field of the date, scan the **Send <character>** barcode that corresponds to the alphanumeric character to use as the date separator immediately following the date format barcode. To select no date separator, scan the **No Separator** DL parsing rule immediately following the date format barcode.



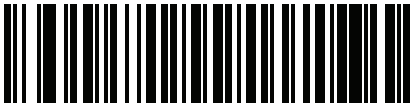
***CCYYMMDD**

Date Format (continued)



CCYYDDMM

Date Format (continued)

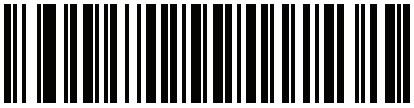


MMDDCCYY

Date Format (continued)

MMCCYYDD

Date Format (continued)



DDMMCCYY

Date Format (continued)

DDCCYYMM

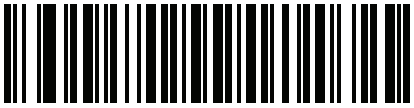
Date Format (continued)

YYMMDD

Date Format (continued)

YYDDMM

Date Format (continued)

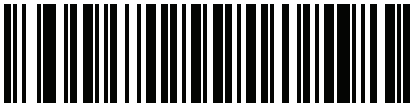


MMDDYY

Date Format (continued)

MMYYDD

Date Format (continued)



DDMMYY

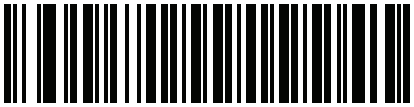
Date Format (continued)

DDYYMM

Date Format (continued)

No Separator

Scan this barcode immediately following a date format barcode to use no separator character between the date fields.



No Separator

Send Keystroke (Control Characters and Keyboard Characters)

Control Characters

Scan a **Send** barcode for the keystroke to send.

Send Control A

Control Characters (continued)

Send Control B

Control Characters (continued)

Send Control C

Control Characters (continued)

Send Control D

Control Characters (continued)

Send Control E

Control Characters (continued)

Send Control F

Control Characters (continued)

Send Control G

Control Characters (continued)

Send Control H

Control Characters (continued)

Send Control I

Control Characters (continued)

Send Control J

Control Characters (continued)

Send Control K

Control Characters (continued)

Send Control L

Control Characters (continued)

Send Control M

Control Characters (continued)

Send Control N

Control Characters (continued)

Send Control O

Control Characters (continued)

Send Control P

Control Characters (continued)

Send Control Q

Control Characters (continued)

Send Control R

Control Characters (continued)

Send Control S

Control Characters (continued)

Send Control T

Control Characters (continued)

Send Control U

Control Characters (continued)

Send Control V

Control Characters (continued)

Send Control W

Control Characters (continued)

Send Control X

Control Characters (continued)

Send Control Y

Control Characters (continued)

Send Control Z

Control Characters (continued)

Send Control [

Control Characters (continued)

**Send Control **

Control Characters (continued)

Send Control]

Control Characters (continued)

Send Control 6

Control Characters (continued)

Send Control -

Keyboard Characters

Scan a **Send** barcode for the keyboard characters to send.

Send Space

Keyboard Characters (continued)

Send !

Keyboard Characters (continued)

Send “

Keyboard Characters (continued)

Send #

Keyboard Characters (continued)

Send $

Keyboard Characters (continued)

Send %

Keyboard Characters (continued)

Send &

Keyboard Characters (continued)

Send ‘

Keyboard Characters (continued)

Send (

Keyboard Characters (continued)

Send)

Keyboard Characters (continued)

Send *

Keyboard Characters (continued)

Send +

Keyboard Characters (continued)

Send ,

Keyboard Characters (continued)

Send -

Keyboard Characters (continued)

Send .

Keyboard Characters (continued)

Send /

Keyboard Characters (continued)

Send 0

Keyboard Characters (continued)

Send 1

Keyboard Characters (continued)

Send 2

Keyboard Characters (continued)

Send 3

Keyboard Characters (continued)

Send 4

Keyboard Characters (continued)

Send 5

Keyboard Characters (continued)

Send 6

Keyboard Characters (continued)

Send 7

Keyboard Characters (continued)

Send 8

Keyboard Characters (continued)

Send 9

Keyboard Characters (continued)

Send :

Keyboard Characters (continued)

Send ;

Keyboard Characters (continued)

Send <

Keyboard Characters (continued)

Send =

Keyboard Characters (continued)

Send >

Keyboard Characters (continued)

Send ?

Keyboard Characters (continued)

Send @

Keyboard Characters (continued)

Send A

Keyboard Characters (continued)

Send B

Keyboard Characters (continued)

Send C

Keyboard Characters (continued)

Send D

Keyboard Characters (continued)

Send E

Keyboard Characters (continued)

Send F

Keyboard Characters (continued)

Send G

Keyboard Characters (continued)

Send H

Keyboard Characters (continued)

Send I

Keyboard Characters (continued)

Send J

Keyboard Characters (continued)

Send K

Keyboard Characters (continued)

Send L

Keyboard Characters (continued)

Send M

Keyboard Characters (continued)

Send N

Keyboard Characters (continued)

Send O

Keyboard Characters (continued)

Send P

Keyboard Characters (continued)

Send Q

Keyboard Characters (continued)

Send R

Keyboard Characters (continued)

Send S

Keyboard Characters (continued)

Send T

Keyboard Characters (continued)

Send U

Keyboard Characters (continued)

Send V

Keyboard Characters (continued)

Send W

Keyboard Characters (continued)

Send X

Keyboard Characters (continued)

Send Y

Keyboard Characters (continued)

Send Z

Keyboard Characters (continued)

Send [

Keyboard Characters (continued)

**Send **

Keyboard Characters (continued)

Send]

Keyboard Characters (continued)

Send ^

Keyboard Characters (continued)

Send _

Keyboard Characters (continued)

Send `

Keyboard Characters (continued)

Send a

Keyboard Characters (continued)

Send b

Keyboard Characters (continued)

Send c

Keyboard Characters (continued)

Send d

Keyboard Characters (continued)

Send e

Keyboard Characters (continued)

Send f

Keyboard Characters (continued)

Send g

Keyboard Characters (continued)

Send h

Keyboard Characters (continued)

Send i

Keyboard Characters (continued)

Send j

Keyboard Characters (continued)

Send k

Keyboard Characters (continued)

Send I

Keyboard Characters (continued)

Send m

Keyboard Characters (continued)

Send n

Keyboard Characters (continued)

Send o

Keyboard Characters (continued)

Send p

Keyboard Characters (continued)

Send q

Keyboard Characters (continued)

Send r

Keyboard Characters (continued)

Send s

Keyboard Characters (continued)

Send t

Keyboard Characters (continued)

Send u

Keyboard Characters (continued)

Send v

Keyboard Characters (continued)

Send w

Keyboard Characters (continued)

Send x

Keyboard Characters (continued)

Send y

Keyboard Characters (continued)

Send z

Keyboard Characters (continued)

Send {

Keyboard Characters (continued)

Send |

Keyboard Characters (continued)

Send }

Keyboard Characters (continued)

Send ~

Keyboard Characters (continued)

Send Tab Key

Keyboard Characters (continued)

Send Enter Key

Parsing Rule Example

Scan the following barcodes in sequence to program the scanner to extract and transmit first, middle, and last names; mailing address line 1; mailing address line 2; mailing address city; mailing address state; mailing address postal code; and, date of birth. Then, scan a driver's license barcode.

NOTE This example applies to RS-232. To use this example with a USB interface, enable *Function Key Mapping on page 1-42* i to send the **Enter** key properly.

1

Embedded Driver's License Parsing

Parsing Rule Example (continued)

2

Begin New Driver's License Parse Rule

Parsing Rule Example (continued)

3

First Name

Parsing Rule Example (continued)

4

Send Space

Parsing Rule Example (continued)

5

Middle Name / Initial

Parsing Rule Example (continued)

6

Send Space

Parsing Rule Example (continued)

7

Last Name

Parsing Rule Example (continued)

8

Send Enter Key

Parsing Rule Example (continued)

9

Mailing Address Line 1

Parsing Rule Example (continued)

10

Send Space

Parsing Rule Example (continued)

11

Mailing Address Line 2

Parsing Rule Example (continued)

12

Send Enter Key

Parsing Rule Example (continued)

13

Mailing Address City

Parsing Rule Example (continued)

14

Send Space

Parsing Rule Example (continued)

15

Mailing Address State

Parsing Rule Example (continued)

16

Send Space

Parsing Rule Example (continued)

17

Mailing Address Postal Code

Parsing Rule Example (continued)

18

Send Enter Key

Parsing Rule Example (continued)

19

Birth Date

Parsing Rule Example (continued)

20

Send Enter Key

Parsing Rule Example (continued)

21

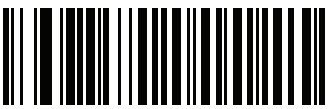
Save Driver’s License Parse Rule

Embedded Driver's License Parsing ADF Example

This example creates a parsing rule for parsed data configured to result in the format:

Last Name, First Name

1



Begin New Driver’s License Parse Rule

Embedded Driver's License Parsing ADF Example (continued)

2

Last Name

Embedded Driver's License Parsing ADF Example (continued)

3

Send ,

Embedded Driver's License Parsing ADF Example (continued)

4

Send Space

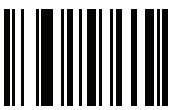
Embedded Driver's License Parsing ADF Example (continued)

5

First Name

Embedded Driver's License Parsing ADF Example (continued)

6



Save Driver’s License Parse Rule

Embedded Driver's License Parsing ADF Example (continued)

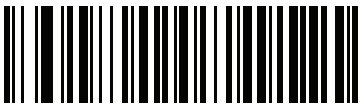
Then, in order to limit the full name to 15 characters, create the following ADF rule:

1

Begin New Rule

Embedded Driver's License Parsing ADF Example (continued)

2



Criterion: Parsed Driver's License

Embedded Driver's License Parsing ADF Example (continued)

3

Action: Send Next 15 Characters

Embedded Driver's License Parsing ADF Example (continued)

4

Save Rule

For a license belonging to Michael Williams, the parsed data is Williams, Michael and Williams, Micha after applying the previous ADF rule.

