ION TABLET

Scanner Configuration Guide

POSX
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User Preferences & Miscellaneous Options

Image Capture Preferences

USB Interface

USER PREFERENCES & MISCELLANEOUS OPTIONS

Introduction

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

The engine 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.

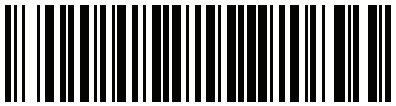
Setting Parameters

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

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

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

To return all features to default values, see *Default Parameters on page 6-5*. Throughout the programming bar code menus, asterisks indicate (*) default values.



* Indicates default — ***Enable Parameter (1)** — Feature/option — Option value

Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to set the beeper tone to high, scan the **High Frequency** (beeper tone) bar code listed under *Beeper Tone on page 6-12*. The engine issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several bar codes. 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 6-1 lists defaults for user preferences parameters. Change these values in one of two ways:

- Scan the appropriate bar codes in this chapter. The new value replaces the standard default value in memory. To recall default parameter values, see *Default Parameters on page 6-5*.
- Configure the engine using the 123Scan^2 configuration program. See *Chapter 12, 123Scan and Software Tools*.

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

Table 6-1 *User Preferences Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
User Preferences				
Set Default Parameter			N/A	*6-5*
Parameter Bar Code Scanning	236	ECh	Enable	*6-6*
Lock Parameter Scanning	802	F2h 22h	N/A	*6-7*
Unlock Parameter Scanning	803	F2h 23h	N/A	*6-7*
User Parameter Pass Through	625	F1h 71h	Disable	*6-8*
Validate Concatenated Parameter Bar Codes	692	F1h B4h	Disable	*6-9*
Beep After Good Decode	56	38h	Enable	*6-10*
Beeper Volume	140	8Ch	High	*6-11*
Beeper Tone	145	91h	Medium	*6-12*
Beeper Duration	628	F1h 74h	Medium	*6-13*
Suppress Power Up Beeps	721	F1h D1h	Do Not Suppress	*6-13*

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 6-1 *User Preferences Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
LED on Good Decode	744	F1h E8h	Enable	6-14
Direct Decode Indicator	859	F2h 5Bh	Disable	6-15
Low Power Mode	128	80h	Enable	6-16
Time Delay to Low Power Mode	146	92h	1 Second	6-17
Trigger Mode	138	8Ah	Standard (Level)	6-19
Picklist Mode	402	F0h 92h	Disable Picklist Mode Always	6-21
Continuous Bar Code Read	649	F1h 89h	Disable	6-22
Unique Bar Code Reporting	723	F1h D3h	Disable	6-22
Mirrored Image	624	F1h 70h	Disable	6-23
Decode Session Timeout	136	88h	9.9 Seconds	6-23
Timeout Between Decodes, Same Symbol	137	89h	0.6 Seconds	6-24
Timeout Between Decodes, Different Symbols	144	90h	0.1 Seconds	6-24
Mobile Phone/Display Mode	716	F1h CCh	Disable	6-25
PDF Prioritization	719	F4h F1h CFh	Disable	6-26
PDF Prioritization Timeout	720	F1h D0h	200 ms	6-26
Low Light Scene Detection	810	F2h 2Ah	Disable	6-28
Miscellaneous Options				
Enter Key	N/A	N/A	N/A	6-29
Tab Key	N/A	N/A	N/A	6-29
Transmit Code ID Character	45	2Dh	None	6-30
Prefix Value	99, 105	63h, 69h	7013 <CR><LF>	6-31
Suffix 1 Value Suffix 2 Value	98, 104 100, 106	62h, 68h 64h, 6Ah	7013 <CR><LF>	6-31
Scan Data Transmission Format	235	EBh	Data As Is	6-32
FN1 Substitution Values	103, 109	67h, 6Dh	7013 <CR><LF>	6-34
Transmit “No Read” Message	94	5E	Disable	6-35

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 6-1 *User Preferences Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Send Versions				
Report Version	N/A	N/A	N/A	*6-36*
Report Decoder Manufacturing Information	N/A	N/A	N/A	*6-36*
Report Scan Engine Manufacturing Information	N/A	N/A	N/A	*6-36*

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 bar codes to reset the engine to its default settings as follows:

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

Write to Custom Defaults

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

Restore Defaults

Write to Custom Defaults

Parameter Bar Code Scanning

Parameter # 236

SSI # ECh

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

***Enable Parameter Bar Code Scanning**
(1)

Disable Parameter Bar Code Scanning
(0)

Lock/Unlock Parameter Scanning

Lock:

Parameter # 802

SSI # F2h 22h

Unlock:

Parameter # 803

SSI # F2h 23h

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

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

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

To lock parameter scanning:

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

To unlock parameter scanning:

1. Scan the **Unlock** bar code.
2. Scan four bar codes from *Appendix B, Numeric Bar Codes* that represent the correct code. An "unlock" beep sounds (two long low beeps) in addition to the parameter entry beep. Entering an incorrect code results in a parameter error beep.

Lock

Unlock

Locking/Unlocking via the Host Interface

You can also use a host interface such as SSI to lock or unlock parameter scanning. To lock parameter scanning using the host interface, store a 4-digit code within the range of 1-9999 in the **Lock** parameter. Values outside this range are ignored. To unlock parameter scanning, store this code in the **Unlock** parameter. To persist the lock/unlock status through a power cycle, make this parameter value permanent.

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

User Parameter Pass Through

Parameter # 625

SSI # F1h 71h

Scan one of the following bar codes to select whether to send user-defined parameter bar codes (see *User-Defined Parameter Bar Code Format*) as normal decode data in decode data packets for SSI and SNAPI hosts (see *Decode Data Format*).

User-Defined Parameter Bar Code Format

Code 128 bar codes with:

<FNC3><L><data>

or

<FNC3><B><12 bytes of data>

Decode Data Format

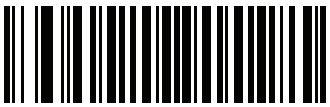
<0xf3><L><data>

or

<0xf3><B><12 bytes of data>

NOTE The **B** type only works with 12 bytes of data.

A decode beep sounds upon a successful decode of a user-defined parameter bar code.



Enable User Parameter Pass Through (1)

***Disable User Parameter Pass Through (0)**

Validate Concatenated Parameter Bar Codes

Parameter # 692

SSI # F1h B4h

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

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

***Disable Validate Concatenated Parameter Bar Codes**
(0)

Enable Validate Concatenated Parameter Bar Codes
(1)

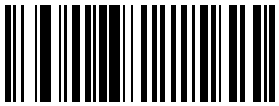
Beep After Good Decode

Parameter # 56

SSI # 38h

Scan one of the following bar codes to select whether or not the engine beeps after a good decode.
If you select **Disable Beep After Good Decode**, the beeper still operates during parameter menu scanning and to indicate error conditions.

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



Disable Beep After Good Decode
(0)

Beeper Volume

Parameter # 140

SSI # 8Ch

Scan one of the following bar codes to select a beeper volume.

Low Volume
(2)

Medium Volume
(1)

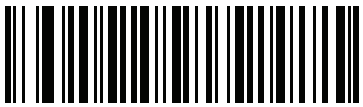
***High Volume**
(0)

Beeper Tone

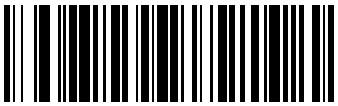
Parameter # 145

SSI # 91h

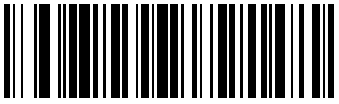
Scan one of the following bar codes to select a beeper tone for the good decode beep.



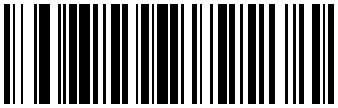
Disable Tone
(3)



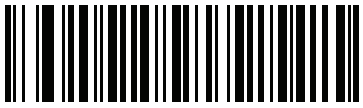
Low Tone
(2)



***Medium Tone**
(1)



High Tone
(0)



Medium to High Tone (2-tone)
(4)

Beeper Duration

Parameter # 628

SSI # F1h 74h

Scan one of the following bar codes to select the duration for the good decode beep.

Short Duration
(0)

***Medium Duration**
(1)

Long Duration
(2)

Suppress Power Up Beeps

Parameter # 721

SSI # F1h D1h

Scan one of the following bar codes to select whether or not to suppress the engine's power-up beeps.

***Do Not Suppress Power Up Beeps**
(0)

Suppress Power Up Beeps
(1)

LED on Good Decode

Parameter # 744

SSI # F1h E8h

Scan one of the following bar codes to select whether or not the LED blinks on a good decode.

***Enable LED on Good Decode (2)**

Disable LED on Good Decode (0)

Direct Decode Indicator

Parameter # 859

SSI # F2h 5Bh

This parameter is only supported in Auto Aim and Standard (Level) *Trigger Mode*. Scan one of the following bar codes to select optional blinking of the illumination on a successful decode.

- ***Disable Direct Decode Indicator** - Illumination does not blink on a successful decode.
- **1 Blink** - Illumination blinks once upon a successful decode.
- **2 Blinks** - Illumination blinks twice upon a successful decode.

***Disable Direct Decode Indicator**
(0)

1 Blink
(1)

2 Blinks
(2)

Low Power Mode

Parameter # 128

SSI # 80h

NOTE The Low Power Mode parameter only applies for non-USB and non-RS485 host interfaces, and when *Trigger Mode on page 6-19* is set to **Level (Standard)**.

Scan one of the following bar codes to select whether or not the engine enters low power mode after a decode attempt or host communication. This applies to serial and keyboard wedge connections. If disabled, power remains on after each decode attempt.

If you enable this, see *Time Delay to Low Power Mode* to set the inactivity time period.

***Enable Low Power Mode**
(1)

Disable Low Power Mode
(0)

Time Delay to Low Power Mode

Parameter # 146

SSI # 92h

NOTE This parameter only applies when *Low Power Mode* is enabled.

Scan one of the following bar codes to set the time the engine remains active before entering low power mode. The engine wakes upon trigger press or when the host attempts to communicate with the engine.

***1 Second**
(17)

10 Seconds
(26)

1 Minute
(33)

5 Minutes
(37)

15 Minutes
(43)

Time Delay to Low Power Mode (continued)

30 Minutes
(45)

45 Minutes
(46)

1 Hour
(49)

Trigger Mode

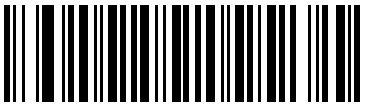
Parameter # 138

SSI # 8Ah

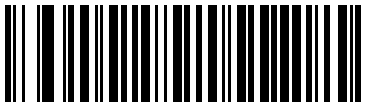
Scan one of the following bar codes to select a trigger mode for the engine:

- **Standard (Level)** - A trigger press activates decode processing. Decode processing continues until the bar code decodes, you release the trigger, or the *Decode Session Timeout on page 6-23* occurs.
- **Presentation (Blink)** - The engine activates decode processing when it detects a bar code in its field of view. After a period of non-use, the LEDs turn off until the engine senses motion.
- **Auto Aim** - The engine projects the aiming pattern when it senses motion. A trigger press activates decode processing. After two seconds of inactivity the aiming pattern shuts off.
- **Auto Aim with Illumination** - The engine turns on the aiming pattern and internal illumination LEDs when it senses motion. A trigger press activates decode processing. After two seconds of inactivity the aiming pattern and internal illumination LEDs automatically shut off.
- **Host and Hardware Trigger Mode** - A host command or trigger press issues the triggering signal, which is interpreted as a level trigger option.