APPENDIX A STANDARD PARAMETER DEFAULTS

Table A-1 *Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
USB Host Parameters				
USB Device Type	N/A	N/A	IBM Table-top	*1-3*
USB Country Keyboard Types - Country Codes	N/A	N/A	US English (North American)	*F-2*
USB Keystroke Delay	N/A	N/A	No Delay	*1-11*
USB Caps Lock Override	N/A	N/A	Disable	*1-14*
Scan Disable Mode	N/A	N/A	Full Disable	*1-16*
Bar Codes with Unknown Characters	N/A	N/A	Send Bar Codes with Unknown Characters	*1-19*
USB Convert Unknown to Code 39	N/A	N/A	Disable	*1-21*
USB Fast HID	N/A	N/A	Disable	*1-23*
USB Polling Interval	N/A	N/A	8 msec	*1-25*
Keypad Emulation	N/A	N/A	Disable	*1-34*
Quick Keypad Emulation	N/A	N/A	Disable	*1-36*
Keypad Emulation with Leading Zero	N/A	N/A	Disable	*1-38*
USB FN1 Substitution	N/A	N/A	Disable	*1-40*
Function Key Mapping	N/A	N/A	Disable	*1-42*
Simulated Caps Lock	N/A	N/A	Disable	*1-44*
Convert Case	N/A	N/A	No Case Conversion	*1-46*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
USB Static CDC	N/A	N/A	Enable	*1-49*
TGCS (IBM) USB Direct I/O Beep	N/A	N/A	Honor	*1-51*
TGCS (IBM) USB Beep Directive	N/A	N/A	Ignore	*1-53*
TGCS (IBM) USB Bar Code Configuration Directive	N/A	N/A	Ignore	*1-55*
TGCS (IBM) USB Specification Version	N/A	N/A	Version 0 (Original)	*1-57*
IBM USB Scale Default Response Status	N/A	N/A	Disabled	*1-59*
RS-232 Host Parameters				
RS-232 Host Types	N/A	N/A	Standard	*2-7*
Baud Rate	N/A	N/A	9600	*2-18*
Parity	N/A	N/A	None	*2-23*
Stop Bits	N/A	N/A	1 Stop Bit	*2-26*
Data Bits	N/A	N/A	8-bit	*2-28*
Check Receive Errors	N/A	N/A	Enable	*2-30*
Hardware Handshaking	N/A	N/A	None	*2-32*
Software Handshaking	N/A	N/A	None	*2-38*
Host Serial Response Timeout	N/A	N/A	2 Sec	*2-43*
RTS Line State	N/A	N/A	Low RTS	*2-48*
Beep on <BEL>	N/A	N/A	Disable	*2-50*
Intercharacter Delay	N/A	N/A	0 msec	*2-52*
Nixdorf Beep/LED Options	N/A	N/A	Normal Operation	*2-57*
Bar Codes with Unknown Characters	N/A	N/A	Send Bar Code With Unknown Characters	*2-60*
NCR Use Prefix	N/A	N/A	Enabled	*2-62*
NCR Prefix	N/A	N/A	1002 (STX)	*2-64*
NCR Suffix	N/A	N/A	1003 (ETX)	*2-65*
NCR Use Block Check Character	N/A	N/A	Enabled	*2-66*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
NCR Interface	N/A	N/A	Follow System	*2-68*
NCR Scale Beep After Weight Request	N/A	N/A	Disable	*2-71*
IBM RS-485 Host Parameters				
Port Address	N/A	N/A	None	*3-3*
Scale Port Address	N/A	N/A	None	*3-7*
Convert Unknown to Code 39	N/A	N/A	Disable	*3-11*
RS-485 Beep Directive	N/A	N/A	Ignore	*3-13*
RS-485 Bar Code Configuration Directive	N/A	N/A	Ignore	*3-15*
Scan Disable Mode	N/A	N/A	Full Disable	*3-17*
IBM-485 Specification Version	N/A	N/A	Original Specification	*3-20*
IBM Commands	N/A	N/A	Ignore Unknown Commands and Reboot	*3-22*
Scale Parameters				
Legal Scale Units	995	N/A	N/A	*4-3*
Legal Scale Dampening Filter Setting	996	N/A	Low Vibration Sensitivity	*4-5*
Scale Enable	1197	N/A	Enable	*4-9*
Scale Reset	6019	N/A	N/A	*4-11*
Scale Display Configuration	986	N/A	Disable	*4-12*
Scale Enforce Zero Return	987	N/A	Disable	*4-14*
Scale Beep After Weight Request	988	N/A	Disable	*4-16*
Scale Port Address	N/A	N/A	Not Selected	*3-7*
Ignore Scale Pole Directives	1242	N/A	Ignore	*4-18*
Maximum Initial Zero Setting Range	1285	N/A	15% maximum weight capacity	*4-20*
Maximum Scale Zeroing Weight Limit	1366	N/A	60	*4-22*
Scale Pole Display Type	1692	N/A	0/Standard	*4-23*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
User Preferences				
Set Default Parameter	N/A	N/A	Set Factory Defaults	*5-4*
Parameter Bar Code Scanning	236	ECh	Enable	*5-6*
Beep After Good Decode	56	38h	Enable	*5-8*
Beeper Volume	140	8Ch	Highest	*5-10*
Beeper Tone	145	91h	Medium	*5-15*
Beeper Duration	628	F1h 74h	Medium	*5-20*
Tone/Volume Button	1287	F8h 05h 07h	Enable Tone, Enable Volume	*5-23*
Suppress Power Up Beeps	721	F1h D1h	Do Not Suppress	*5-27*
Decode Session Timeout	136	88h	9.9 Seconds	*5-29*
Timeout Between Decodes, Same Symbol	137	89h	0.5 Seconds	*5-30*
Same Symbol Report Timeout	1284	F8h 05h 04h	Disable	*5-31*
Swipe Frame Timeout	1226	F8 04h CAh	30 ms	*5-33*
Presentation Frame Timeout	1227	F8h 04h CBh	35 ms	*5-34*
Fuzzy 1D Processing	514	F1h 02h	Enable	*5-35*
Cell Phone Frame Timeout	1228	F8h 04h CCh	35 ms	*5-37*
Mobile Phone Display Mode	716	F1h CCh	Disable	*5-38*
PDF Prioritization	719	F1h CFh	Disable	*5-40*
PDF Prioritization Timeout	720	F1h D0h	300 ms	*5-42*
RS-232 Device Port Configuration	1246	F8h 04h DEh	Aux 1 Sensormatic and Aux 2 RS-232 Scanner	*5-43*
RS-232 Auxiliary Port Scale Protocol	1247	F8h 04h DFh	SASI	*5-48*
Third Party Scale Parameters				*5-53*
Third Party Scale	1294	F8 05 0E	Disable Third Party Scale	
Third Party Scale LED Pin	1295	F8 05 0F	Active High	
Third Party Scale Zero Pin	1296	F8 05 10	Active High	
Illumination Configurations	1250	F8h 04h E2h	Full Brightness on Both Vertical and Horizontal	*5-59*
Product ID (PID) Type	1281	F8h 05h 01h	IBM Unique	*5-66*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Product ID (PID) Value	1725	F8h 06h BDh	0	*5-66*
ECLevel	1710	F8h 06h AEh	0	*5-70*
Miscellaneous Options				
Transmit Code ID Character	45	2Dh	None	*5-71*
Prefix Value	99, 105	63h, 69h	7013 <CR><LF>	*5-74*
Suffix 1 Value Suffix 2 Value	98, 104 100, 106	62h, 68h 64h, 6Ah	7013 <CR><LF>	*5-75*
Scan Data Transmission Format	235	EBh	Data As Is	*5-78*
FN1 Substitution Values	103, 109	67h, 6Dh	7013 <CR><LF>	*5-86*
Unsolicited Heartbeat Interval	1118	F8h 04h 5Eh	Disable	*5-87*
Copy Statistics to a Staging Flash Drive	1137	F8h 04h 71h	Enable	*5-66*
Imaging Preferences				
Image Cropping	301	F0h 2Dh	Disable	*6-3*
Crop to Pixel Addresses	315 316 317 318	F4h F0h 3Bh F4h F0h 3Ch F4h F0h 3Dh F4h F0h 3Eh	0 top 0 left 959 bottom 1279 right	*6-5*
Image Size (Number of Pixels)	302	F0h 2Eh	Full	*6-9*
JPEG Image Options	299	F0h 2Bh	Quality	*6-12*
JPEG Size Value	561	F1h 31h	160 kB	*6-14*
JPEG Quality Value	305	F0h 31h	065	*6-15*
Image Enhancement	564	F1h 34h	Off (0)	*6-16*
Image File Format Selection	304	F0h 30h	JPEG	*6-20*
Image Rotation	665	F1h 99h	Rotate 0^{o}	*6-23*
Image Capture Camera Selection	1715	F8h 05h B3h	Tower	*6-27*
Camera Button	1716	F8h 06h B4h	Disable	*6-29*
Camera Button Delay	1717	F8h 06h B5h	20 (2 seconds)	*6-31*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Symbologies				
Enable/Disable All Code Types				*12-7*
1D Symbologies				
UPC/EAN/JAN				
UPC-A	1	01h	Enable	*12-9*
UPC-E	2	02h	Enable	*12-11*
UPC-E1	12	0Ch	Disable	*12-13*
EAN-8/JAN 8	4	04h	Enable	*12-15*
EAN-13/JAN 13	3	03h	Enable	*12-17*
Bookland EAN	83	53h	Disable	*12-19*
Bookland ISBN Format	576	F1h 40h	ISBN-10	*12-21*
ISSN EAN	617	F1h 69h	Disable	*12-23*
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	16	10h	Ignore	*12-25*
User Programmable Supplementals Supplemental 1: Supplemental 2:	 579 580	 F1h 43h F1h 44h	0	*12-39*
UPC/EAN Redundancy	1225	N/A	1	*12-41*
UPC/EAN/JAN Supplemental Redundancy	80	50h	10	*12-42*
UPC/EAN/JAN Supplemental AIM ID Format	672	F1h A0h	Combined	*12-43*
Transmit UPC-A Check Digit	40	28h	Enable	*12-46*
Transmit UPC-E Check Digit	41	29h	Enable	*12-48*
Transmit UPC-E1 Check Digit	42	2Ah	Enable	*12-50*
UPC-A Preamble	34	22h	System Character	*12-52*
UPC-E Preamble	35	23h	System Character	*12-55*
UPC-E1 Preamble	36	24h	System Character	*12-58*
Convert UPC-E to A	37	25h	Disable	*12-61*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Convert UPC-E1 to A	38	26h	Disable	*12-63*
EAN/JAN Zero Extend	39	27h	Disable	*12-65*
UPC Reduced Quiet Zone	1289	F8h 05h 09h	Disable	*12-67*
UPC/EAN Random Weight Check Digit	53	35h	Disable	*12-69*
Digimarc Digital Watermarks	1687	F8h 06h 97h	Disable	*12-71*
UPC/EAN Block Life Span	1291	F8h 05h 08h	0	*12-73*
Code 128				
Code 128	8	08h	Disable	*12-74*
Set Length(s) for Code 128	209, 210	D1h, D2h	Any Length	*12-76*
GS1-128 (formerly UCC/EAN-128)	14	0Eh	Disable	*12-81*
Code 128 <FNC4>	1254	F8h 04h E6h	Ignore	*12-83*
Code 128 Stitching	72	48h	Disable	*12-85*
Code 128 Stitching Security Level	1205	F8h 04h B5h	Level 0	*12-87*
Code 128 Security Level	751	F1h EFh	Security Level 1	*12-91*
Code 128 Reduced Quiet Zone	1208	F8h 04h B8h	Disable	*12-95*
Code 39				
Code 39	0	00h	Disable	*12-97*
Trioptic Code 39	13	0Dh	Disable	*12-99*
Convert Code 39 to Code 32 (Italian Pharmacy Code)	86	56h	Disable	*12-101*
Code 32 Prefix	231	E7h	Disable	*12-103*
Set Length(s) for Code 39	18, 19	12h, 13h	Length Within Range (2-55)	*12-105*
Code 39 Check Digit Verification	48	30h	Disable	*12-109*
Transmit Code 39 Check Digit	43	2Bh	Disable	*12-111*
Code 39 Full ASCII Conversion	17	11h	Disable	*12-113*
Code 39 Security Level	750	F1h EEh	Security Level 1	*12-115*
Code 39 Stitching	70	46h	Disable	*12-119*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Code 39 Stitching Security Level	1206	F8h 04h B6h	Level 2	*12-121*
Code 39 Reduced Quiet Zone	1209	F8h 04h B9h	Disable	*12-125*
Code 93				
Code 93	9	09h	Disable	*12-127*
Set Length(s) for Code 93	26, 27	1Ah, 1Bh	Length Within Range (4-55)	*12-129*
Code 93 Stitching	1224	F8h 04h C8h	Disable	*12-134*
Code 93 Reduce Quiet Zone	1223	F8h 04h C7h	Disable	*12-136*
Interleaved 2 of 5 (ITF)				
Interleaved 2 of 5 (ITF)	6	06h	Disable	*12-138*
Set Lengths for Interleaved 2 of 5	22, 23	16h, 17h	1 Discrete Length Length (14)	*12-140*
Interleaved 2 of 5 Check Digit Verification	49	31h	Disable	*12-145*
Transmit Interleaved 2 of 5 Check Digit	44	2Ch	Disable	*12-145*
Convert Interleaved 2 of 5 to EAN 13	82	52h	Disable	*12-150*
Interleaved 2 of 5 Security Level	1121	F8h 04h 61h	Security Level 1	*12-152*
Interleaved 2 of 5 Stitching	1204	F8h 04h B4h	Disable	*12-156*
Interleaved 2 of 5 Reduced Quiet Zone	1210	F8h 04h BAh	Disable	*12-158*
Discrete 2 of 5 (DTF)				
Discrete 2 of 5	5	05h	Disable	*12-160*
Set Length(s) for Discrete 2 of 5	20, 21	14h 15h	One Discrete Length (12)	*12-162*
Codabar (NW - 7)				
Codabar	7	07h	Disable	*12-167*
Set Lengths for Codabar	24, 25	18h, 19h	Length Within Range (5-55)	*12-169*
CLSI Editing	54	36h	Disable	*12-173*
NOTIS Editing	55	37h	Disable	*12-175*
Codabar Upper or Lower Case Start/ Stop Characters Detection	855	F2h 57h	Lower Case	*12-177*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
MSI				
MSI	11	0Bh	Disable	*12-179*
Set Length(s) for MSI	30, 31	1Eh, 1Fh	Length Within Range (4-55)	*12-181*
MSI Check Digits	50	32h	One	*12-185*
Transmit MSI Check Digit	46	2Eh	Disable	*12-187*
MSI Check Digit Algorithm	51	33h	Mod 10/Mod 10	*12-189*
MSI Reduced Quiet Zone	1392	F8h 05h 70h	Disable	*12-191*
Chinese 2 of 5				
Chinese 2 of 5	408	F0h 98h	Disable	*12-193*
Inverse 1D	586	F1h 4Ah	Regular	*12-195*
GS1 DataBar				
GS1 DataBar Omnidirectional (formerly GS1 DataBar-14), GS1 DataBar Truncated, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional	338	F0h 52h	Disable	*12-198*
GS1 DataBar Limited	339	F0h 53h	Disable	*12-200*
GS1 DataBar Expanded, GS1 DataBar Expanded Stacked	340	F0h 54h	Disable	*12-202*
Convert GS1 DataBar to UPC/EAN/JAN	397	F0h 8Dh	Disable	*12-204*
GS1 DataBar Security Level	1706	F8h 06h AAh	Security Level 1	*12-206*
GS1 DataBar Limited Margin Check	728	F1h D8h	Level 3	*12-210*
Symbology-Specific Security Features				
Redundancy Level	78	4Eh	1	*12-214*
Security Level	77	4Dh	Security Level 1	*12-219*
1D Quiet Zone Level	1288	F8h 05h 08h	Level 1	*12-223*
Intercharacter Gap Size	381	F0h 7Dh	Normal	*12-227*

[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)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
2D Symbologies				
PDF417	15	0Fh	Disable	*12-229*
MicroPDF417	227	E3h	Disable	*12-231*
Code 128 Emulation	123	7Bh	Disable	*12-233*
Data Matrix	292	F0h 24h	Disable	*12-235*
GS1 Data Matrix	1336	F8h 05h 38h	Disable	*12-237*
Data Matrix Inverse	588	F1h 4Ch	Regular Only	*12-239*
QR Code	293	F0h 25h	Disable	*12-242*
GS1 QR	1343	F8h 05h 3Fh	Disable	*12-244*
MicroQR	573	F1h 3Dh	Disable	*12-246*
Aztec	574	F1h 3Eh	Disable	*12-248*
Aztec Inverse	589	F1h 4Dh	Regular Only	*12-250*
Han Xin	1167	F8h 04h 8Fh	Disable	*12-253*
Han Xin Inverse	1168	F8h 04h 90h	Regular	*12-255*
Macro PDF				
Flush Macro PDF Buffer	N/A	N/A	N/A	*12-259*
Abort Macro PDF Entry	N/A	N/A	N/A	*12-260*
DL Parsing Parameters				
Driver's License Parsing	N/A	N/A	No Driver's License Parsing	*13-2*
Parsing Driver's License Data Fields	N/A	N/A	N/A	*13-4*
Driver's License Parse Field Bar Codes	N/A	N/A	N/A	*13-5*
AAMVA Parse Field Bar Codes	N/A	N/A	N/A	*13-18*
Set Default Parameter	N/A	N/A	N/A	*13-88*
Output Gender as M or F	N/A	N/A	N/A	*13-89*
Date Format	N/A	N/A	CCYYMMDD	*13-90*
No Separator	N/A	N/A	N/A	*13-102*

[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)*

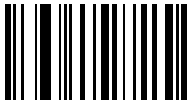
Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Send Keystroke Control Characters Keyboard Characters	N/A	N/A	N/A	*13-103*
Parsing Rule Example	N/A	N/A	N/A	*13-231*
Embedded Driver's License Parsing ADF Example	N/A	N/A	N/A	*13-252*
Country Codes				
USB Country Keyboard Types	960	F2h C0h	US English (North American)	*F-2*
Country Code Pages				
Country Code Page Bar Codes	961	N/A	Default value for a set country code is 0	*G-5*
CJK Decode Control				
Unicode Output Control	973	N/A	Universal Output	*H-2*
CJK Output Method to Windows Host	972	N/A	Universal CJK Output	*H-4*

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

APPENDIX B NUMERIC BAR CODES

Numeric Bar Codes

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

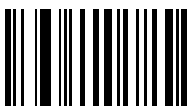


0

Numeric Bar Codes (continued)

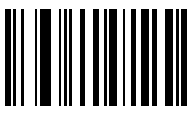
1

Numeric Bar Codes (continued)



2

Numeric Bar Codes (continued)



Numeric Bar Codes (continued)

4

Numeric Bar Codes (continued)

5

Numeric Bar Codes (continued)

6

Numeric Bar Codes (continued)

Numeric Bar Codes (continued)

8

Numeric Bar Codes (continued)

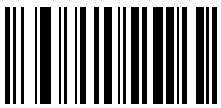
Cancel

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

Cancel

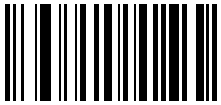
APPENDIX C ALPHANUMERIC BAR CODES

Alphanumeric Bar Codes



Space

Alphanumeric Bar Codes (continued)

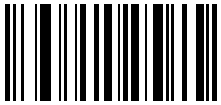


#

Alphanumeric Bar Codes (continued)

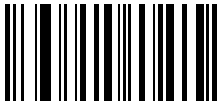
$

Alphanumeric Bar Codes (continued)



%

Alphanumeric Bar Codes (continued)

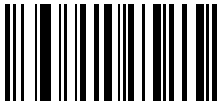


*

Alphanumeric Bar Codes (continued)

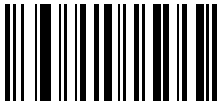
+

Alphanumeric Bar Codes (continued)



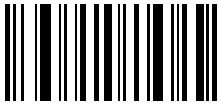
-

Alphanumeric Bar Codes (continued)



.

Alphanumeric Bar Codes (continued)



/

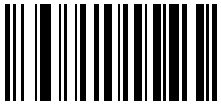
Alphanumeric Bar Codes (continued)

!

Alphanumeric Bar Codes (continued)

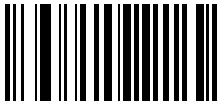
“

Alphanumeric Bar Codes (continued)



&

Alphanumeric Bar Codes (continued)

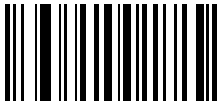


‘

Alphanumeric Bar Codes (continued)

(

Alphanumeric Bar Codes (continued)



)

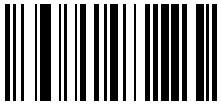
Alphanumeric Bar Codes (continued)

:

Alphanumeric Bar Codes (continued)

;

Alphanumeric Bar Codes (continued)

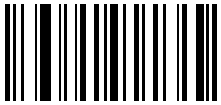


<

Alphanumeric Bar Codes (continued)

=

Alphanumeric Bar Codes (continued)



>

Alphanumeric Bar Codes (continued)

?

Alphanumeric Bar Codes (continued)

@

Alphanumeric Bar Codes (continued)

[

Alphanumeric Bar Codes (continued)

\

Alphanumeric Bar Codes (continued)

]

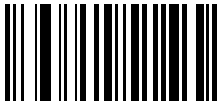
Alphanumeric Bar Codes (continued)

^

Alphanumeric Bar Codes (continued)

_

Alphanumeric Bar Codes (continued)



`

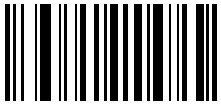
Alphanumeric Bar Codes (continued

✓ ***NOTE*** Do not confuse the following barcodes with those on the numeric keypad.

0

Alphanumeric Bar Codes (continued)

Alphanumeric Bar Codes (continued)



2

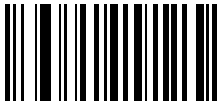
Alphanumeric Bar Codes (continued)

Alphanumeric Bar Codes (continued)

4

Alphanumeric Bar Codes (continued)

Alphanumeric Bar Codes (continued)



6

Alphanumeric Bar Codes (continued)

Alphanumeric Bar Codes (continued)

8

Alphanumeric Bar Codes (continued)

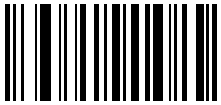
Alphanumeric Bar Codes (continued)

End of Message

Alphanumeric Bar Codes (continued)

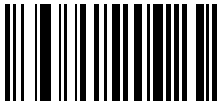
Cancel

Alphanumeric Bar Codes (continued)



A

Alphanumeric Bar Codes (continued)



B

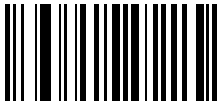
Alphanumeric Bar Codes (continued)

C

Alphanumeric Bar Codes (continued)

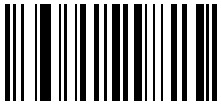
D

Alphanumeric Bar Codes (continued)



E

Alphanumeric Bar Codes (continued)



F

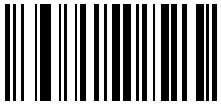
Alphanumeric Bar Codes (continued)

G

Alphanumeric Bar Codes (continued)

H

Alphanumeric Bar Codes (continued)

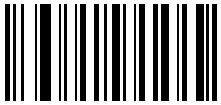


I

Alphanumeric Bar Codes (continued)

J

Alphanumeric Bar Codes (continued)

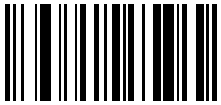


K

Alphanumeric Bar Codes (continued)

L

Alphanumeric Bar Codes (continued)



M

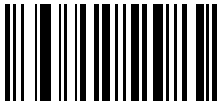
Alphanumeric Bar Codes (continued)

N

Alphanumeric Bar Codes (continued)

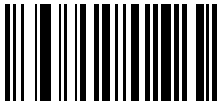
O

Alphanumeric Bar Codes (continued)



P

Alphanumeric Bar Codes (continued)

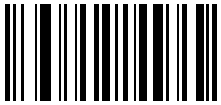


Q

Alphanumeric Bar Codes (continued)

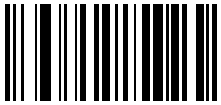
R

Alphanumeric Bar Codes (continued)



S

Alphanumeric Bar Codes (continued)



T

Alphanumeric Bar Codes (continued)

U

Alphanumeric Bar Codes (continued)

V

Alphanumeric Bar Codes (continued)

W

Alphanumeric Bar Codes (continued)

X

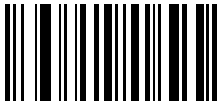
Alphanumeric Bar Codes (continued)

Y

Alphanumeric Bar Codes (continued)

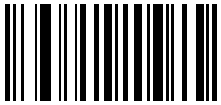
Z

Alphanumeric Bar Codes (continued)



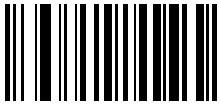
a

Alphanumeric Bar Codes (continued)



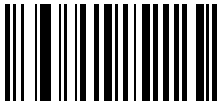
b

Alphanumeric Bar Codes (continued)



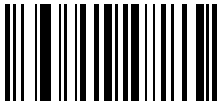
c

Alphanumeric Bar Codes (continued)



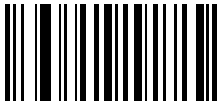
d

Alphanumeric Bar Codes (continued)



e

Alphanumeric Bar Codes (continued)

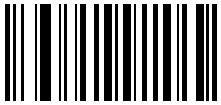


f

Alphanumeric Bar Codes (continued)

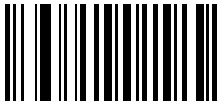
g

Alphanumeric Bar Codes (continued)



h

Alphanumeric Bar Codes (continued)

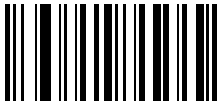


i

Alphanumeric Bar Codes (continued)

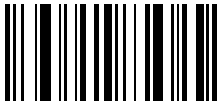
j

Alphanumeric Bar Codes (continued)



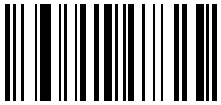
k

Alphanumeric Bar Codes (continued)



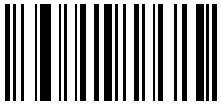
I

Alphanumeric Bar Codes (continued)



m

Alphanumeric Bar Codes (continued)



n

Alphanumeric Bar Codes (continued)

o

Alphanumeric Bar Codes (continued)

p

Alphanumeric Bar Codes (continued)

q

Alphanumeric Bar Codes (continued)

r

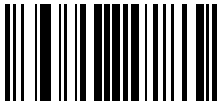
Alphanumeric Bar Codes (continued)

S

Alphanumeric Bar Codes (continued)

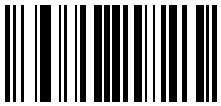
t

Alphanumeric Bar Codes (continued)



u

Alphanumeric Bar Codes (continued)

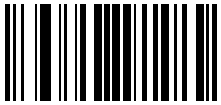


v

Alphanumeric Bar Codes (continued)

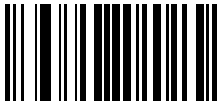
w

Alphanumeric Bar Codes (continued)



x

Alphanumeric Bar Codes (continued)

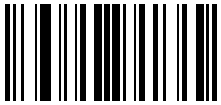


y

Alphanumeric Bar Codes (continued)

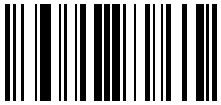
z

Alphanumeric Bar Codes (continued)



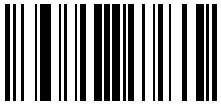
{

Alphanumeric Bar Codes (continued)



I

Alphanumeric Bar Codes (continued)



}

Alphanumeric Bar Codes (continued)

~

Cancel

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

Cancel

APPENDIX D ASCII CHARACTER SETS

✓ ***NOTE*** For the Keyboard Wedge Interface, Code 39 Full ASCII interprets the barcode special character ($ + % /) preceding a Code 39 character and assigns an ASCII character value to the pair. For example, if you enable Code 39 Full ASCII and scan **+B**, it transmits as **b**, **%J** as **?**, and **%V** as @. Scanning **ABC%I** outputs the keystroke equivalent of **ABC >.**

Table D-1 *ASCII Character Set*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1000	%U	CTRL 2	NUL
1001	$A	CTRL A	SOH
1002	$B	CTRL B	STX
1003	$C	CTRL C	ETX
1004	$D	CTRL D	EOT
1005	$E	CTRL E	ENQ
1006	$F	CTRL F	ACK
1007	$G	CTRL G	BELL
1008	$H	CTRL H/**BACKSPACE**[1]	BCKSPC
1009	$I	CTRL I/**HORIZONTAL TAB**[1]	HORIZ TAB
1010	$J	CTRL J	LF/NW LN
1011	$K	CTRL K	VT
1012	$L	CTRL L	FF
1013	$M	CTRL M/**ENTER**[1]	CR/ENTER
1014	$N	CTRL N	SO