Trigger Mode (continued)



*Standard (Level)
(0)



Presentation (Blink)
(7)

Auto Aim
(9)

Auto Aim with Illumination
(A)

Host and Hardware Trigger Mode
(8)

Picklist Mode

Parameter # 402

SSI # F0h 92h

Scan one of the following bar codes to select a Picklist Mode, which allows you to pick and decode a bar code from multiple bar codes printed close together.

NOTE Enabling Picklist Mode overrides the Disable Decode Aiming Pattern options. You can not disable the decode aiming pattern when Picklist Mode is enabled.

Enabling Picklist Mode can slow decode speed and hinder the ability to decode longer bar codes.

- **Enable Picklist Mode Always** - Picklist Mode is always enabled.
- **Disable Picklist Mode Always** - Picklist Mode is always disabled.

Enable Picklist Mode Always (2)

***Disable Picklist Mode Always (0)**

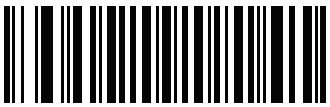
Continuous Bar Code Read

Parameter # 649

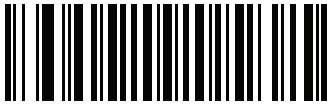
SSI # F1h 89h

Scan **Enable Continuous Bar Code Read** to report every bar code while the trigger is pressed.

NOTE We strongly recommend enabling *Picklist Mode on page 6-21* with this parameter. Disabling Picklist Mode can cause accidental decodes when more than one bar code is in the engine's field of view.



Enable Continuous Bar Code Read
(1)



***Disable Continuous Bar Code Read**
(0)

Unique Bar Code Reporting

Parameter # 723

SSI # F1h D3h

Scan **Enable Continuous Bar Code Read Uniqueness** to report only unique bar codes while the trigger is pressed. This option only applies when *Continuous Bar Code Read* is enabled.

Enable Unique Bar Code Reporting
(1)

***Disable Unique Bar Code Reporting**
(0)

Mirrored Image

Parameter # 624

SSI # F1h 70h

Scan **Enable Mirrored Images** to scan images in reverse, or mirrored, as if seen through a mirror. This mode is useful in applications requiring scanning through a mirror and using symbologies that do not decode in reverse.

Enabling this mode when using snapshot, video, or video viewfinder mode transmits images as mirrored images.

***Disable Mirrored Image**
(0)

Enable Mirrored Image
(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 bar code, and then scan two bar codes 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 bar code, and then scan the **0** and **5** bar codes. To correct an error or change the selection, scan *Cancel on page B-3*.

Decode Session Timeout

Timeout Between Decodes, Same Symbol

Parameter # 137

SSI # 89h

Use this option in presentation mode or *Continuous Bar Code Read* mode to prevent the engine from continuously decoding the same bar code when it is left in the engine's field of view. The bar code must be out of the field of view for the timeout period before the engine reads the same consecutive symbol. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The default interval is 0.6 seconds.

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

Timeout Between Decodes, Same Symbol

Timeout Between Decodes, Different Symbols

Parameter # 144

SSI # 90h

Use this option in presentation mode or *Continuous Bar Code Read* to control the time the engine waits before decoding a different symbol. It is programmable in 0.1 second increments from 0.1 to 9.9 seconds. The default is 0.1 seconds.

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

NOTE Timeout Between Decodes, Different Symbols cannot be greater than or equal to the *Decode Session Timeout*.

Timeout Between Decodes, Different Symbols

Mobile Phone/Display Mode

Parameter # 716

SSI # F1h CCh

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

***Disable Mobile Phone/Display Mode (0)**

Enable Mobile Phone/Display Mode (3)

PDF Prioritization

Parameter # 719

SSI # F4h F1h CFh

Scan **Enable PDF Prioritization** to delay decoding certain 1D bar codes (see *Note* below) by the value specified in *PDF Prioritization Timeout*. During that time the engine 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 device's field of view for the engine to report it. This parameter does not affect decoding other symbologies.

NOTE

The 1D Code 128 bar code lengths include the following:

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

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

- 8 characters
- 12 characters

Enable PDF Prioritization
(1)

***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 engine attempts to decode a PDF417 symbol before reporting the 1D bar code in the field of view.

Scan the following bar code, and then scan four bar codes from *Appendix B, Numeric Bar Codes* that specify the timeout in milliseconds. For example, to enter 400 ms, scan the following bar code, and then scan 0400. The range is 0 to 5000 ms, and the default is 200 ms.

PDF Prioritization Timeout

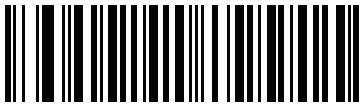
Low Light Scene Detection

Parameter # 810

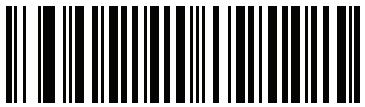
SSI # F2h 2Ah

Scan one of the following bar codes to allow the engine to detect motion in dim to dark illumination environments when in presentation mode:

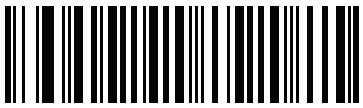
- **No Low Light Scene Detection** - The engine attempts to detect motion as best it can with the aim pattern and illumination turned off when the engine is idle.
- **Aiming Pattern Low Light Assist Scene Detection** - Illumination is off, but the aim pattern is on when the engine is idle to assist in scene detection.
- **Dim Illumination Low Light Assist Scene Detection** - The aim pattern is off, but illumination is on at a dim level to assist in scene detection.



***No Low Light Assist Scene Detection (0)**



Aiming Pattern Low Light Assist Scene Detection (1)

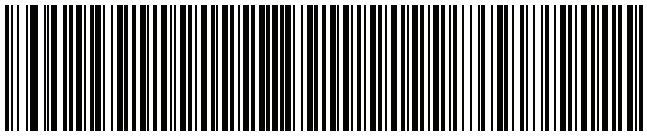


Dim Illumination Low Light Assist Scene Detection (2)

Miscellaneous Scanner Parameters

Enter Key

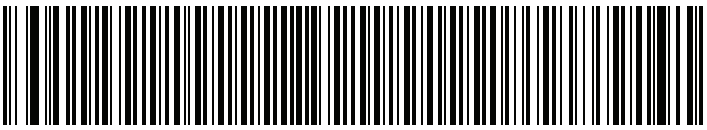
Scan the following bar code to add an Enter key (carriage return/line feed) after scanned data. To program other prefixes and/or suffixes, see *Prefix/Suffix Values on page 6-31*.



Add Enter Key (Carriage Return/Line Feed)

Tab Key

Scan the following bar code to add a Tab key after scanned data.



Tab Key

Transmit Code ID Character

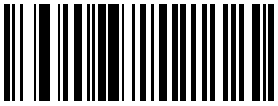
Parameter # 45

SSI # 2Dh

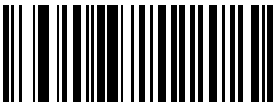
A Code ID character identifies the code type of a scanned bar code. This is useful when decoding more than one code type. In addition to any single character prefix selected, the Code ID character is inserted between the prefix and the decoded symbol.

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-3*.

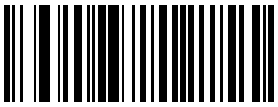
✓ ***NOTE*** If you enable Symbol Code ID Character or AIM Code ID Character, and enable *Transmit "No Read" Message on page 6-35*, the engine appends the code ID for Code 39 to the NR message.



Symbol Code ID Character
(2)



AIM Code ID Character
(1)



***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 bar codes, and then scan four bar codes 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.

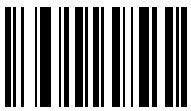
The default prefix and suffix value is 7013 <CR><LF> (Enter key). To correct an error or change a selection, scan *Cancel on page B-3*.

NOTE To use Prefix/Suffix values, first set the *Scan Data Transmission Format on page 6-32*.

Scan Prefix
(7)

Scan Suffix 1
(6)

Scan Suffix 2
(8)



Data Format Cancel

Scan Data Transmission Format

Parameter # 235

SSI # EBh

To change the scan data format, scan one of the following bar codes 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 6-31*.

***Data As Is**
(0)

<DATA> <SUFFIX 1>
(1)

<DATA> <SUFFIX 2>
(2)

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

Scan Data Transmission Format (continued)

<PREFIX> <DATA >
(4)

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

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

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

FN1 Substitution Values

Key Category Parameter # 103

Key Category SSI # 67h

Decimal Value Parameter # 109

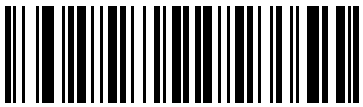
Decimal Value SSI # 6Dh

Keyboard wedge and USB HID keyboard hosts support a FN1 substitution feature. Enabling this substitutes any FN1 character (0x1b) in an EAN128 bar code 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 bar code menus:

1. Scan the following bar code.



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 bar codes 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** bar code on page *6-34*.

Transmit “No Read” Message

Parameter # 94

SSI # 5Eh

Scan one of the following bar codes to set an option for transmitting the No Read (NR) characters:

NOTE If you enable **Transmit No Read**, and also enable Symbol Code ID Character or AIM Code ID Character for *Transmit Code ID Character on page 6-30*, the engine appends the code ID for Code 39 to the NR message.

NOTE This does not apply in presentation mode.

- **Enable No Read** - This transmits the characters NR when a successful decode does not occur before trigger release or the **Decode Session Timeout** expires. See *Decode Session Timeout on page 6-23*.
- **Disable No Read** - This sends nothing to the host if a symbol does not decode.

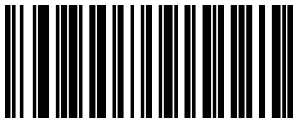
Enable No Read
(1)

***Disable No Read**
(0)

Send Versions

Report Version

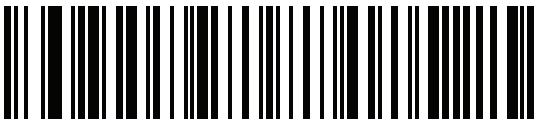
Scan the bar code below to report the version of software currently installed in the decoder.



Report Software Version

Report Decoder Manufacturing Information

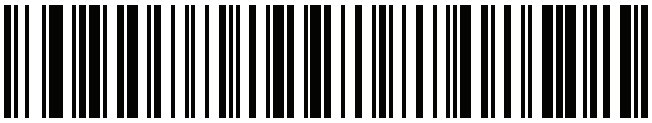
Scan the bar code below to report the part number, serial number, and manufacture date of the decoder.