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-1 *ASCII Character Set (Continued)*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1015	$O	CTRL O	SI
1016	$P	CTRL P	DLE
1017	$Q	CTRL Q	DC1/XON
1018	$R	CTRL R	DC2
1019	$S	CTRL S	DC3/XOFF
1020	$T	CTRL T	DC4
1021	$U	CTRL U	NAK
1022	$V	CTRL V	SYN
1023	$W	CTRL W	ETB
1024	$X	CTRL X	CAN
1025	$Y	CTRL Y	EM
1026	$Z	CTRL Z	SUB
1027	%A	CTRL [	ESC
1028	%B	CTRL \	FS
1029	%C	CTRL]	GS
1030	%D	CTRL 6	RS
1031	%E	CTRL -	US
1032	Space	Space	Space
1033	/A	!	!
1034	/B	“	"
1035	/C	#	#
1036	/D	$	$
1037	/E	%	%
1038	/F	&	&
1039	/G	‘	‘
1040	/H	(	(
1041	/I	)	)
1042	/J	*	*

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-1 *ASCII Character Set (Continued)*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1043	/K	+	+
1044	/L	,	,
1045	-	-	-
1046	.	.	.
1047	/o	/	/
1048	0	0	0
1049	1	1	1
1050	2	2	2
1051	3	3	3
1052	4	4	4
1053	5	5	5
1054	6	6	6
1055	7	7	7
1056	8	8	8
1057	9	9	9
1058	/Z	:	:
1059	%F	;	;
1060	%G	<	<
1061	%H	=	=
1062	%I	>	>
1063	%J	?	?
1064	%V	@	@
1065	A	A	A
1066	B	B	B
1067	C	C	C
1068	D	D	D
1069	E	E	E
1070	F	F	F

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-1 *ASCII Character Set (Continued)*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1071	G	G	G
1072	H	H	H
1073	I	I	I
1074	J	J	J
1075	K	K	K
1076	L	L	L
1077	M	M	M
1078	N	N	N
1079	O	O	O
1080	P	P	P
1081	Q	Q	Q
1082	R	R	R
1083	S	S	S
1084	T	T	T
1085	U	U	U
1086	V	V	V
1087	W	W	W
1088	X	X	X
1089	Y	Y	Y
1090	Z	Z	Z
1091	%K	[	[
1092	%L	\	\
1093	%M	]	]
1094	%N	^	^
1095	%O	_	_
1096	%W	‘	`
1097	+A	a	a
1098	+B	b	b

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-1 *ASCII Character Set (Continued)*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1099	+C	c	c
1100	+D	d	d
1101	+E	e	e
1102	+F	f	f
1103	+G	g	g
1104	+H	h	h
1105	+I	i	i
1106	+J	j	j
1107	+K	k	k
1108	+L	l	l
1109	+M	m	m
1110	+N	n	n
1111	+O	o	o
1112	+P	p	p
1113	+Q	q	q
1114	+R	r	r
1115	+S	s	s
1116	+T	t	t
1117	+U	u	u
1118	+V	v	v
1119	+W	w	w
1120	+X	x	x
1121	+Y	y	y
1122	+Z	z	z
1123	%P	{	{
1124	%Q	|	|
1125	%R	}	}

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-1 *ASCII Character Set (Continued)*

ASCII Value (Prefix/Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
1126	%S	~	~
1127			Undefined
7013			ENTER

[1] The keystroke in bold transmits only if you enabled *Function Key Mapping on page 1-42*. Otherwise, the unbold keystroke transmits.

Table D-2 *ALT Key Character Set*

ALT Keys	Keystroke
2064	ALT 2
2065	ALT A
2066	ALT B
2067	ALT C
2068	ALT D
2069	ALT E
2070	ALT F
2071	ALT G
2072	ALT H
2073	ALT I
2074	ALT J
2075	ALT K
2076	ALT L
2077	ALT M
2078	ALT N
2079	ALT O
2080	ALT P
2081	ALT Q
2082	ALT R
2083	ALT S
2084	ALT T

Table D-2 *ALT Key Character Set (Continued)*

ALT Keys	Keystroke
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z

Table D-3 *GUI Key Character Set*

GUI Key	Keystroke
3000	Right Control Key
3048	GUI 0
3049	GUI 1
3050	GUI 2
3051	GUI 3
3052	GUI 4
3053	GUI 5
3054	GUI 6
3055	GUI 7
3056	GUI 8
3057	GUI 9
3065	GUI A
3066	GUI B
3067	GUI C
3068	GUI D
3069	GUI E
3070	GUI F
3071	GUI G

Note: GUI Shift Keys - The Apple™ iMac keyboard has an apple key on either side of the space bar. Windows-based systems have a GUI key to the left of the left ALT key, and to the right of the right ALT key.

Table D-3 *GUI Key Character Set (Continued)*

GUI Key	Keystroke
3072	GUI H
3073	GUI I
3074	GUI J
3075	GUI K
3076	GUI L
3077	GUI M
3078	GUI N
3079	GUI O
3080	GUI P
3081	GUI Q
3082	GUI R
3083	GUI S
3084	GUI T
3085	GUI U
3086	GUI V
3087	GUI W
3088	GUI X
3089	GUI Y
3090	GUI Z

Note: GUI Shift Keys - The Apple™ iMac keyboard has an apple key on either side of the space bar. Windows-based systems have a GUI key to the left of the left ALT key, and to the right of the right ALT key.

Table D-4 *PF Key Character Set*

PF Keys	Keystroke
4001	PF 1
4002	PF 2
4003	PF 3
4004	PF 4
4005	PF 5
4006	PF 6
4007	PF 7
4008	PF 8
4009	PF 9
4010	PF 10
4011	PF 11
4012	PF 12
4013	PF 13
4014	PF 14
4015	PF 15
4016	PF 16

Table D-5 *F Key Character Set*

F Keys	Keystroke
5001	F 1
5002	F 2
5003	F 3
5004	F 4
5005	F 5
5006	F 6
5007	F 7
5008	F 8
5009	F 9
5010	F 10
5011	F 11
5012	F 12
5013	F 13
5014	F 14
5015	F 15
5016	F 16
5017	F 17
5018	F 18
5019	F 19
5020	F 20
5021	F 21
5022	F 22
5023	F 23
5024	F 24

Table D-6 *Numeric Key Character Set*

Numeric Keypad	Keystroke
6042	*
6043	+
6044	Undefined
6045	-
6046	.
6047	/
6048	0
6049	1
6050	2
6051	3
6052	4
6053	5
6054	6
6055	7
6056	8
6057	9
6058	Enter
6059	Num Lock

Table D-7 *Extended Key Character Set*

Extended Keypad	Keystroke
7001	Break
7002	Delete
7003	Pg Up
7004	End
7005	Pg Dn
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert
7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Dn Arrow
7017	Left Arrow
7018	Right Arrow

APPENDIX E PROGRAMMING REFERENCE

Symbol Code Identifiers

IMPORTANT Symbol Code Characters only apply if the scanner supports the symbology listed. See *Chapter 12, Symbologies* for supported symbologies.

Table E-1 *Symbol Code Characters*

Code Character	Code Type
A	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
B	Code 39, Code 32
C	Codabar
D	Code 128
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
J	MSI
K	GS1-128
L	Bookland EAN
R	GS1 DataBar Family
T	UCC Composite
U	Chinese 2 of 5
X	ISSN EAN, PDF417, Macro PDF417
z	Aztec, Aztec Rune
P00	Data Matrix

Table E-1 *Symbol Code Characters (Continued)*

Code Character	Code Type
P01	QR Code, MicroQR
P0G	GS1 Data Matrix
P0H	Han Xin
P0Q	GS1 QR

AIM Code Identifiers

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

] = Flag Character (ASCII 93)
c = Code Character (see *Table E-2*)
m = Modifier Character (see *Table E-3*)

IMPORTANT AIM Code Characters only apply if the scanner supports the symbology listed. See *Chapter 12, Symbologies* for supported symbologies.

Table E-2 *AIM Code Characters*

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, GS1-128, Coupon (Code 128 portion)
d	Data Matrix, GS1 Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar Family
F	Codabar
G	Code 93
h	Han Xin
I	Interleaved 2 of 5
L	PDF417, Macro PDF417
L2	TLC 39
M	MSI
Q	QR Code, MicroQR, GS1 QR
S	Discrete 2 of 5, IATA 2 of 5
z	Aztec, Aztec Rune
X	Bookland EAN, ISSN EAN, Chinese 2 of 5

The modifier character is the sum of the applicable option values based on *Table E-3*.

Table E-3 *Modifier Characters*

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII barcode with check character W, **A+I+MI+DW**, is transmitted as **]A7**AIMID where 7 = (3+4).	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 barcode with Function 1 character FNC1 in the first position, AIMID is transmitted as **]C1**AIMID	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 barcode without check digit, 4123, is transmitted as **]I0**4123	
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar barcode without check digit, 4123, is transmitted as **]F0**4123	
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 barcode 012345678905 is transmitted as **]G0**012345678905	
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI barcode 4123, with a single check digit checked, is transmitted as **]M1**4123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 barcode 4123, is transmitted as **]S0**4123	

Table E-3 *Modifier Characters (Continued)*

Code Type	Option Value	Option
UPC/EAN	0	Standard data packet in full EAN format, i.e. 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two digit supplemental data only.
	2	Five digit supplemental data only.
	3	Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from supplemental symbol.
	4	EAN-8 data packet.
	Example: A UPC-A barcode 012345678905 is transmitted as **]E0**012345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN barcode 123456789X is transmitted as **]X0**123456789X	
ISSN EAN	0	No options specified at this time. Always transmit 0.
	Example: An ISSN EAN barcode 123456789X is transmitted as **]X0**123456789X	
GS1 DataBar Family		No option specified at this time. Always transmit 0. GS1 DataBar Omnidirectional and GS1 DataBar Limited transmit with an Application Identifier “01”.
	Example: A GS1 DataBar Omnidirectional barcode 0110012345678902 is transmitted as **]e**00110012345678902.	
EAN.UCC Composites (GS1 DataBar, GS1-128, 2D portion of UPC composite)		Native mode transmission. Note: UPC portion of composite is transmitted using UPC rules.
	0	Standard data packet.
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
	1	Data packet is a GS1-128 symbol (i.e., data is preceded with]JC1).

Table E-3 *Modifier Characters (Continued)*

Code Type	Option Value	Option
PDF417	0	Reader set to conform to protocol defined in 1994 PDF417 symbology specifications. **Note:** When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92_{DEC} has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92_{DEC} are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92_{DEC} 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.
	3	The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.
	Example: A PDF417 barcode ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.	
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
GS1 Data Matrix	2	ECC 200, FNC1 in first or fifth position.
MaxiCode	0	Symbol in Mode 4 or 5.
	1	Symbol in Mode 2 or 3.
	2	Symbol in Mode 4 or 5, ECI protocol implemented.
	3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.

Table E-3 *Modifier Characters (Continued)*

Code Type	Option Value	Option
QR Code	0	Model 1 symbol.
	1	Model 2 / MicroQR symbol, ECI protocol not implemented.
	2	Model 2 symbol, ECI protocol implemented.
	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.
GS1 QR	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.
Han Xin	0	Generic data, no special features are set. The transmitted data does not follow the AIM ECI protocol.
	1	ECI protocol enabled. There is at least one ECI mode encoded. Transmitted data must follow the AIM ECI protocol.
Mailmark	0	No option specified at this time. Always transmit 0.

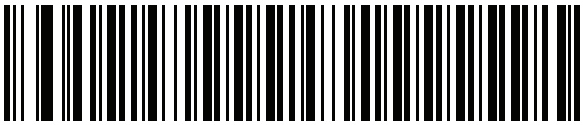
APPENDIX F COUNTRY CODES

Introduction

This chapter provides instructions for programming the keyboard to interface with a USB or keyboard wedge host. The host powers the scanner. For host setup information, see *Chapter 1, USB Interface*.

To select a code page for the country keyboard type, see *Appendix G, Country Code Pages*.

Throughout the programming barcode menus, default values are indicated with asterisks (*).



*Indicates Default — ***US English (North American)** — Feature/Option

USB Country Keyboard Types (Country Codes)

Parameter # 960

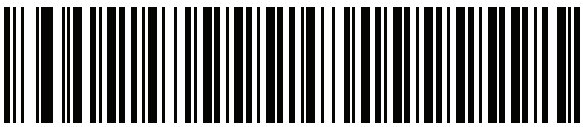
Scan the barcode corresponding to the keyboard type. For a USB host, this setting applies only to the USB Keyboard (HID) device. If the keyboard type is not listed, see *Keypad Emulation on page 1-34* for the USB HID host.

NOTE When changing USB country keyboard types the scanner automatically resets and issues the standard startup beep sequences.

NOTE For best results when using international keyboards, enable *Quick Keypad Emulation on page 1-36*.

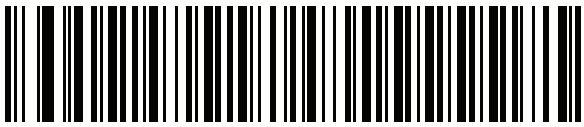
IMPORTANT 1. Some country keyboard barcode types are specific to certain Windows operating systems (i.e., XP and Windows 7 or higher). Barcodes requiring a specific Windows OS are noted in the barcode captions.