Report Decoder Manufacturing Information

Report Scan Engine Manufacturing Information

Scan the bar code below to report the part number, serial number, and manufacture date of the scan engine.



Report Engine Manufacturing Information

IMAGE CAPTURE PREFERENCES

Introduction

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

NOTE Only the Symbol Native API (SNAPI) with Imaging interface supports image capture.

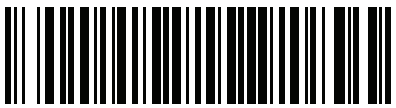
The engine ships with the settings shown in *Table 7-1 on page 7-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

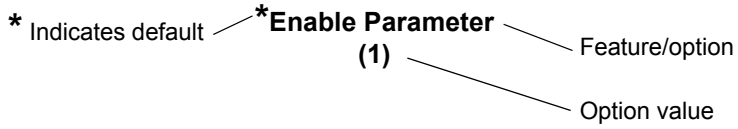
Setting Parameters

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

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

To return all features to default values, scan *Set Factory Defaults on page 6-5*. Throughout the programming bar code menus, asterisks (*) indicate default values.





Scanning Sequence Examples

In most cases scanning one bar code sets the parameter value. For example, to disable image capture illumination, scan the **Disable Image Capture Illumination** bar code under *Image Capture Illumination on page 7-8*. The engine issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several bar codes. 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.

Image Capture Preferences Parameter Defaults

Table 7-1 lists defaults for image capture preference parameters. Change these values in one of two ways:

- Scan the appropriate bar codes in this chapter. The new value replaces the standard default value in memory. To recall default parameter values, see *Default Parameters on page 6-5*.
- Configure the engine using the 123Scan^2 configuration program. See *Chapter 12, 123Scan and Software Tools*.

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

Table 7-1 *Image Capture Preferences Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Image Capture Preferences				
Operational Modes	N/A	N/A	N/A	*7-4*
Aim Brightness	668	F1h 9Ch	2 (High)	*7-5*
Illumination Brightness	669	F1h 9Dh	7	*7-6*
Decoding Autoexposure	297	F0h 29h	Enable	*7-6*
Decoding Illumination	298	F0h 2Ah	Enable	*7-7*
Decode Aiming Pattern	306	F0h 32h	Enable	*7-7*
Image Capture Illumination	361	F0h 69h	Enable	*7-8*
Image Capture Autoexposure	360	F0h 68h	Enable	*7-8*
Exposure Time	567	F4h F1h 37h	100 (10 ms)	*7-9*
Analog Gain	1232	F4h D0h	Analog Gain 1	*7-10*
Snapshot Mode Timeout	323	F0h 43h	0 (30 seconds)	*7-11*

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 7-1 *Image Capture Preferences Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Snapshot Aiming Pattern	300	F0h 2Ch	Enable	*7-12*
Image Size (Number of Pixels)	302	F0h 2Eh	Full	*7-13*
Image Brightness (Target White)	390	F0h 86h	180	*7-14*
Image File Format Selection	304	F0h 30h	JPEG	*7-15*
Image Rotation	665	F1h 99h	0	*7-16*
Video View Finder	324	F0h 44h	Disable	*7-17*
Target Video Frame Size	328	F0h 48h	2200 bytes	*7-18*
Video View Finder Image Size	329	F0h 49h	1700 bytes	*7-18*
Video Resolution	667	F1h 9Bh	1/4 resolution	*7-19*

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.

Operational Modes

The engine has two modes of operation:

- Decode Mode
- Snapshot Mode.

Decode Mode

By default, when you press the trigger the engine attempts to locate and decode enabled bar codes within its field of view. The engine remains in this mode until it decodes a bar code or you release the trigger.

Snapshot Mode

Use Snapshot Mode to capture a high-quality image and transmit it to the host. Scan the **Snapshot Mode** bar code to temporarily enter this mode. While in this mode the engine blinks the green LED at one-second intervals to indicate it is not in standard operating (decode) mode.

In Snapshot Mode, the engine turns on its aiming pattern to highlight the area to capture in the image. The next trigger press instructs the engine to capture a high quality image and transmit it to the host. A short time may pass (less than two seconds) between when the trigger is pressed and the image is captured as the engine adjusts to lighting conditions. Hold the engine steady until a single beep indicates that it captured the image.

If you do not press the trigger within the Snapshot Mode Timeout period, the engine returns to Decode Mode. Use *Snapshot Mode Timeout on page 7-11* to adjust this timeout period. The default timeout period is 30 seconds.

To disable the aiming pattern during Snapshot Mode, see *Snapshot Aiming Pattern on page 7-12*.

Snapshot Mode

Aim Brightness

Parameter # 668

SSI # F1h 9Ch

Scan one of the following bar codes to set the aim pattern brightness or power. Options are low, medium, and high.

Aim Brightness - Low
(0)

Aim Brightness - Medium
(1)

***Aim Brightness - High**
(2)

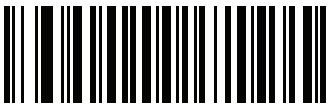
Illumination Brightness

Parameter # 669

SSI # F1h 9Dh

This parameter sets illumination brightness by altering LED power. The default is 7. For values from 1 to 10, LED brightness varies from lowest to highest level.

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



Illumination Brightness

Decoding Autoexposure

Parameter # 297

SSI # F0h 29h

Scan one of the following bar codes:

- **Enable Decoding Autoexposure** - Allows the engine to control gain settings and exposure (integration) time to best capture an image for decode mode.
- **Disable Decoding Autoexposure** - Manually adjust the gain and exposure time. See *Exposure Time* and *Analog Gain*. We recommend this option only for advanced users with difficult decoding situations.

***Enable Decoding Autoexposure**
(1)

Disable Decoding Autoexposure
(0)

Decoding Illumination

Parameter # 298

SSI # F0h 2Ah

Selecting **Enable Decoding Illumination** causes the engine to turn on illumination every image capture to aid decoding. Select **Disable Decoding Illumination** to prevent the engine from using decoding illumination.

Enabling illumination usually results in superior images. The effectiveness of illumination decreases as the distance to the target increases.

NOTE Changing this parameter while using **Presentation Mode**, with or without **Motion Enhancement**, is not recommended.

***Enable Decoding Illumination**
(1)

Disable Decoding Illumination
(0)

Decode Aiming Pattern

Parameter # 306

SSI # F0h 32h

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

NOTE With *Picklist Mode on page 6-21* enabled, the decode aiming pattern flashes even when the **Decode Aiming Pattern** is disabled.

*** Enable Decode Aiming Pattern**
(2)

Disable Decode Aiming Pattern
(0)

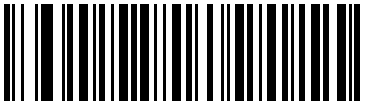
Image Capture Illumination

Parameter # 361

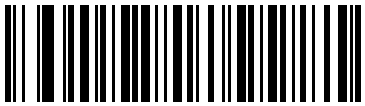
SSI # F0h 69h

Scan **Enable Image Capture Illumination** to turn on illumination during every image capture. This usually results in superior images. The effectiveness of illumination decreases as the distance to the target increases.

Scan **Disable Image Capture Illumination** to prevent the engine from using illumination.



***Enable Image Capture Illumination**
(1)



Disable Image Capture Illumination
(0)

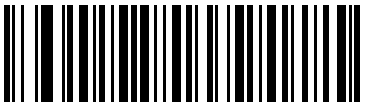
Image Capture Autoexposure

Parameter # 360

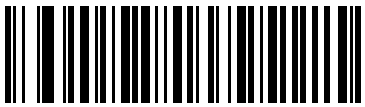
SSI # F0h 68h

Scan **Enable Image Capture Autoexposure** to allow the engine to control gain settings and exposure (integration) time to best capture an image for the selected operation mode.

Scan **Disable Image Capture Autoexposure** to manually adjust the gain and exposure time. See *Exposure Time* and *Analog Gain*. This option is only recommended for advanced users with difficult image capture situations.



***Enable Image Capture Autoexposure**
(1)



Disable Image Capture Autoexposure
(0)

Exposure Time

SSI # F4h F1h 37h
Parameter # 567

If you disable *Decoding Autoexposure* or *Image Capture Autoexposure*, use this parameter to configure the exposure for Decode and Snapshot modes.

Each integer value represents 100 µs worth of exposure. The default value is 100 which results in an exposure setting of 10 ms.

NOTE The maximum exposure time is based on the configured frame rate. For example, for a frame rate of 60 fps, the maximum exposure time allowed is 15 ms. Setting exposure time to a larger value than the frame rate allows sets the value to the maximum allowed exposure time.

As exposure time lengthens, aim brightness decreases.

To set the Exposure Time, scan the **Exposure Time** bar code, and then scan four numeric bar codes from *Appendix B, Numeric Bar Codes* representing the value. Leading zeros are required. For example, to set an Exposure Time value of 99, scan 0, 0, 9, 9.

Exposure Time
(4 digits)

Analog Gain

SSI # F4h D0h
Parameter # 1232

If you disable *Decoding Autoexposure* or *Image Capture Autoexposure*, scan one of the following bar codes to set the engine's analog gain.

***Analog Gain 1**
(01h)

Analog Gain 2
(02h)

Analog Gain 3
(03h)

Analog Gain 4
(04h)

Analog Gain 5
(05h)

Analog Gain 6
(06h)

Snapshot Mode Timeout

Parameter # 323

SSI # F0h 43h

This parameter sets the amount of time the engine remains in Snapshot Mode. The engine exits Snapshot Mode when you press the trigger, or when the Snapshot Mode Timeout elapses. To set this timeout value, scan the **Set Snapshot Mode Timeout** bar code, and then scan a bar code from *Appendix B, Numeric Bar Codes*. The default value is 0 which represents 30 seconds; values increment by 30. For example, 1 = 60 seconds, 2 = 90 seconds.

To quickly re-set the default timeout to 30 seconds, scan the **30 Seconds** bar code.

If you scan **No Timeout**, the engine remains in Snapshot Mode until you press the trigger.

Set Snapshot Mode Timeout

***30 Seconds**

No Timeout

Snapshot Aiming Pattern

Parameter # 300

SSI # F0h 2Ch

Scan one of the following bar codes to select whether or not to project the aiming pattern when in Snapshot Mode..

NOTE If enabled, the aiming pattern frames the image for aiming purposes and does not appear in the captured image.

***Enable Snapshot Aiming Pattern**
(1)

Disable Snapshot Aiming Pattern
(0)

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 bar codes to select an image size:

Table 7-2 *Image Size*

Resolution Value	Uncropped Image Size
Full	640 x 400
1/2	320 x 200
1/4	160 x 100

***Full Resolution**
(0)

1/2 Resolution
(1)

1/4 Resolution
(3)

Image Brightness (Target White)

Parameter # 390

SSI # F0h 86h

Type: Byte

Range: [1 - 240]

This parameter sets the Target White value used in Snapshot Mode when using autoexposure. White and black are defined as 240 decimal and 1, respectively. Setting the value to the factory default of 180 sets the white level of the image to ~180.