2. Use the **French International** barcode for Belgian French keyboards.



***US English (North American)**

Country Codes (continued)

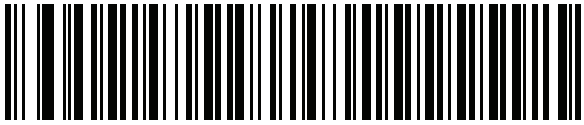


US English (Mac)

Country Codes (continued)

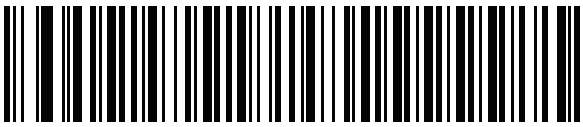
Albanian

Country Codes (continued)



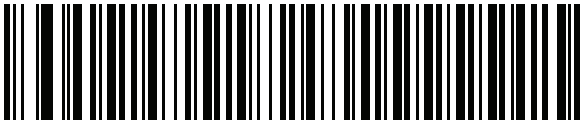
Arabic (101)

Country Codes (continued)



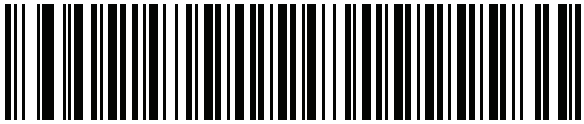
Arabic (102)

Country Codes (continued)



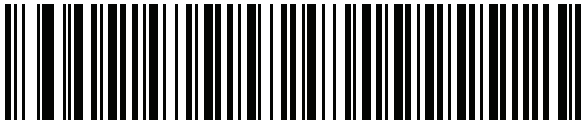
Arabic (102) AZERTY

Country Codes (continued)



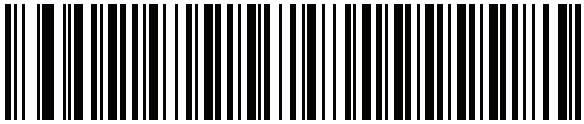
Azeri (Latin)

Country Codes (continued)



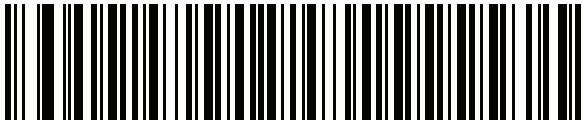
Azeri (Cyrillic)

Country Codes (continued)



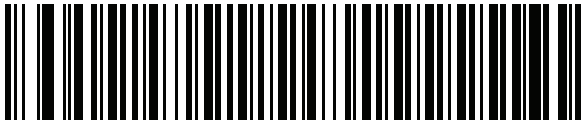
Belarusian

Country Codes (continued)



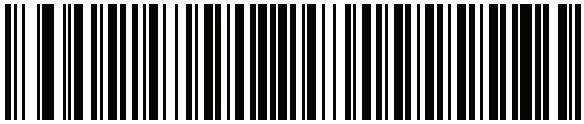
Bosnian (Latin)

Country Codes (continued)



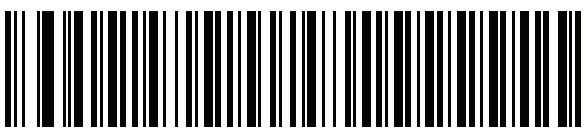
Bosnian (Cyrillic)

Country Codes (continued)



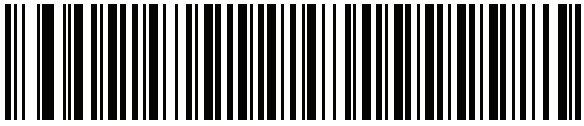
Bulgarian (Latin)

Country Codes (continued)



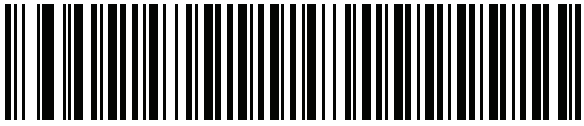
Bulgarian Cyrillic (Typewriter)
(Bulgarian -Windows XP
Typewriter - Windows 7 or higher)

Country Codes (continued)



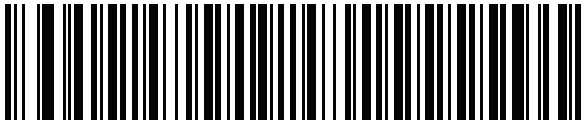
Canadian French Win7

Country Codes (continued)



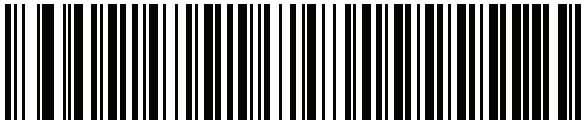
Canadian French (Legacy)

Country Codes (continued)



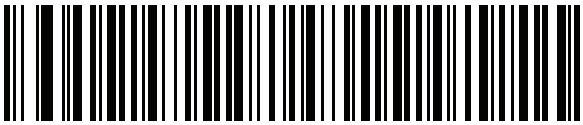
Canadian Multilingual Standard

Country Codes (continued)



Chinese (ASCII)

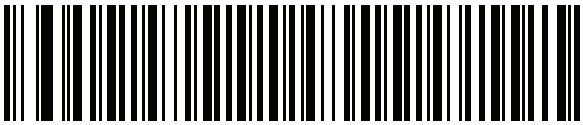
Country Codes (continued)



Chinese (Simplified)

✓ ***NOTE*** For CJK keyboard types, see *Appendix H, CJK Decode Control*.

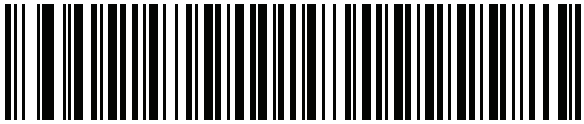
Country Codes (continued)



Chinese (Traditional)

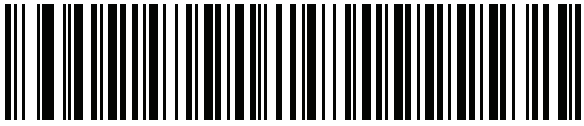
✓ ***NOTE*** For CJK keyboard types, see *Appendix H, CJK Decode Control*.

Country Codes (continued)



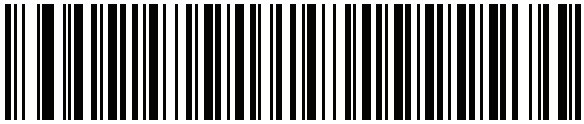
Croatian

Country Codes (continued)



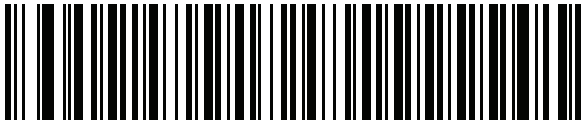
Czech

Country Codes (continued)



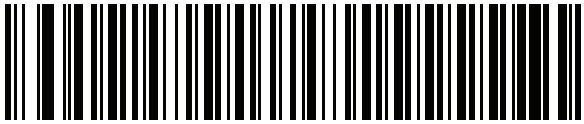
Czech (Programmer)

Country Codes (continued)



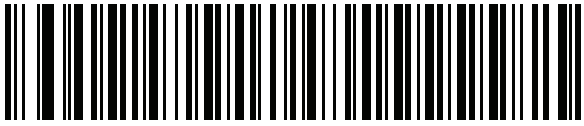
Czech (QWERTY)

Country Codes (continued)



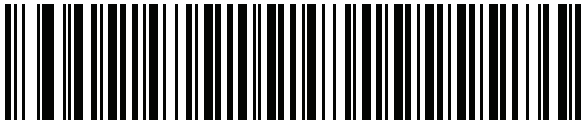
Danish

Country Codes (continued)



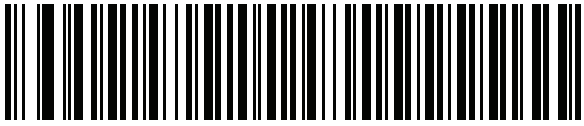
Dutch (Netherlands)

Country Codes (continued)



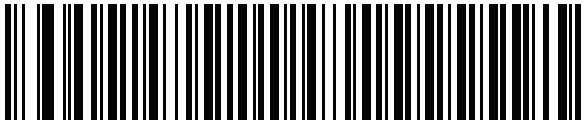
Estonian

Country Codes (continued)



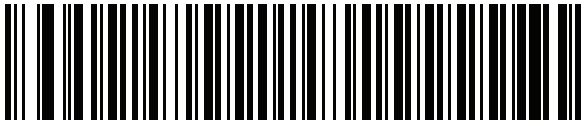
Faeroese

Country Codes (continued)



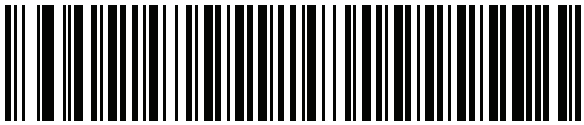
Finnish

Country Codes (continued)



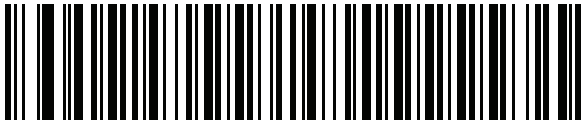
French (France)

Country Codes (continued)



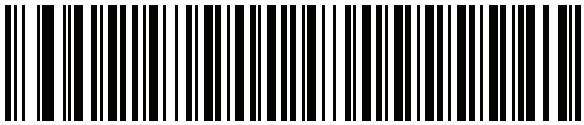
French International
(Belgian French)

Country Codes (continued)



French (Canada) 95/98

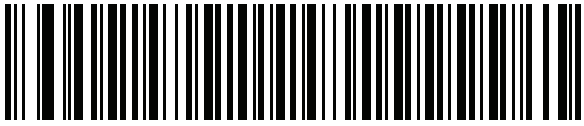
Country Codes (continued)



French (Canada) 2000/XP

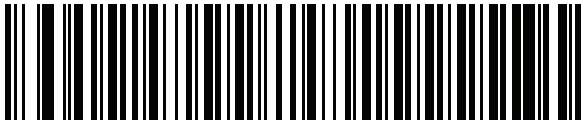
There is also a country code barcode for *Canadian Multilingual Standard on page F-17*. Be sure to select the appropriate barcode for your host system.

Country Codes (continued)



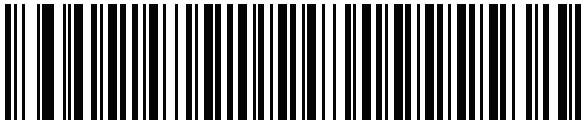
Galician

Country Codes (continued)



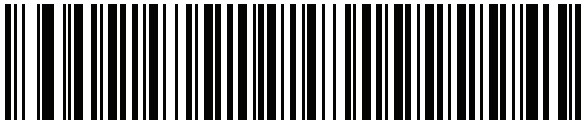
German

Country Codes (continued)



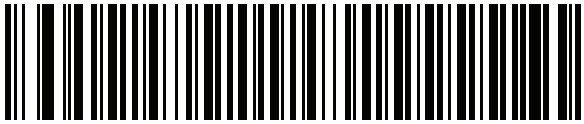
Greek Latin

Country Codes (continued)



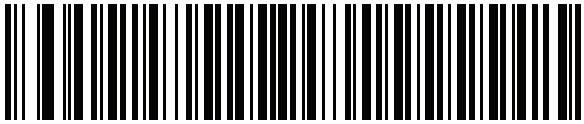
Greek (220) Latin

Country Codes (continued)



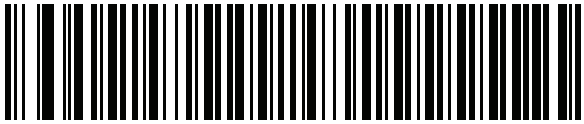
Greek (319) Latin

Country Codes (continued)



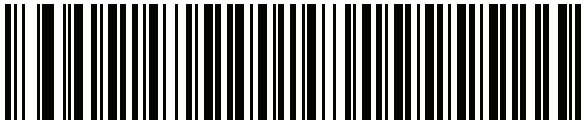
Greek

Country Codes (continued)



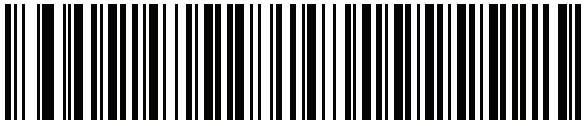
Greek (220)

Country Codes (continued)



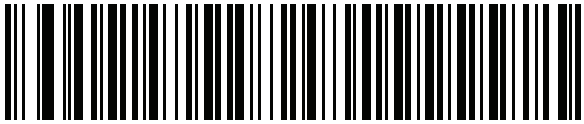
Greek (319)

Country Codes (continued)



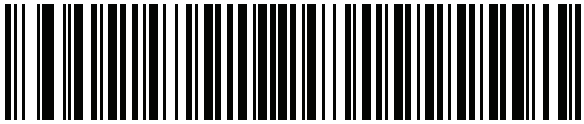
Greek Polytonic

Country Codes (continued)