Scan the **Image Brightness** bar code, and then scan three numeric bar codes from *Appendix B, Numeric Bar Codes* representing the value. Leading zeros are required. For example, to set an Image Brightness value of 99, scan 0, 9, 9.

***180**

Image Brightness
(3 digits)

Image File Format Selector

Parameter # 304

SSI # F0h 30h

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

BMP File Format
(3)

***JPEG File Format**
(1)

TIFF File Format
(04h)

Image Rotation

Parameter # 665

SSI # F1h 99h

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

***Rotate 0°**
(0)

Rotate 90°
(1)

Rotate 180°
(2)

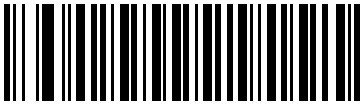
Rotate 270°
(3)

Video View Finder

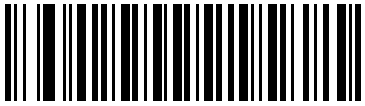
Parameter # 324

SSI # F0h 44h

Scan one of the following bar codes to select whether to project the video view finder while in Snapshot Mode.



Enable Video View Finder (1)



***Disable Video View Finder (0)**

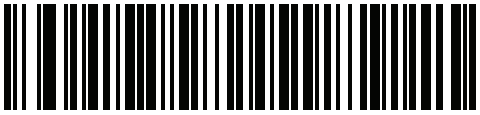
Target Video Frame Size

Parameter # 328

SSI # F0h 48h

This parameter sets the number of 100-byte blocks to transmit per second. A smaller value transmits more frames per second but reduces video quality, while a larger value increases video quality but slows transmission.

Scan the **Target Video Frame Size** bar code, and then scan three bar codes from *Appendix B, Numeric Bar Codes* corresponding to the 100-byte value from 800 to 20,000 bytes. For example, to select 1500 bytes, enter 0, 1, 5. To select 900 bytes, enter 0, 0, 9. The default is 2200 bytes.



Target Video Frame Size

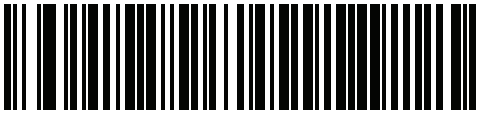
Video View Finder Image Size

Parameter # 329

SSI # F0h 49h

This parameter sets the number of 100-byte blocks. Values range from 800 to 12,000 bytes. A smaller value transmits more frames per second, while a larger value increases video quality.

Scan the **Video View Finder Image Size** bar code, and then scan three bar codes from *Appendix B, Numeric Bar Codes* corresponding to the 100-byte value from 800 to 12,000 bytes. For example, to select 1500 bytes, enter 0, 1, 5. To select 900 bytes, enter 0, 0, 9. The default is 1700 bytes.



Video View Finder Image Size

Video Resolution

Parameter # 667

SSI # F1h 9Bh

This parameter alters the video resolution before transmission. Rows and columns are removed from the image, resulting in a smaller video image containing the original content with reduced resolution.

Scan one of the following bar codes to select a resolution value:

Table 7-3 *Resolution and Video Image Sizes*

Resolution Value	Video Image Size
Full	640 x 400
1/2	320 x 200
1/4	160 x 100

Full Resolution
(0)

1/2 Resolution
(1)

***1/4 Resolution**
(3)

USB INTERFACE

Introduction

This chapter describes how to set up the engine with a USB host. The engine connects directly to a USB host, or a powered USB hub, which powers it. No additional power supply is required.

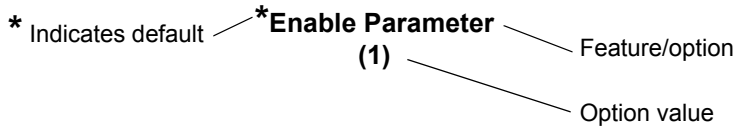
The engine ships with the settings shown in *Table 8-1 on page 8-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

Setting Parameters

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

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

To return all features to default values, scan *Set Factory Defaults on page 6-5*. Throughout the programming bar code menus, asterisks (*) indicate default values.



Scanning Sequence Examples

In most cases scanning one bar code sets the parameter value. For example, to enable USB convert unknown to Code 39, scan the **Enable Convert Unknown to Code 39** bar code. The engine issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several bar codes. 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 Host Parameter Defaults

Table 8-1 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 6-5*.
- Configure the engine using the 123Scan^2 configuration program. See *Chapter 12, 123Scan and Software Tools*.

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

Table 8-1 *USB Interface Parameter Defaults*

Parameter	Default	Page Number
USB Host Parameters		
USB Device Type	SNAPI with Imaging	*8-4*
USB Country Keyboard Types (Country Codes)	North American	*8-6*
Symbol Native API (SNAPI) Status Handshaking	Enable	*8-6*
USB Keystroke Delay	No Delay	*8-7*
USB Caps Lock Override	Disable	*8-7*
Barcodes with Unknown Characters	Send Barcodes with Unknown Characters	*8-8*
USB Fast HID	Disable	*8-8*
USB Polling Interval	8 msec	*8-9*
Keypad Emulation	Disable	*8-11*
Quick Keypad Emulation	Disable	*8-11*
Keypad Emulation with Leading Zero	Disable	*8-12*
USB FN1 Substitution	Disable	*8-12*
Function Key Mapping	Disable	*8-13*

Table 8-1 *USB Interface Parameter Defaults (continued)*

Parameter	Default	Page Number
Simulated Caps Lock	Disable	*8-13*
Convert Case	None	*8-14*
USB Static CDC	Enable	*8-15*

USB Host Parameters

USB Device Type

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

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

NOTE Before selecting **USB CDC Host**, install the Zebra USB CDC driver located at https://www.zebra.com/us/en/support-downloads/software/drivers/usb-cdc-driver.html on the host.

- If using Windows XP, this self-contained driver provides functionality but prompts with a warning message as Microsoft no longer re-certifies drivers for this operating system.
- Windows 10 includes a native CDC driver that supports Zebra engines. Use this to provide CDC functionality in the Windows 10 environment.

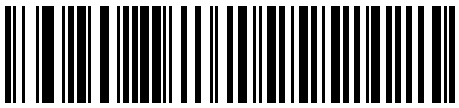
To recover a stalled engine:

- Install the Zebra USB CDC driver

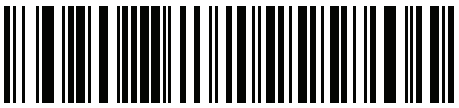
or

- After power-up, hold the trigger for 10 seconds, which allows the engine to power up using an alternate USB configuration. Upon power-up, scan another USB Device Type.

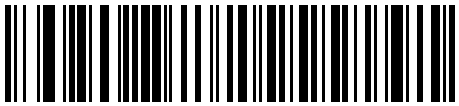
USB Device Type (continued)



USB HID Keyboard



USB CDC Host



SSI over USB CDC

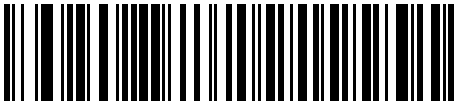
***Symbol Native API (SNAPI) with Imaging Interface**

Symbol Native API (SNAPI) without Imaging Interface

USB Country Keyboard Types - Country Codes

Scan the barcode corresponding to the keyboard type. This setting applies only to the USB HID Keyboard Emulation device.

NOTE The scanner only supports the North American USB country keyboard type.



***North American Standard USB Keyboard**

Symbol Native API (SNAPI) Status Handshaking

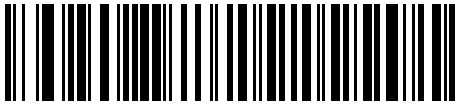
After selecting a SNAPI interface as the USB device type, scan one of the following barcodes to select whether to enable or disable status handshaking.

***Enable SNAPI Status Handshaking**

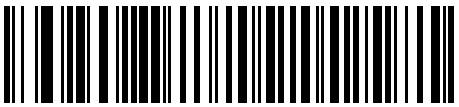
Disable SNAPI Status Handshaking

USB Keystroke Delay

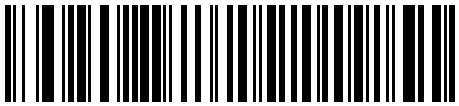
Scan one of the following barcodes to set the delay, in milliseconds, between emulated keystrokes. Select a longer delay for hosts that require slower data transmission.



***No Delay**



Medium Delay (20 msec)



Long Delay (40 msec)

USB Caps Lock Override

This option applies only to the USB HID Keyboard 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)

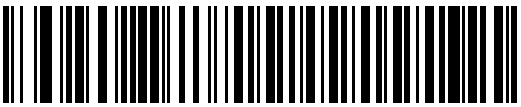
***Do Not Override Caps Lock Key (Disable)**

Barcodes with Unknown Characters

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

Scan **Do Not Send Barcodes With Unknown Characters** to send the barcode characters up to the unknown character. The engine issues an error beep.

***Send Barcodes with Unknown Characters**

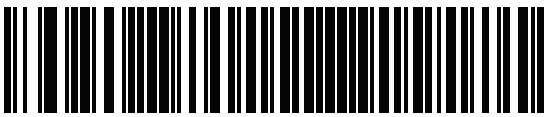


Do Not Send Barcodes with Unknown Characters

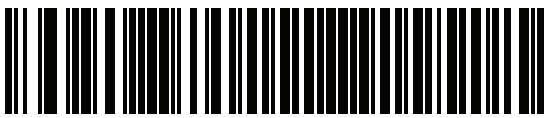
USB Fast HID

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



***Disable USB Fast HID**

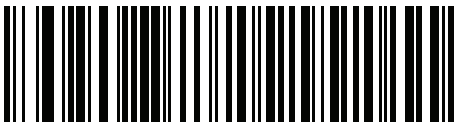
USB Polling Interval

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

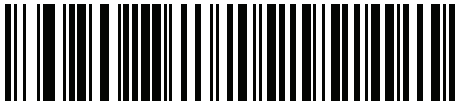
NOTE When changing the USB polling interval, the engine restarts and issues a power-up beep sequence.

IMPORTANT Ensure the host supports the selected data rate.

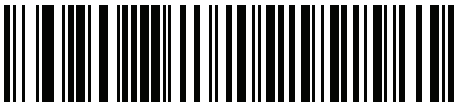
1 msec



2 msec



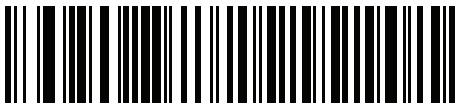
3 msec



4 msec

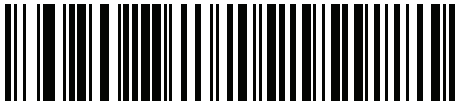
5 msec

USB Polling Interval (continued)

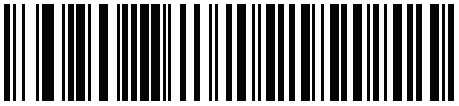


6 msec

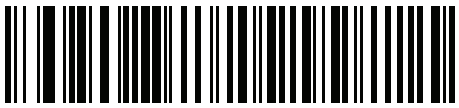
7 msec



***8 msec**



9 msec



10 msec

Keypad Emulation

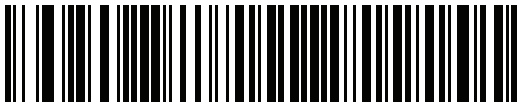
Scan **Enable Keypad Emulation** to send all characters as ASCII sequences over the numeric keypad. For example, ASCII A transmits as “ALT make” 0 6 5 “ALT Break”.

Enable Keypad Emulation

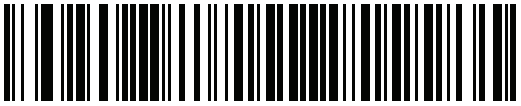
***Disable Keypad Emulation**

Quick Keypad Emulation

This option applies only to the USB HID Keyboard 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



***Disable Quick Keypad Emulation**

Keypad Emulation with Leading Zero

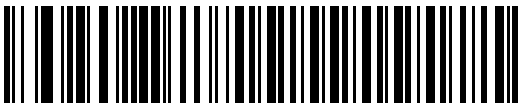
Scan **Enable Keypad Emulation with Leading Zero** to send character sequences sent over the numeric keypad as ISO characters which have a leading zero. For example, ASCII A transmits as “ALT MAKE” 0 0 6 5 “ALT BREAK”.

Enable Keypad Emulation with Leading Zero

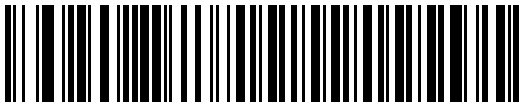
***Disable Keypad Emulation with Leading Zero**

USB Keyboard FN1 Substitution

This option applies only to the USB HID Keyboard 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 6-34* to set the Key Category and Key Value.



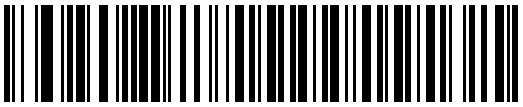
Enable USB Keyboard FN1 Substitution



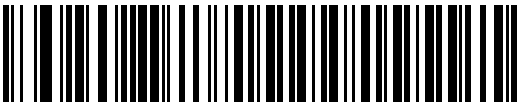
***Disable USB Keyboard FN1 Substitution**

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



***Disable Function Key Mapping**

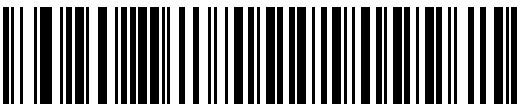
Simulated Caps Lock

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 8-7* is enabled.

Enable Simulated Caps Lock

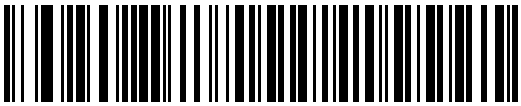


***Disable Simulated Caps Lock**

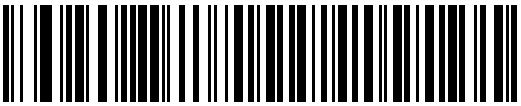
Convert Case

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

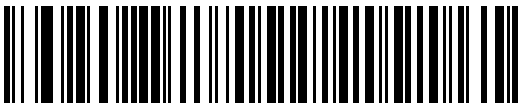
NOTE Convert Case applies to ASCII characters only.



***No Case Conversion**



Convert All to Upper Case



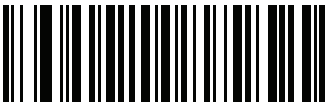
Convert All to Lower Case

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**



Disable USB Static CDC

ASCII Character Sets

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

SYMBOLOGIES

Introduction

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

The engine ships with the settings shown in *Table 11-1 on page 11-2* (also see *Appendix A, Standard Parameter Defaults* for all defaults). If the default values suit requirements, programming is not necessary.

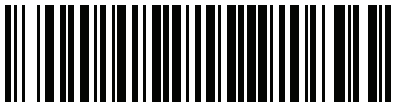
Setting Parameters

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

NOTE Most computer monitors allow scanning bar codes directly on the screen. When scanning from the screen, be sure to set the document magnification to a level where you can see the bar code 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 6-5*. Throughout the programming bar code menus, asterisks (*) indicate default values.



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

Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to transmit bar code data without the UPC-A check digit, scan the **Do Not Transmit UPC-A Check Digit** bar code under *Transmit UPC-A Check Digit on page 11-19*. The engine issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters require scanning several bar codes. 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 11-1 lists defaults for all symbology parameters. Change these values in one of two ways:

- Scan the appropriate bar codes in this chapter. The new value replaces the standard default value in memory. To recall the default parameter values, see *Default Parameters on page 6-5*.
- Configure the engine using the 123Scan^2 configuration program. See *Chapter 12, 123Scan and Software Tools*.

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

Table 11-1 *Symbology Parameter Defaults*

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

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 11-1 *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	*11-14*
User-Programmable Supplementals Supplemental 1: Supplemental 2:	 579 580	 F4h F1h 43h F4h F1h 44h	000	*11-17*
UPC/EAN/JAN Supplemental Redundancy	80	50h	10	*11-17*
Decode UPC/EAN/JAN Supplemental AIM ID	672	F1h A0h	Combined	*11-18*
Transmit UPC-A Check Digit	40	28h	Enable	*11-19*
Transmit UPC-E Check Digit	41	29h	Enable	*11-19*
Transmit UPC-E1 Check Digit	42	2Ah	Enable	*11-20*
UPC-A Preamble	34	22h	System Character	*11-21*
UPC-E Preamble	35	23h	System Character	*11-22*
UPC-E1 Preamble	36	24h	System Character	*11-23*
Convert UPC-E to A	37	25h	Disable	*11-24*
Convert UPC-E1 to A	38	26h	Disable	*11-24*
EAN/JAN Zero Extend	39	27h	Disable	*11-25*
UCC Coupon Extended Code	85	55h	Disable	*11-25*
Coupon Report	730	F1h DAh	New Coupon Format	*11-26*
UPC Reduced Quiet Zone	1289	F8h 05h 09h	Disable	*11-27*
Code 128				
Code 128	8	08h	Enable	*11-28*
Set Length(s) for Code 128	209, 210	D1h, D2h	Any Length	*11-28*
GS1-128 (formerly UCC/EAN-128)	14	0Eh	Enable	*11-30*
ISBT 128	84	54h	Enable	*11-30*
ISBT Concatenation	577	F1h 41h	Disable	*11-31*
Check ISBT Table	578	F1h 42h	Enable	*11-32*
ISBT Concatenation Redundancy	223	DFh	10	*11-32*
Ignore Code 128 <FNC4>	1254	F8h 04h E6h	Honor	*11-33*

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 11-1 *Symbology Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Code 128 Security Level	751	F1h EFh	Security Level 1	*11-34*
Code 128 Reduced Quiet Zone	1208	F8h 04h B8h	Disable	*11-36*
Code 39				
Code 39	0	00h	Enable	*11-37*
Trioptic Code 39	13	0Dh	Disable	*11-37*
Convert Code 39 to Code 32 (Italian Pharmacy Code)	86	56h	Disable	*11-38*
Code 32 Prefix	231	E7h	Disable	*11-38*
Set Length(s) for Code 39	18, 19	12h, 13h	Length Within Range: 2 to 55	*11-39*
Code 39 Check Digit Verification	48	30h	Disable	*11-40*
Transmit Code 39 Check Digit	43	2Bh	Disable	*11-41*
Code 39 Full ASCII Conversion	17	11h	Disable	*11-41*
Code 39 Security Level	750	F1h EEh	Security Level 1	*11-42*
Code 39 Reduced Quiet Zone	1209	F8h 04h B9h	Disable	*11-44*
Code 93				
Code 93	9	09h	Enable	*11-45*
Set Length(s) for Code 93	26, 27	1Ah, 1Bh	Length Within Range: 4 to 55	*11-45*
Code 11				
Code 11	10	0Ah	Disable	*11-47*
Set Lengths for Code 11	28, 29	1Ch, 1Dh	Length Within Range: 4 to 55	*11-47*
Code 11 Check Digit Verification	52	34h	Disable	*11-49*
Transmit Code 11 Check Digit(s)	47	2Fh	Disable	*11-50*
Interleaved 2 of 5 (ITF)				
Interleaved 2 of 5 (ITF)	6	06h	Disable	*11-51*
Set Lengths for I 2 of 5	22, 23	16h, 17h	One Discrete Length = 14	*11-51*
I 2 of 5 Check Digit Verification	49	31h	Disable	*11-53*

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 11-1 *Symbology Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Transmit I 2 of 5 Check Digit	44	2Ch	Disable	*11-54*
Convert I 2 of 5 to EAN 13	82	52h	Disable	*11-54*
I 2 of 5 Security Level	1121	F8h 04h 61h	Security Level 1	*11-55*
I 2 of 5 Reduced Quiet Zone	1210	F8h 04h BAh	Disable	*11-56*
Discrete 2 of 5 (DTF)				
Discrete 2 of 5	5	05h	Disable	*11-57*
Set Length(s) for D 2 of 5	20, 21	14h 15h	One Discrete Length = 12	*11-57*
Codabar (NW - 7)				
Codabar	7	07h	Enable	*11-59*
Set Lengths for Codabar	24, 25	18h, 19h	Length Within Range: 5 to 55	*11-59*
CLSI Editing	54	36h	Disable	*11-61*
NOTIS Editing	55	37h	Disable	*11-61*
Codabar Upper or Lower Case Start/ Stop Characters Detection	855	F2h 57h	Upper Case	*11-62*
MSI				
MSI	11	0Bh	Disable	*11-63*
Set Length(s) for MSI	30, 31	1Eh, 1Fh	Length Within Range: 4 to 55	*11-63*
MSI Check Digits	50	32h	One	*11-65*
Transmit MSI Check Digit	46	2Eh	Disable	*11-65*
MSI Check Digit Algorithm	51	33h	Mod 10/Mod 10	*11-66*
MSI Reduced Quiet Zone	1392	F8h 05h 70h	Disable	*11-66*
Chinese 2 of 5				
Chinese 2 of 5	408	F0h 98h	Disable	*11-67*
Matrix 2 of 5				
Matrix 2 of 5	618	F1h 6Ah	Disable	*11-68*
Matrix 2 of 5 Lengths	619 620	F1h 6Bh F1h 6Ch	One Discrete Length = 14	*11-68*