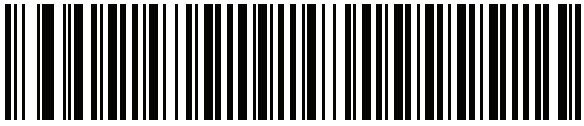
Hebrew Israel

Country Codes (continued)



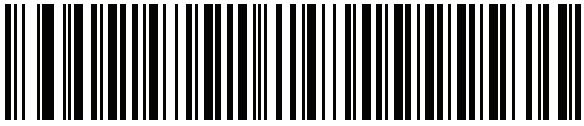
Hungarian

Country Codes (continued)



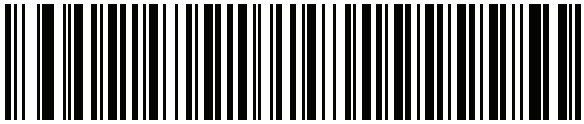
Hungarian_101KEY

Country Codes (continued)



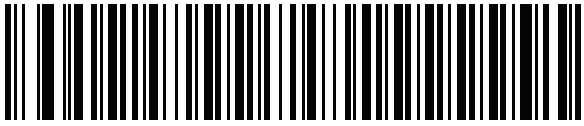
Icelandic

Country Codes (continued)



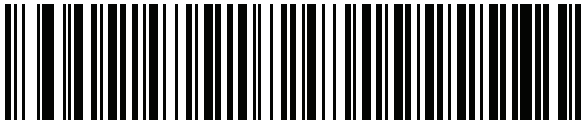
Irish

Country Codes (continued)



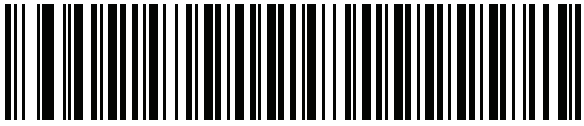
Italian

Country Codes (continued)



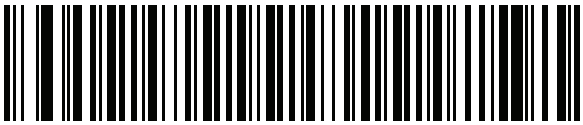
Italian (142)

Country Codes (continued)



Japanese (ASCII)

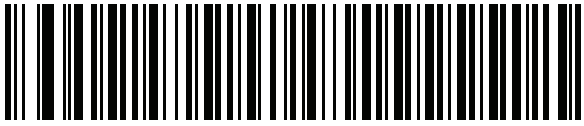
Country Codes (continued)



Japanese (SHIFT-JIS)

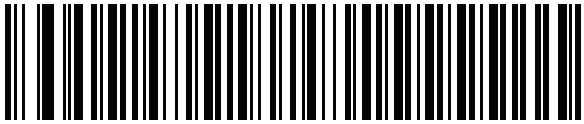
✓ ***NOTE*** For CJK keyboard types, see *Appendix H, CJK Decode Control*.

Country Codes (continued)



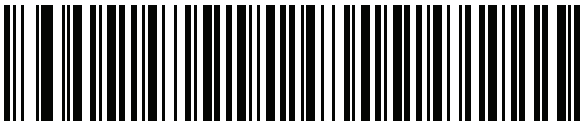
Kazakh

Country Codes (continued)



Korean (ASCII)

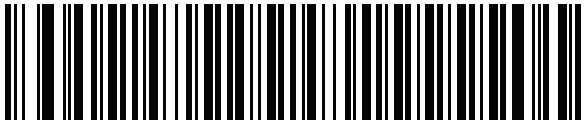
Country Codes (continued)



Korean (Hangul)

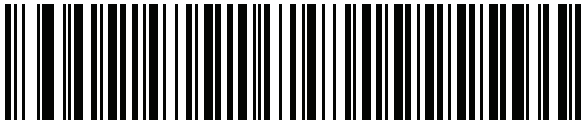
✓ ***NOTE*** For CJK keyboard types, see *Appendix H, CJK Decode Control*.

Country Codes (continued)



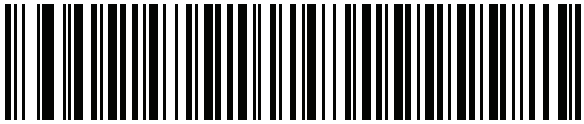
Kyrgyz

Country Codes (continued)



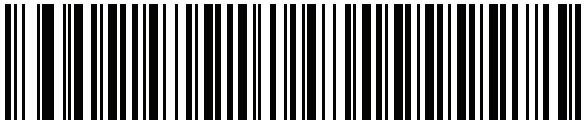
Latin American

Country Codes (continued)



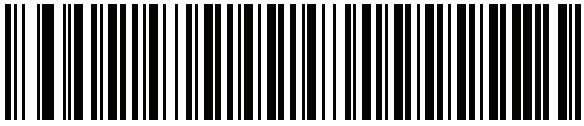
Latvian

Country Codes (continued)



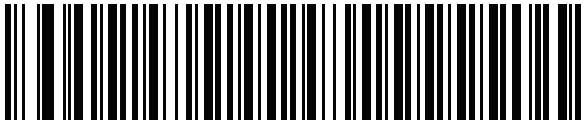
Latvian (QWERTY)

Country Codes (continued)



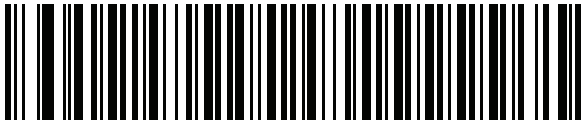
Lithuanian

Country Codes (continued)



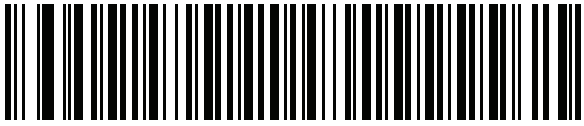
Lithuanian (IBM)

Country Codes (continued)



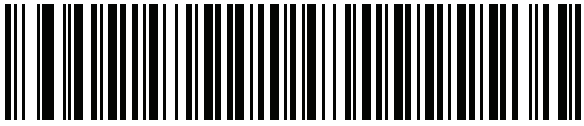
Macedonian (FYROM)

Country Codes (continued)



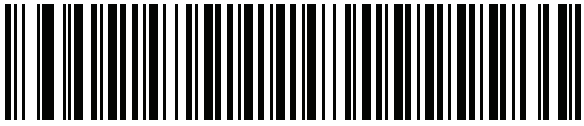
Maltese_47KEY

Country Codes (continued)



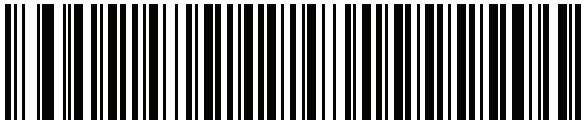
Mongolian

Country Codes (continued)



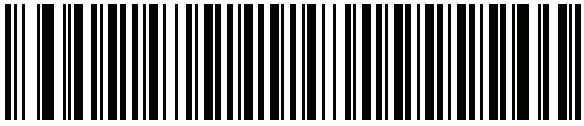
Norwegian

Country Codes (continued)



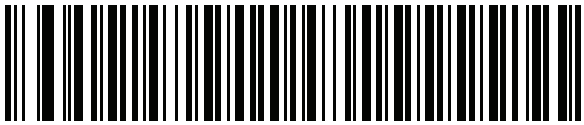
Polish (214)

Country Codes (continued)



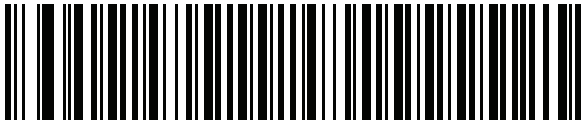
Polish (Programmer)

Country Codes (continued)



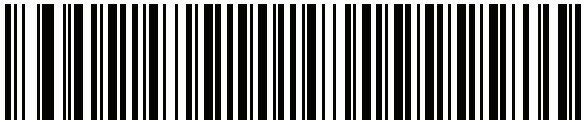
Portuguese (Brazil)
(Windows XP)

Country Codes (continued)



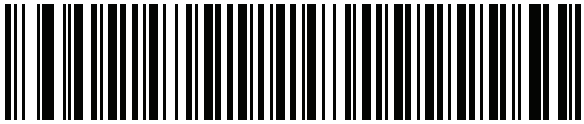
Portuguese (Brazilian ABNT)

Country Codes (continued)



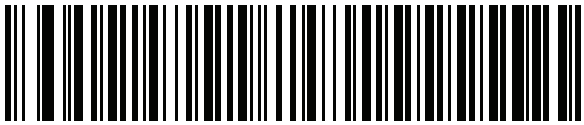
Portuguese (Brazilian ABNT2)

Country Codes (continued)



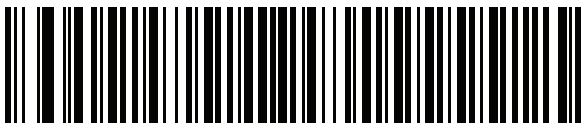
Portuguese (Portugal)

Country Codes (continued)



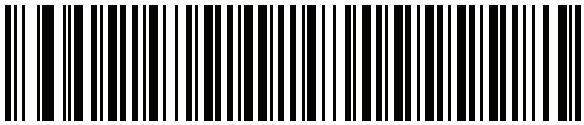
Romanian
(Windows XP)

Country Codes (continued)



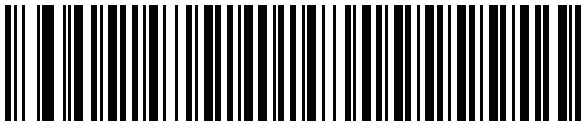
Romanian (Legacy)
(Windows 7 or higher)

Country Codes (continued)



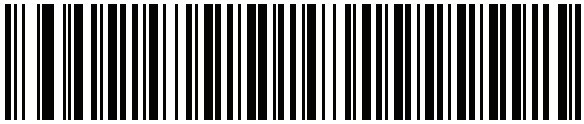
Romanian (Standard)
(Windows 7 or higher)

Country Codes (continued)



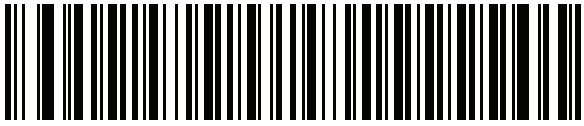
Romanian (Programmer)
(Windows 7 or higher)

Country Codes (continued)



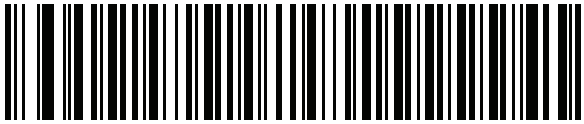
Russian

Country Codes (continued)



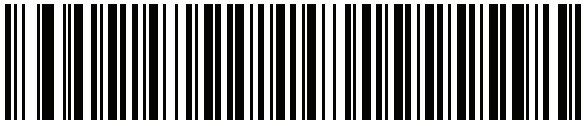
Russian (Typewriter)

Country Codes (continued)



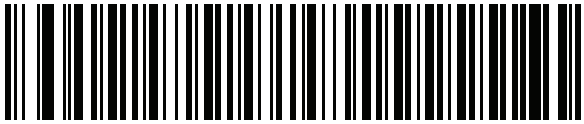
Serbian (Latin)

Country Codes (continued)



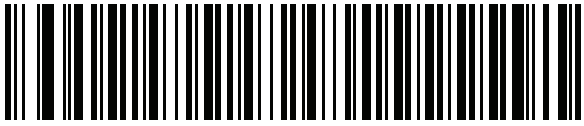
Serbian (Cyrillic)

Country Codes (continued)



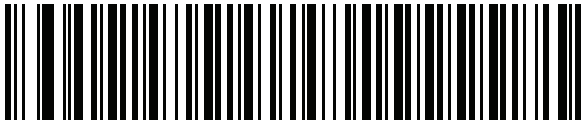
Slovak

Country Codes (continued)



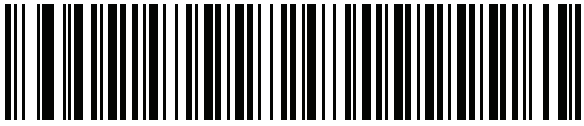
Slovak (QWERTY)

Country Codes (continued)



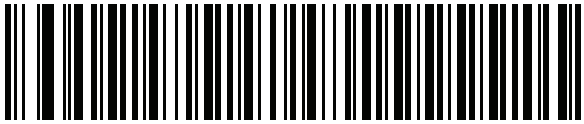
Slovenian

Country Codes (continued)



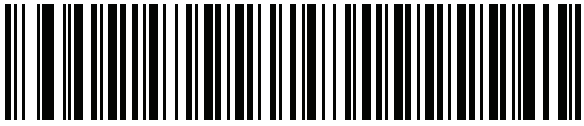
Spanish

Country Codes (continued)



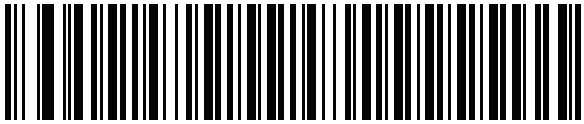
Spanish (Variation)

Country Codes (continued)