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 11-1 *Symbology Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Matrix 2 of 5 Check Digit	622	F1h 6Eh	Disable	*11-70*
Transmit Matrix 2 of 5 Check Digit	623	F1h 6Fh	Disable	*11-70*
Inverse 1D	586	F1h 4Ah	Regular	*11-71*
GS1 DataBar				
GS1 DataBar-14	338	F0h 52h	Enable	*11-72*
GS1 DataBar Limited	339	F0h 53h	Enable	*11-72*
GS1 DataBar Expanded	340	F0h 54h	Enable	*11-73*
Convert GS1 DataBar to UPC/EAN/JAN	397	F0h 8Dh	Disable	*11-73*
GS1 DataBar Security Level	1706	F8h 06h AAh	Level 1	*11-74*
GS1 DataBar Limited Margin Check	728	F1h D8h	Level 3	*11-75*
Symbology-Specific Security Features				
Redundancy Level	78	4Eh	1	*11-77*
Security Level	77	4Dh	1	*11-79*
1D Quiet Zone Level	1288	F8h 05h 08h	1	*11-80*
Intercharacter Gap Size	381	F0h 7Dh	Normal	*11-81*
Composite Codes				
Composite CC-C	341	F0h 55h	Disable	*11-82*
Composite CC-A/B	342	F0h 56h	Disable	*11-82*
Composite TLC-39	371	F0h 73h	Disable	*11-83*
Composite Inverse	1113	F8h 04h 59h	Regular	*11-83*
UPC Composite Mode	344	F0h 58h	UPC Always Linked	*11-84*
Composite Beep Mode	398	F0h 8Eh	Beep As Each Code Type is Decoded	*11-85*
GS1-128 Emulation Mode for UCC/EAN Composite Codes	427	F0h ABh	Disable	*11-85*
2D Symbologies				
PDF417	15	0Fh	Enable	*11-86*
MicroPDF417	227	E3h	Disable	*11-86*
Code 128 Emulation	123	7Bh	Disable	*11-87*

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 11-1 *Symbology Parameter Defaults (continued)*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
Data Matrix	292	F0h 24h	Enable	*11-88*
Data Matrix Inverse	588	F1h 4Ch	Inverse Autodetect	*11-89*
Decode Data Matrix Mirror Images	537	F1h 19h	Auto	*11-90*
Maxicode	294	F0h 26h	Disable	*11-91*
QR Code	293	F0h 25h	Enable	*11-92*
MicroQR	573	F1h 3Dh	Enable	*11-92*
Aztec	574	F1h 3Eh	Enable	*11-93*
Aztec Inverse	589	F1h 4Dh	Inverse Autodetect	*11-94*
Han Xin	1167	F8h 04h 8Fh	Disable	*11-95*
Han Xin Inverse	1168	F8h 04h 90h	Regular	*11-96*
Macro PDF				
Flush Macro PDF Buffer	N/A	N/A	N/A	*11-97*
Abort Macro PDF Entry	N/A	N/A	N/A	*11-97*
Postal Codes				
US Postnet	89	59h	Disable	*11-98*
US Planet	90	5Ah	Disable	*11-98*
Transmit US Postal Check Digit	95	5Fh	Enable	*11-99*
UK Postal	91	5Bh	Disable	*11-99*
Transmit UK Postal Check Digit	96	60h	Enable	*11-100*
Japan Postal	290	F0h 22h	Disable	*11-100*
Australia Post	291	F0h 23h	Disable	*11-101*
Australia Post Format	718	F1h CEh	Autodiscriminate	*11-102*
Netherlands KIX Code	326	F0h 46h	Disable	*11-103*
USPS 4CB/One Code/Intelligent Mail	592	F1h 50h	Disable	*11-103*
UPU FICS Postal	611	F1h 63h	Disable	*11-104*

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** bar code 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 All Code Types

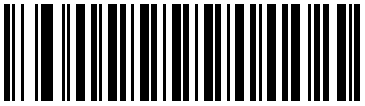
UPC/EAN/JAN

UPC-A

Parameter # 1

SSI # 01h

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



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

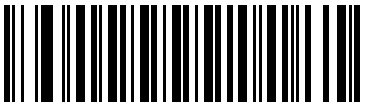
Disable UPC-A
(0)

UPC-E

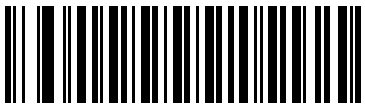
Parameter # 2

SSI # 02h

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



***Enable UPC-E**
(1)



Disable UPC-E
(0)

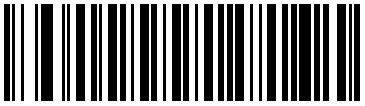
UPC-E1

Parameter # 12

SSI # 0Ch

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

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



Enable UPC-E1
(1)

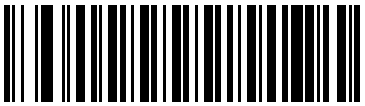
***Disable UPC-E1**
(0)

EAN-8/JAN-8

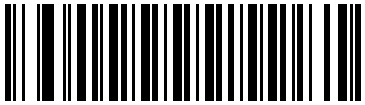
Parameter # 4

SSI # 04h

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



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



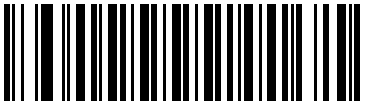
Disable EAN-8/JAN-8
(0)

EAN-13/JAN-13

Parameter # 3

SSI # 03h

Scan one of the following bar codes to enable or disable EAN-13/JAN-13.



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

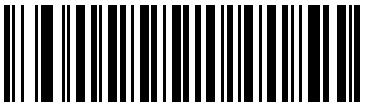
Disable EAN-13/JAN-13
(0)

Bookland EAN

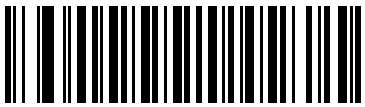
Parameter # 83

SSI # 53h

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



Enable Bookland EAN
(1)



***Disable Bookland EAN**
(0)

NOTE If you enable Bookland EAN, select a *Bookland ISBN Format*. Also set *Decode UPC/EAN/JAN Supplementals on page 11-14* 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 11-11*, select one of the following formats for Bookland data:

- **Bookland ISBN-10** - The engine 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 engine 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-13
(1)

NOTE For Bookland EAN to function properly, first enable Bookland EAN using *Bookland EAN on page 11-11*, and then set *Decode UPC/EAN/JAN Supplementals on page 11-14* 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 bar codes to enable or disable ISSN EAN.

Enable ISSN EAN
(1)

***Disable ISSN EAN**
(0)

Decode UPC/EAN/JAN Supplementals

Parameter # 16

SSI # 10h

Supplementals are bar codes 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 engine 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 engine decodes UPC/EAN/JAN and ignores the supplemental characters.
- **Autodiscriminate UPC/EAN/JAN with Supplementals** - The engine decodes UPC/EAN/JAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the engine must decode the bar code the number of times set via *UPC/EAN/JAN Supplemental Redundancy on page 11-17* before transmitting its data to confirm that there is no supplemental.

Select one of the following **Supplemental Mode** options to immediately transmit EAN-13 bar codes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the engine must decode the bar code the number of times set via *UPC/EAN/JAN Supplemental Redundancy on page 11-17* before transmitting the data to confirm that there is no supplemental. The engine transmits UPC/EAN/JAN bar codes that do not have that prefix immediately.

- **Enable 378/379 Supplemental Mode**
- **Enable 978/979 Supplemental Mode**

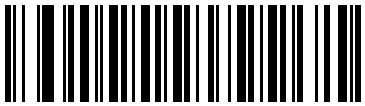
NOTE If you select 978/979 Supplemental Mode and are scanning Bookland EAN bar codes, see *Bookland EAN on page 11-11* to enable Bookland EAN, and select a format using *Bookland ISBN Format on page 11-12*.

- **Enable 977 Supplemental Mode**
- **Enable 414/419/434/439 Supplemental Mode**
- **Enable 491 Supplemental Mode**
- **Enable Smart Supplemental Mode** - This applies to EAN-13 bar codes starting with any prefix listed previously.
- **Supplemental User-Programmable Type 1** - This applies to EAN-13 bar codes starting with a 3-digit user-defined prefix. Set this using *User-Programmable Supplementals on page 11-17*.
- **Supplemental User-Programmable Type 1 and 2 -** This applies to EAN-13 bar codes starting with either of two 3-digit user-defined prefixes. Set the prefixes using *User-Programmable Supplementals on page 11-17***.**
- **Smart Supplemental Plus User-Programmable 1** - This applies to EAN-13 bar codes starting with any prefix listed previously or the prefix set using *User-Programmable Supplementals on page 11-17*.
- **Smart Supplemental Plus User-Programmable 1 and 2 -** This applies to EAN-13 bar codes starting with any prefix listed previously or one of the two user-defined prefixes set using *User-Programmable Supplementals on page 11-17*.

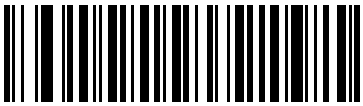
NOTE To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.

Decode UPC/EAN/JAN Supplementals (continued)

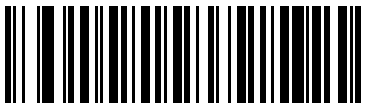
Decode UPC/EAN/JAN With Supplementals Only
(1)



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



Autodiscriminate UPC/EAN/JAN with Supplementals
(2)



Enable 378/379 Supplemental Mode
(4)

Enable 978/979 Supplemental Mode
(5)

Enable 977 Supplemental Mode
(7)

Decode UPC/EAN/JAN Supplementals (continued)

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

Enable 491 Supplemental Mode (8)

Enable Smart Supplemental Mode (3)

Supplemental User-Programmable Type 1 (9)

Supplemental User-Programmable Type 1 and 2 (10)

Smart Supplemental Plus User-Programmable 1 (11)

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

User-Programmable Supplementals

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

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

If you selected a Supplemental User-Programmable option from *Decode UPC/EAN/JAN Supplementals on page 11-14*, scan **User-Programmable Supplemental 1**, and then scan three bar codes 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 bar codes from *Appendix B, Numeric Bar Codes*. The default is 000 (zeroes).

User-Programmable Supplemental 1

User-Programmable Supplemental 2

UPC/EAN/JAN Supplemental Redundancy

Parameter # 80

SSI # 50h

If you selected **Autodiscriminate UPC/EAN/JAN with Supplementals**, this option sets the number of times to decode a symbol without supplementals before transmission. The range is from 2 to 16. 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 bar code, and then scan two bar codes 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-3*.

UPC/EAN/JAN Supplemental Redundancy

UPC/EAN/JAN Supplemental AIM ID Format

Parameter # 672

SSI # F1h A0h

If *Transmit Code ID Character on page 6-30*is set to **AIM Code ID Character**, scan one of the following bar codes to select an output format when reporting UPC/EAN/JAN bar codes 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)

***Combined**
(1)

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 bar codes to transmit the bar code 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)**

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 bar codes to transmit the bar code data with or without the UPC-E check digit. It is always verified to guarantee the integrity of the data.

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

Do Not Transmit UPC-E Check Digit (0)

Transmit UPC-E1 Check Digit

Parameter # 42

SSI # 2Ah

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

***Transmit UPC-E1 Check Digit (1)**

Do Not Transmit UPC-E1 Check Digit (0)

UPC-A Preamble

Parameter # 34

SSI # 22h

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

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

No Preamble (<DATA>)
(0)

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

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

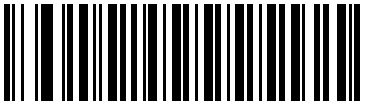
UPC-E Preamble

Parameter # 35

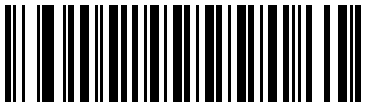
SSI # 23h

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

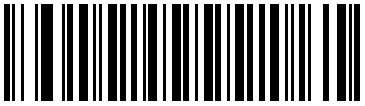
- Transmit System Character only
- Transmit System Character and Country Code (“0” for USA)
- Transmit no preamble.



No Preamble (<DATA>)
(0)



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



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

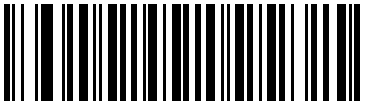
UPC-E1 Preamble

Parameter # 36

SSI # 24h

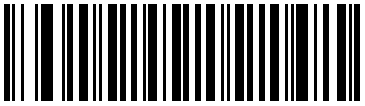
Preamble characters are part of the UPC symbol, and include Country Code and System Character. Select the appropriate option for transmitting a UPC-E1 preamble to match the host system:

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



No Preamble (<DATA>)
(0)

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



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

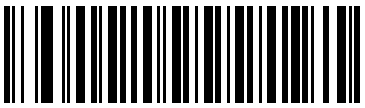
Convert UPC-E to UPC-A

Parameter # 37

SSI # 25h

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

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



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

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

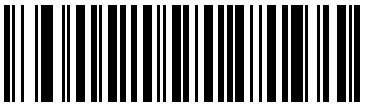
Convert UPC-E1 to UPC-A

Parameter # 38

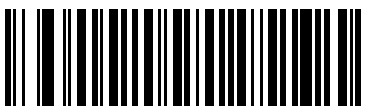
SSI # 26h

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

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



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



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

EAN/JAN Zero Extend

Parameter # 39

SSI # 27h

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

Enable EAN/JAN Zero Extend
(1)

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

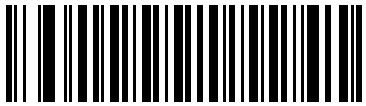
UCC Coupon Extended Code

Parameter # 85

SSI # 55h

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

Enable UCC Coupon Extended Code
(1)



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

✓ ***NOTE*** See *UPC/EAN/JAN Supplemental Redundancy on page 11-17* to control autodiscrimination of the GS1-128 portion (right half) of a coupon code.

Coupon Report

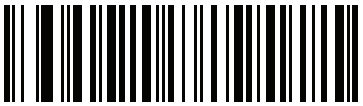
Parameter # 730

SSI # F1h DAh

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

- **Old Coupon Format** - Support UPC-A/GS1-128 and EAN-13/GS1-128.
- **New Coupon Format** - An interim format to support UPC-A/GS1-DataBar and EAN-13/GS1-DataBar.
- **Autodiscriminate Format** - Support both **Old Coupon Format** and **New Coupon Format.**

Old Coupon Format
(0)



***New Coupon Format**
(1)

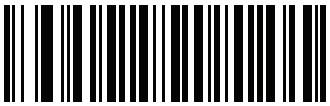
Autodiscriminate Coupon Format
(2)

UPC Reduced Quiet Zone

Parameter # 1289

SSI # F8h 05h 09h

Scan one of the following bar codes to enable or disable decoding UPC bar codes with reduced quiet zones (the margins on either side of the bar code). If you select **Enable**, select a *1D Quiet Zone Level on page 11-80*.



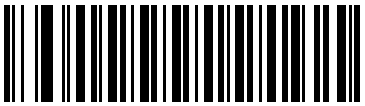
Enable UPC Reduced Quiet Zone
(1)

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

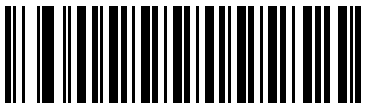
Code 128

Parameter # 8
SSI # 08h

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



***Enable Code 128**
(1)



Disable Code 128
(0)

Set Lengths for Code 128

L1 = Parameter # 209
SSI # D1h

L2 = Parameter # 210
SSI # D2h

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

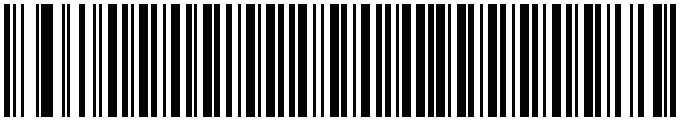
NOTE When setting lengths, enter a leading zero for single digit numbers.

Scan one of the following bar codes to select a length option:

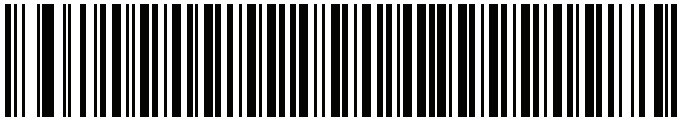
- **One Discrete Length** - Decode only Code 128 symbols containing a selected length. Select the length using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only Code 128 symbols with 14 characters, scan **Code 128 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Two Discrete Lengths** - Decode only Code 128 symbols containing either of two lengths. Select lengths using the bar codes 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-3*.
- **Length Within Range** - Decode Code 128 symbols with a specific length range. Select lengths using the bar codes 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-3*.

Set Lengths for Code 128 (continued)

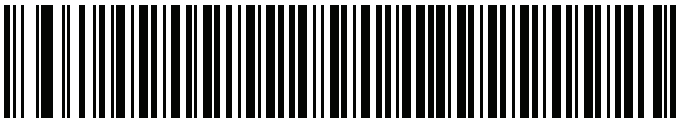
- **Any Length** - Decode Code 128 symbols containing any number of characters within the engine's capability.



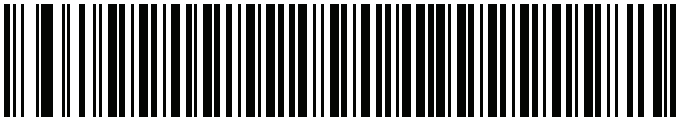
Code 128 - One Discrete Length



Code 128 - Two Discrete Lengths



Code 128 - Length Within Range



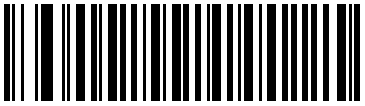
***Code 128 - Any Length**

GS1-128 (formerly UCC/EAN-128)

Parameter # 14

SSI # 0Eh

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



***Enable GS1-128**
(1)

Disable GS1-128
(0)

ISBT 128

Parameter # 84

SSI # 54h

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

***Enable ISBT 128**
(1)

Disable ISBT 128
(0)

ISBT Concatenation

Parameter # 577

SSI # F1h 41h

Select an option for concatenating pairs of ISBT code types:

- **Enable ISBT Concatenation** - There must be two ISBT codes in order for the engine to decode and perform concatenation. The engine does not decode single ISBT symbols.
- **Disable ISBT Concatenation** - The engine does not concatenate pairs of ISBT codes it encounters.
- **Autodiscriminate ISBT Concatenation** - The engine decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the engine must decode the symbol the number of times set via *ISBT Concatenation Redundancy on page 11-32* before transmitting its data to confirm that there is no additional ISBT symbol.

Enable ISBT Concatenation
(1)

***Disable ISBT Concatenation**
(0)

Autodiscriminate ISBT Concatenation
(2)

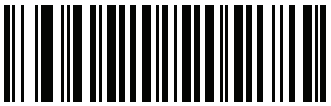
Check ISBT Table

Parameter # 578

SSI # F1h 42h

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

***Enable Check ISBT Table (1)**



Disable Check ISBT Table (0)

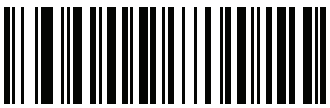
ISBT Concatenation Redundancy

Parameter # 223

SSI # DFh

If you set *ISBT Concatenation on page 11-31* to **Autodiscriminate** (the default), use this parameter to set the number of times the engine must decode an ISBT symbol before determining that there is no additional symbol.

Scan the following bar code, and then scan bar codes in *Appendix B, Numeric Bar Codes* to set a value between 2 and 20. Enter a leading zero for single digit numbers. To correct an error or change a selection, scan *Cancel on page B-3*. The default is 10.



ISBT Concatenation Redundancy

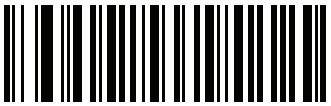
Code 128 <FNC4>

Parameter # 1254

SSI # F8h 04h E6h

This feature applies to Code 128 bar codes 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>**
(0)



Ignore Code 128 <FNC4>
(1)

Code 128 Security Level

Parameter # 751

SSI # F1h EFh

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

- **Code 128 Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **Code 128 Security Level 1** - This option eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Code 128 Security Level 2** - This option applies greater bar code 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.

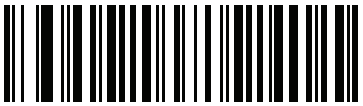
NOTE Selecting this option is an extreme measure against mis-decoding severely out-of-spec bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

Code 128 Security Level (continued)

Code 128Security Level 0
(0)

*Code 128 Security Level 1
(1)

Code 128 Security Level 2
(2)



Code 128 Security Level 3
(3)

Code 128 Reduced Quiet Zone

Parameter # 1208

SSI # F8h 04h B8h

Scan one of the following bar codes to enable or disable decoding Code 128 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select **Enable**, select a *1D Quiet Zone Level on page 11-80*.

Enable Code 128 Reduced Quiet Zone (1)

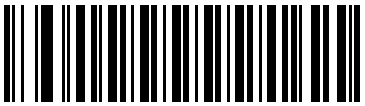
***Disable Code 128 Reduced Quiet Zone (0)**

Code 39

Parameter # 0

SSI # 00h

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



***Enable Code 39**
(1)

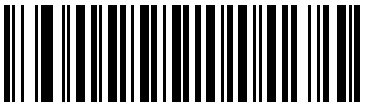
Disable Code 39
(0)

Trioptic Code 39

Parameter # 13

SSI # 0Dh

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



Enable Trioptic Code 39
(1)

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

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

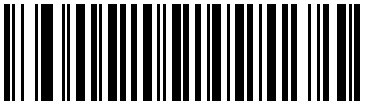
Convert Code 39 to Code 32

Parameter # 86

SSI # 56h

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan one of the following bar codes 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)

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

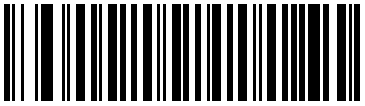
Code 32 Prefix

Parameter # 231

SSI # E7h

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

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



Enable Code 32 Prefix
(1)

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

Set Lengths for Code 39

L1 = Parameter # 18
SSI # 12h

L2 = Parameter # 19
SSI # 13h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, **Length Within Range** or **Any Length** are the preferred options. The default is **Length Within Rang**e: 2 to 55.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 39 symbols containing a selected length. Select the length using the bar codes 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-3*.
- **Two Discrete Lengths** - Decode only Code 39 symbols containing either of two lengths. Select lengths using the bar codes 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-3*.
- **Length Within Range** - Decode Code 39 symbols with a specific length range. Select lengths using the bar codes 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-3*.
- **Any Length** - Decode Code 39 symbols containing any number of characters within the engine's capability.