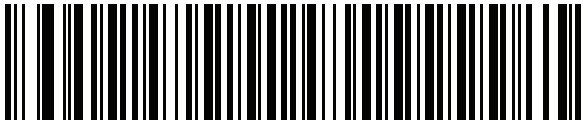
Swedish

Country Codes (continued)



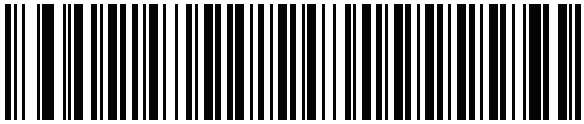
Swiss French

Country Codes (continued)



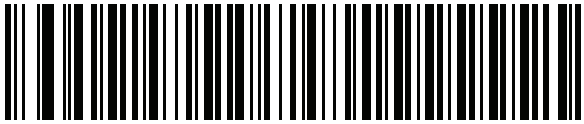
Swiss German

Country Codes (continued)



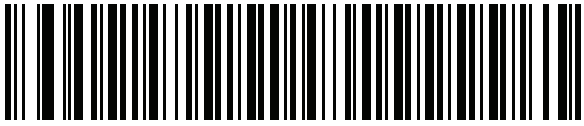
Tatar

Country Codes (continued)



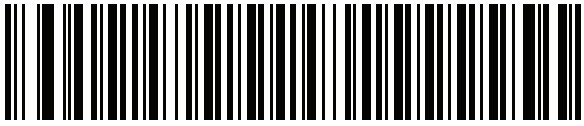
Thai (Kedmanee)

Country Codes (continued)



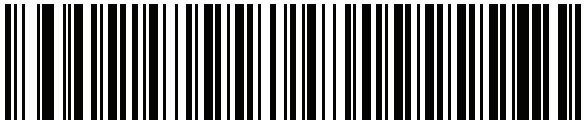
Turkish F

Country Codes (continued)



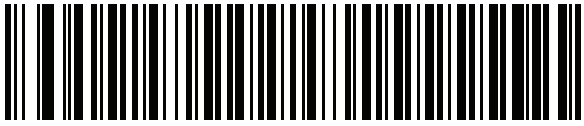
Turkish Q

Country Codes (continued)



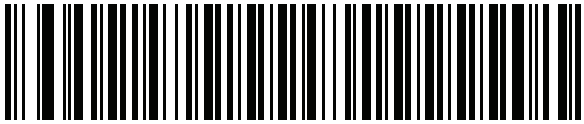
UK English

Country Codes (continued)



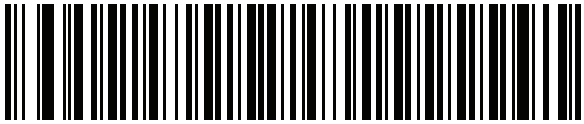
Ukrainian

Country Codes (continued)



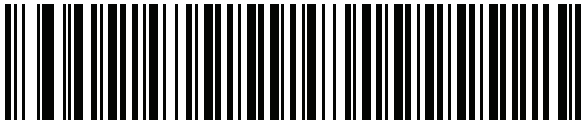
US Dvorak

Country Codes (continued)



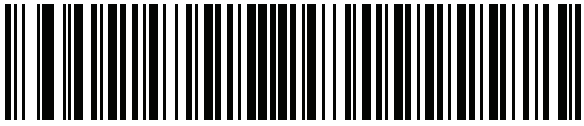
US Dvorak Left

Country Codes (continued)



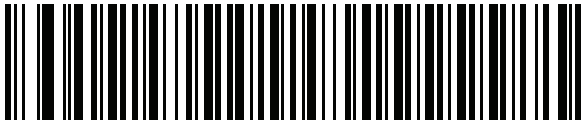
US Dvorak Right

Country Codes (continued)



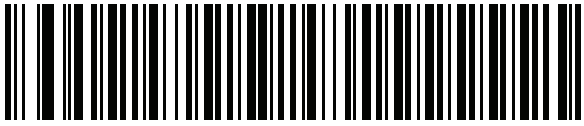
US International

Country Codes (continued)



Uzbek

Country Codes (continued)



Vietnamese

APPENDIX G COUNTRY CODE PAGES

Introduction

This chapter provides barcodes for selecting code pages for the country keyboard type selected in *Appendix F, Country Codes*. If the default code page in *Table G-1* is appropriate for your selected country keyboard type, you do not need to scan a country code page barcode.

✓ ***NOTE*** ADF rules can also specify a code page based on the symbology and other ADF criteria. Refer to the *Advanced Data Formatting Programmer Guide*.

Country Code Page Defaults

Table G-1 lists the code page default for each country keyboard.

Table G-1 *Country Code Page Defaults*

Country Keyboard	Code Page Default
US English (North American)	Windows 1252
US English (Mac)	Mac CP10000
Albanian	Windows 1250
Arabic 101	Windows 1256
Arabic 102	Windows 1256
Arabic 102 AZERTY	Windows 1256
Azeri Latin	Windows 1254
Azeri Cyrillic	Windows 1251
Belarusian	Windows 1251
Bosnian Latin	Windows 1250

Table G-1 *Country Code Page Defaults (Continued)*

Country Keyboard	Code Page Default
Bosnian Cyrillic	Windows 1251
Bulgarian Latin	Windows 1250
Bulgarian Cyrillic	Windows 1251
Canadian French Win7	Windows 1252
Canadian French (Legacy)	Windows 1252
Canadian Multilingual	Windows 1252
Croatian	Windows 1250
Chinese ASCII	Windows 1252
Chinese (Simplified)	Windows 936, GBK
Chinese (Traditional)	Windows 950, Big5
Czech	Windows 1250
Czech Programmers	Windows 1250
Czech QWERTY	Windows 1250
Danish	Windows 1252
Dutch Netherland	Windows 1252
Estonian	Windows 1257
Faeroese	Windows 1252
Finnish	Windows 1252
French (France)	Windows 1252
French (Canada) 95/98	Windows 1252
French (Canada) 2000/XP	Windows 1252
French International (Belgian French)	Windows 1252
Galician	Windows 1252
German	Windows 1252
Greek Latin	Windows 1252
Greek220 Latin	Windows 1253
Greek319 Latin	Windows 1252
Greek	Windows 1253
Greek220	Windows 1253
Greek319	Windows 1253

Table G-1 *Country Code Page Defaults (Continued)*

Country Keyboard	Code Page Default
Greek Polytonic	Windows 1253
Hebrew Israel	Windows 1255
Hungarian	Windows 1250
Hungarian_101KEY	Windows 1250
Icelandic	Windows 1252
Irish	Windows 1252
Italian	Windows 1252
Italian_142	Windows 1252
Japanese ASCII	Windows 1252
Japanese (Shift-JIS)	Windows 932, Shift-JIS
Kazakh	Windows 1251
Korean ASCII	Windows 1252
Korean (Hangul)	Windows 949, Hangul
Kyrgyz Cyrillic	Windows 1251
Latin America	Windows 1252
Latvian	Windows 1257
Latvian QWERTY	Windows 1257
Lithuanian	Windows 1257
Lithuanian_IBM	Windows 1257
Macedonian -FYROM	Windows 1251
Maltese_47KEY	Windows 1252
Mongolian-Cyrillic	Windows 1251
Norwegian	Windows 1252
Polish_214	Windows 1250
Polish Programmer	Windows 1250
Portuguese Brazil	Windows 1252
Portuguese Brazilian ABNT	Windows 1252
Portuguese Brazilian ABNT2	Windows 1252
Portuguese Portugal	Windows 1252
Romanian	Windows 1250

Table G-1 *Country Code Page Defaults (Continued)*

Country Keyboard	Code Page Default
Romanian Legacy	Windows 1250
Romanian Standard	Windows 1250
Romanian Programmer	Windows 1250
Russian	Windows 1251
Russian Typewriter	Windows 1251
Serbian Latin	Windows 1250
Serbian Cyrillic	Windows 1251
Slovak	Windows 1250
Slovak QWERTY	Windows 1250
Slovenian	Windows 1250
Spanish	Windows 1252
Spanish Variation	Windows 1252
Swedish	Windows 1252
Swiss French	Windows 1252
Swiss German	Windows 1252
Tatar	Windows 1251
Thai-Kedmanee	Windows 874
Turkish F	Windows 1254
Turkish Q	Windows 1254
Ukrainian	Windows 1251
United Kingdom	Windows 1252
United States	Windows 1252
US Dvorak	Windows 1252
US Dvorak Left Hand	Windows 1252
US Dvorak Right Hand	Windows 1252
US International	Windows 1252
Uzbek Cyrillic	Windows 1251
Vietnamese	Windows 1258

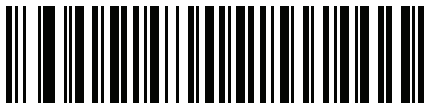
Country Code Page Bar Codes

Parameter # 961

Scan the barcode corresponding to the country keyboard code page.

Windows 1250
Latin 2, Central European

Country Code Page Bar Codes (continued)



Windows 1251
Cyrillic, Slavic

Country Code Page Bar Codes (continued)

Windows 1252
Latin 1, Western European

Country Code Page Bar Codes (continued)

Windows 1253
Greek

Country Code Page Bar Codes (continued)

Windows 1254
Latin 5, Turkish

Country Code Page Bar Codes (continued)

Windows 1255
Hebrew

Country Code Page Bar Codes (continued)

Windows 1256
Arabic

Country Code Page Bar Codes (continued)

Windows 1257
Baltic

Country Code Page Bar Codes (continued)

Windows 1258
Vietnamese

Country Code Page Bar Codes (continued)

Windows 874
Thai

Country Code Page Bar Codes (continued)

Windows 20866
Cyrillic KOI8-R

Country Code Page Bar Codes (continued)

Windows 932
Japanese Shift-JIS

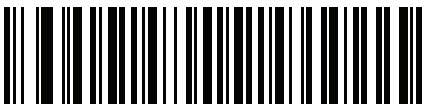
Country Code Page Bar Codes (continued)

Windows 936
Simplified Chinese GBK

Country Code Page Bar Codes (continued)

Windows 54936
Simplified Chinese GB18030

Country Code Page Bar Codes (continued)



Windows 949
Korean Hangul

Country Code Page Bar Codes (continued)

Windows 950
Traditional Chinese Big5

Country Code Page Bar Codes (continued)

MS-DOS 437
Latin US

Country Code Page Bar Codes (continued)

MS-DOS 737
Greek

Country Code Page Bar Codes (continued)

MS-DOS 775
Baltic

Country Code Page Bar Codes (continued)

MS-DOS 850
Latin 1

Country Code Page Bar Codes (continued)

MS-DOS 852
Latin 2

Country Code Page Bar Codes (continued)

MS-DOS 855
Cyrillic

Country Code Page Bar Codes (continued)

MS-DOS 857
Turkish

Country Code Page Bar Codes (continued)

MS-DOS 860
Portuguese

Country Code Page Bar Codes (continued)

MS-DOS 861
Icelandic

Country Code Page Bar Codes (continued)

MS-DOS 862
Hebrew

Country Code Page Bar Codes (continued)

MS-DOS 863
French Canada

Country Code Page Bar Codes (continued)

MS-DOS 865
Nordic

Country Code Page Bar Codes (continued)

MS-DOS 866
Cyrillic

Country Code Page Bar Codes (continued)

MS-DOS 869
Greek 2

Country Code Page Bar Codes (continued)

ISO 8859-1
Latin 1, Western European

Country Code Page Bar Codes (continued)

ISO 8859-2
Latin 2, Central European

Country Code Page Bar Codes (continued)

ISO 8859-3
Latin 3, South European

Country Code Page Bar Codes (continued)

ISO 8859-4
Latin 4, North European

Country Code Page Bar Codes (continued)

ISO 8859-5
Cyrillic

Country Code Page Bar Codes (continued)

ISO 8859-6
Arabic

Country Code Page Bar Codes (continued)

ISO 8859-7
Greek

Country Code Page Bar Codes (continued)

ISO 8859-8
Hebrew

Country Code Page Bar Codes (continued)

ISO 8859-9
Latin 5, Turkish

Country Code Page Bar Codes (continued)

ISO 8859-10
Latin 6, Nordic

Country Code Page Bar Codes (continued)

ISO 8859-11
Thai

Country Code Page Bar Codes (continued)

ISO 8859-13
Latin 7, Baltic

Country Code Page Bar Codes (continued)

ISO 8859-14
Latin 8, Celtic

Country Code Page Bar Codes (continued)

ISO 8859-15
Latin 9

Country Code Page Bar Codes (continued)

ISO 8859-16
Latin 10, South-Eastern European

Country Code Page Bar Codes (continued)

UTF-8

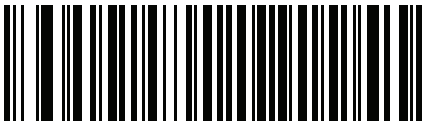
Country Code Page Bar Codes (continued)

UTF-16LE
UTF-16 Little Endian

Country Code Page Bar Codes (continued)

UTF-16BE
UTF-16 Big Endian

Country Code Page Bar Codes (continued)



Mac CP10000
Roman

APPENDIX H CJK DECODE CONTROL

Introduction

This appendix describes control parameters for CJK (Chinese, Japanese, Korean) barcode decode through USB HID Keyboard Emulation mode.

NOTE Because ADF does not support CJK character processing, there is no format manipulation for CJK output.

CJK Control Parameters

Unicode Output Control

Parameter # 973

For a Unicode encoded CJK barcode, select one of the following options for unicode output:

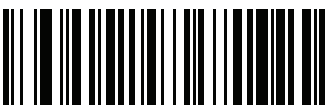
- **Universal Output to Unicode and MBCS Application** - This default method applies to Unicode and MBCS expected applications, such as MS Word and Notepad on a Windows host.

NOTE To support Unicode universal output, set up the registry table for the Windows host. See *Unicode/CJK Decode Setup with Windows Host on page H-15*.

- **Output to Unicode Application Only** - This method applies only to Unicode expected applications, such as MS Word and WordPad, but not Notepad.

***Universal Output**
(0)

Unicode Output Control (continued)



Unicode Application Only
(1)

CJK Output Method to Windows Host

Parameter # 972

For a national standard encoded CJK barcode, select one of the following options for CJK output to a Windows host:

- **Universal CJK Output** - This is the default universal CJK output method for US English IME or Chinese/Japanese/Korean ASCII IME on a Windows host. This method converts CJK characters to Unicode and emulates the characters when transmitting to the host. Use the *Unicode Output Control* parameter to control Unicode output.

NOTE To support universal CJK output, set up the registry table for the Windows host. See *Unicode/CJK Decode Setup with Windows Host on page H-15*.

- **Other options for CJK output** - With the following methods, the scanner sends the CJK character hexadecimal internal code (Nei Ma) value to the host, or converts the CJK character to Unicode and sends the hexadecimal Unicode value to the host. When using these methods, the Windows host must select the corresponding IME to accept the CJK character. See *Unicode/CJK Decode Setup with Windows Host on page H-15*.
  - **Japanese Unicode Output**
  - **Simplified Chinese GBK Code Output**
  - **Simplified Chinese Unicode Output**
  - **Korean Unicode Code Output**
  - **Traditional Chinese Big5 Code Output** (Windows XP)
  - **Traditional Chinese Big5 Code Output** (Windows 7)
  - **Traditional Chinese Unicode Code Output** (Windows XP)
  - **Traditional Chinese Unicode Code Output** (Windows 7)

NOTE The Unicode emulate output method depends on the host system (Windows XP or Windows 7).

***Universal CJK Output**
(0)

CJK Output Method to Windows Host (continued)

Japanese Unicode Output
(34)

✓ ***NOTE*** For Japanese Unicode Output, select Simplified Chinese Unicode IME on the Windows host.

CJK Output Method to Windows Host (continued)

Chinese (Simplified) GBK Output (1)

CJK Output Method to Windows Host (continued)

Chinese (Simplified) Unicode Output (2)

CJK Output Method to Windows Host (continued)

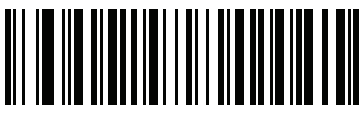
Korean Unicode Output
(50)

✓ ***NOTE*** For Korean Unicode Output, select Simplified Chinese Unicode IME on the Windows host.

CJK Output Method to Windows Host (continued)

Chinese (Traditional) Big5 Output (Windows XP) (17)

CJK Output Method to Windows Host (continued)

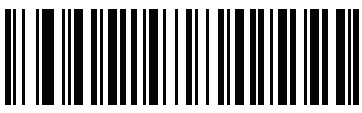


Chinese (Traditional) Big5 Output (Windows 7)
(19)

CJK Output Method to Windows Host (continued)

Chinese (Traditional) Unicode Output (Windows XP)
(18)

CJK Output Method to Windows Host (continued)



Chinese (Traditional) Unicode Output (Windows 7)
(20)

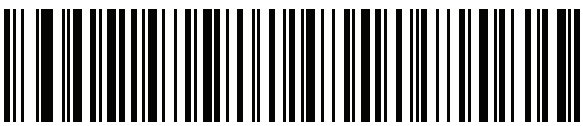
Non-CJK UTF Bar Code Output

Parameter # 960

Some country keyboard type layouts contain characters that do not exist in the default code page (see *Country Keyboard Type Missing Characters on page H-14*). Although the default code page can not encode these characters in a barcode, they can be encoded in the UTF-8 barcode. Scan the following barcode to output the Unicode values by emulation mode.

✓ ***NOTE*** Use this special country keyboard type to decode the non-CJK UTF-8 barcode. After decoding, re-configure the scanner to use the original country keyboard type.

Use US English IME on Windows. See *Unicode Output Control on page H-2*.



Non-CJK UTF-8 Emulation Output

Country Keyboard Type Missing Characters

Country keyboard type: **Tatar, Uzbek, Mongolian, Kyrgyz, Kazakh and Azeri**
Default code page: CP1251
Missing characters:

ғ	Ғ
ҳ	Ҳ
қ	Қ
һ	Һ
ө	Ө
ә	Ә
ү	Ү
ң	Ң
җ	Җ
₮	
ң	Ң
ұ	Ұ
к	К
ч	Ч
к	К

Country keyboard type: **Romanian (Standard)**
Default code page: CP1250
Missing characters:

ș	Ș
ț	Ț

Country keyboard type: **Portuguese-Brazilian (ABNT), Portuguese-Brazilian (ABNT2)**
Default code page: CP1252
Missing character: ₲

Country keyboard type: **Azeri-Latin**
Default code page: CP1254
Missing characters: ə, Ə

Unicode/CJK Decode Setup with Windows Host

This section describes how to set up CJK decode with a Windows host.

Setting Up the Windows Registry Table for Unicode Universal Output

To support the Unicode universal output method, set up the Windows host registry table as follows:

1. Select **Start > Run > regedt32** to start the registry editor.
2. Under **HKEY_Current_User\Control Panel\Input Method**, set **EnableHexNumpad** to **1** as follows:
   [HKEY_CURRENT_USER\Control Panel\Input Method]
   "EnableHexNumpad"="1"
   If this key does not exist, add it as type **REG_SZ** (string value).
3. Reboot the computer to implement the registry change.

Adding CJK IME on Windows

To add the desired CJK input language:

1. Click **Start > Control Panel**.
2. If the Control Panel opens in category view, select **Switch to Classic View** in the top left corner.
3. Select **Regional and Language Options**.
4. Click the **Language** tab.
5. Under **Supplemental Language Support**, select the **Install Files for East Asian Languages** check box if not already selected, and click **Apply**. This may require a Windows installation CD to install the required files. This step ensures that the East Asian Languages (CJK) are available.
6. Under **Text Services and Input Language**, click **Details**.
7. Under **Installed Services**, click **Add**.
8. In the **Add Input Language** dialog box, choose the CJK input language and keyboard layout or Input Method Editor (IME) to add.
9. Click **OK** twice. The language indicator appears in the system tray (at bottom right corner of the desktop by default). To switch between input languages (keyboard languages) select the language indicator in the system tray.
10. Select the language indicator in the system tray to select the desired country keyboard type.
11. Verify that the characters displayed on each country's keyboard appear.

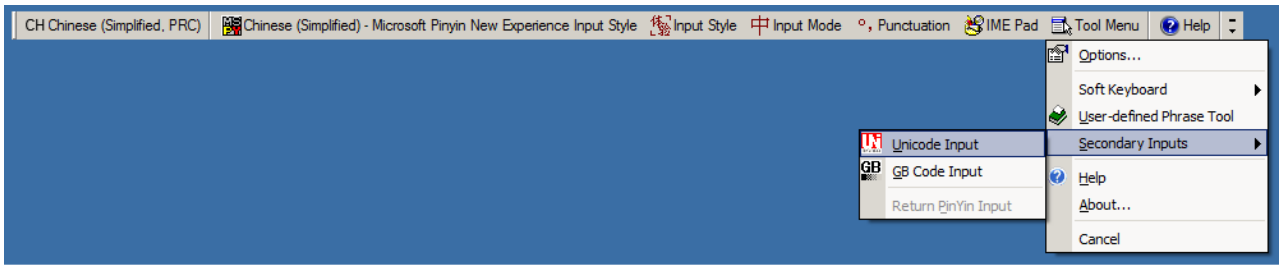
Selecting the Simplified Chinese Input Method on the Host

To select the Simplified Chinese input method:

- Select Unicode/GBK input on Windows XP: **Chinese (Simplified) - NeiMa**, then click the input bar to select **Unicode** or **GBK NeiMa** input.

Or

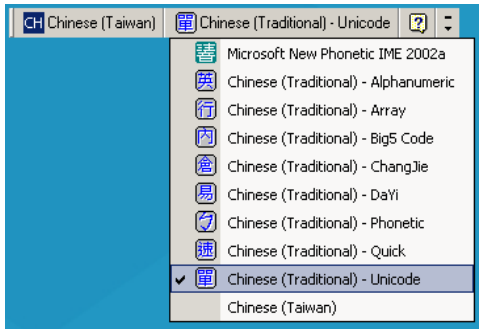
- Select Unicode/GBK input on Windows 7: **Chinese (Simplified) - Microsoft Pinyin New Experience Input Style**, then select **Tool Menu > Secondary Inputs > Unicode Input** or **GB Code Input**.



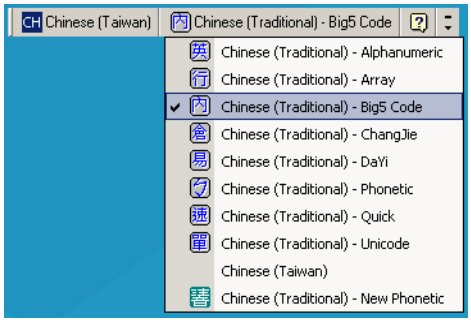
Selecting the Traditional Chinese Input Method on the Host

To select the Traditional Chinese input method:

- Select Unicode input on Windows XP: **Chinese (Traditional) - Unicode**



- Select Big5 input on Windows XP: **Chinese (Traditional) - Big5 Code**



- Select Unicode/Big5 input on Windows 7: **Chinese (Traditional) - New Quick**. This option support both Unicode and Big5 input.

APPENDIX I SAMPLE BAR CODES

IMPORTANT To read a sample barcode the parameter must be enabled. To enable a parameter scan the appropriate enable barcode in *Chapter 12, 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)

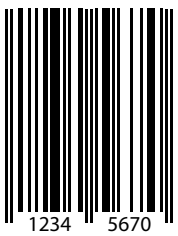
UPC-E with 2-digit Add-on

UPC/EAN (continued)

UPC-E with 5-digit Add-on

UPC/EAN (continued)

EAN-8



UPC/EAN (continued)

EAN-8 with 2-digit Add-on

UPC/EAN (continued)

EAN-8 with 5-digit Add-on

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

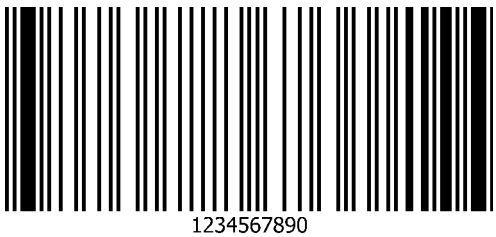
Code 128 (continued)

GS1-128

(01)94019097685457(13)170119(30)17

Code 39

Code 93



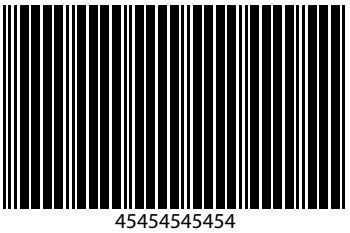
Interleaved 2 of 5

12345678901231

MSI with 2 Check Digits

123455834

Chinese 2 of 5



GS1 DataBar

GS1 DataBar Omnidirectional (formerly GS1 DataBar-14)

7612341562341

GS1 DataBar (continued)

GS1 DataBar Truncated

GS1 DataBar (continued)

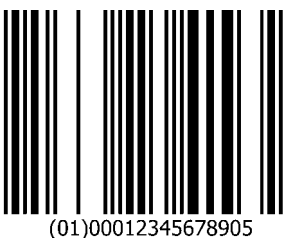
GS1 DataBar Stacked

GS1 DataBar (continued)

GS1 DataBar Stacked Omnidirectional

GS1 DataBar (continued)

GS1 DataBar Limited



GS1 DataBar (continued)

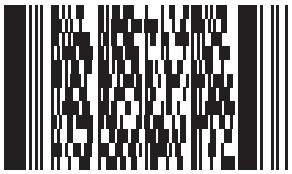
GS1 DataBar Expanded

GS1 DataBar (continued)

GS1 DataBar Expanded Stacked

2D Symbologies

PDF417



2D Symbologies (continued)

Data Matrix

2D Symbologies (continued)

GS1 Data Matrix

2D Symbologies (continued)

QR Code

2D Symbologies (continued)

GS1 QR

2D Symbologies (continued)

MicroQR

2D Symbologies (continued)

Aztec

0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789012345
6789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789

2D Symbologies (continued)

Han Xin

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