Set Lengths for Code 39 (continued)

Code 39 - One Discrete Length

Code 39 - Two Discrete Lengths

***Code 39 - Length Within Range (Default: 2 to 55)**

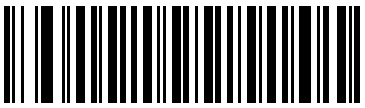
Code 39 - Any Length

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)

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

Transmit Code 39 Check Digit

Parameter # 43

SSI # 2Bh

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

Transmit Code 39 Check Digit (Enable)
(1)

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

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

Code 39 Full ASCII Conversion

Parameter # 17

SSI # 11h

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

Enable Code 39 Full ASCII
(1)

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

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

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

Code 39 Security Level

Parameter # 750

SSI # F1h EEh

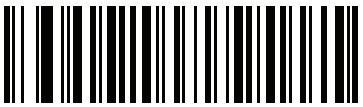
The engine offers four levels of decode security for Code 39 bar codes. There is an inverse relationship between security and engine aggressiveness. Increasing the level of security can reduce scanning aggressiveness, so select only the level of security necessary.

- **Code 39 Security Level 0:** The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **Code 39 Security Level 1:** This default setting eliminates most misdecodes.
- **Code 39 Security Level 2:** This option applies greater bar code 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 bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.

Code 39 Security Level (continued)

Code 39 Security Level 0
(0)



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

Code 39 Security Level 2
(2)

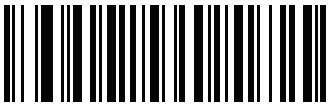
Code 39 Security Level 3
(3)

Code 39 Reduced Quiet Zone

Parameter # 1209

SSI # F8h 04h B9h

Scan one of the following bar codes to enable or disable decoding Code 39 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select **Enable**, select a *1D Quiet Zone Level on page 11-80*.



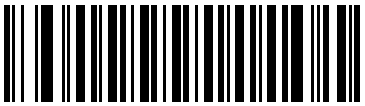
Enable Code 39 Reduced Quiet Zone
(1)

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

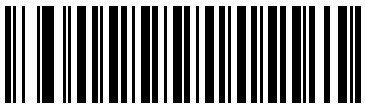
Code 93

Parameter # 9
SSI # 09h

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



***Enable Code 93**
(1)



Disable Code 93
(0)

Set Lengths for Code 93

L1 = Parameter # 26
SSI # 1Ah

L2 = Parameter # 27
SSI # 1Bh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 93 to any length, one or two discrete lengths, or lengths within a specific range. The default is **Length Within Range: 4 to 55**.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 93 symbols containing a selected length. Select the length using the bar codes 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-3*.
- **Two Discrete Lengths** - Decode only Code 93 symbols containing either of two lengths. Select lengths using the bar codes 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-3*.
- **Length Within Range** - Decode Code 93 symbols with a specific length range. Select lengths using the bar codes 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-3*.
- **Any Length** - Decode Code 93 symbols containing any number of characters within the engine's capability.

Set Lengths for Code 93 (continued)

Code 93 - One Discrete Length

Code 93 - Two Discrete Lengths

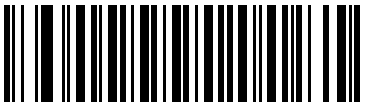
***Code 93 - Length Within Range**
(Default: 4 to 55)

Code 93 - Any Length

Code 11

Parameter # 10
SSI # 0Ah

Scan one of the following bar codes to enable or disable Code 11



Enable Code 11
(1)

***Disable Code 11**
(0)

Set Lengths for Code 11

L1 = Parameter # 28
SSI # 1Ch

L2 = Parameter # 29
SSI # 1Dh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range. The default is **Length Within Range: 4 to 55**.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Code 11 symbols containing a selected length. Select the length using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Two Discrete Lengths** - Decode only Code 11 symbols containing either of two lengths. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only Code 11 symbols containing either 2 or 14 characters, scan **Code 11 - Two Discrete Lengths**, and then scan **0**, **2**, **1**, **4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Length Within Range** - Decode Code 11 symbols with a specific length range. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode Code 11 symbols containing between 4 and 12 characters, scan **Code 11 - Length Within Range**, and then scan **0**, **4**, **1, 2**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Any Length** - Decode Code 11 symbols containing any number of characters within the engine's capability.

Set Lengths for Code 11 (continued)

Code 11 - One Discrete Length

Code 11 - Two Discrete Lengths

***Code 11 - Length Within Range**
(Default: 4 to 55)

Code 11 - Any Length

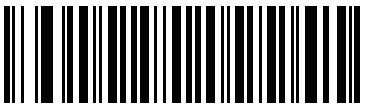
Code 11 Check Digit Verification

Parameter # 52

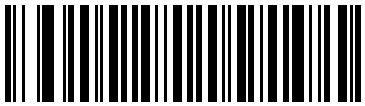
SSI # 34h

This feature allows the engine to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm.

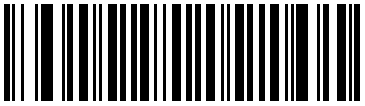
Scan one of the following bar codes to specify the number of check digits encoded in the Code 11 symbols, or to disable this feature.



***Disable**
(0)



One Check Digit
(1)



Two Check Digits
(2)

Transmit Code 11 Check Digits

Parameter # 47

SSI # 2Fh

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

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

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

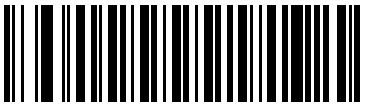
NOTE *Code 11 Check Digit Verification* must be enabled for this parameter to function.

Interleaved 2 of 5 (ITF)

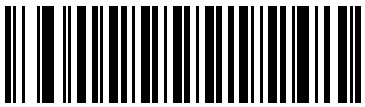
Parameter # 6

SSI # 06h

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



Enable Interleaved 2 of 5 (1)



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

Set Lengths for Interleaved 2 of 5

L1 = Parameter # 22
SSI # 16h

L2 = Parameter # 23
SSI # 17h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for I 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is **One Discrete Length: 14**.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only I 2 of 5 symbols containing a selected length. Select the length using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only I 2 of 5 symbols with 14 characters, scan **I 2 of 5 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Two Discrete Lengths** - Decode only I 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only I 2 of 5 symbols containing either 2 or 14 characters, scan **I 2 of 5 - Two Discrete Lengths**, and then scan **0**, **2**, **1**, **4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Length Within Range** - Decode I 2 of 5 symbols with a specific length range. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, scan **I 2 of 5 - Length Within Range**, and then scan **0**, **4**, **1, 2**. To correct an error or change the selection, scan *Cancel on page B-3*.

Set Lengths for Interleaved 2 of 5 (continued)

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

NOTE Due to the construction of the I 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length, Two Discrete Lengths) for I 2 of 5 applications, or increase the *I 2 of 5 Security Level on page 11-55*.

***I 2 of 5 - One Discrete Length (Default: 14)**

I 2 of 5 - Two Discrete Lengths

I 2 of 5 - Length Within Range

I 2 of 5 - Any Length

I 2 of 5 Check Digit Verification

Parameter # 49

SSI # 31h

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

***Disable**
(0)

USS Check Digit
(1)

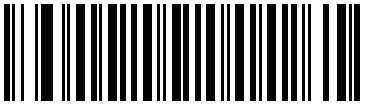
OPCC Check Digit
(2)

Transmit I 2 of 5 Check Digit

Parameter # 44

SSI # 2Ch

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



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

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

Convert I 2 of 5 to EAN-13

Parameter # 82

SSI # 52h

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

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

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

I 2 of 5 Security Level

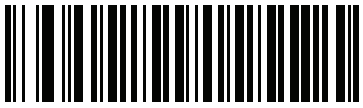
Parameter # 1121

SSI # F8h 04h 61h

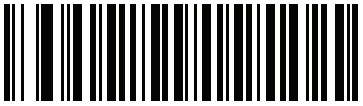
Interleaved 2 of 5 bar codes are vulnerable to misdecodes, particularly when I 2 of 5 Lengths is set to **Any Length**. The engine offers four levels of decode security for Interleaved 2 of 5 bar codes. There is an inverse relationship between security and engine aggressiveness. Increasing the level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

- **I 2 of 5 Security Level 0:** The engine operates in its most aggressive state, while providing sufficient security in decoding most in-spec bar codes.
- **I 2 of 5 Security Level 1:** A bar code must be successfully read twice, and satisfy certain safety requirements before being decoded. This default setting eliminates most misdecodes.
- **I 2 of 5 Security Level 2:** This option applies greater bar code security requirements if **Security Level 1** fails to eliminate misdecodes.
- **I 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 bar code must be successfully read three times before being decoded.

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

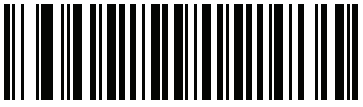


I 2 of 5 Security Level 0
(0)



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

I 2 of 5 Security Level 2
(2)



I 2 of 5 Security Level 3
(3)

I 2 of 5 Reduced Quiet Zone

Parameter # 1210

SSI # F8h 04h BAh

Scan one of the following bar codes to enable or disable decoding I 2 of 5 bar codes with reduced quiet zones (the margins on either side of the bar code). If you select **Enable**, select a *1D Quiet Zone Level on page 11-80*.

Enable I 2 of 5 Reduced Quiet Zone
(1)

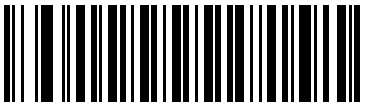
***Disable I 2 of 5 Reduced Quiet Zone**
(0)

Discrete 2 of 5 (DTF)

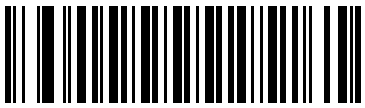
Parameter # 5

SSI # 05h

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



Enable Discrete 2 of 5
(1)



***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 D 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is **One Discrete Length: 12**.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only D 2 of 5 symbols containing a selected length. Select the length using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only D 2 of 5 symbols with 14 characters, scan **D 2 of 5 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Two Discrete Lengths** - Decode only D 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only D 2 of 5 symbols containing either 2 or 14 characters, scan **D 2 of 5 - Two Discrete Lengths**, and then scan **0**, **2**, **1**, **4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Length Within Range** - Decode D 2 of 5 symbols with a specific length range. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, scan **D 2 of 5 - Length Within Range**, and then scan **0**, **4**, **1, 2**. To correct an error or change the selection, scan *Cancel on page B-3*.

Set Lengths for Discrete 2 of 5 (continued)

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

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

***D 2 of 5 - One Discrete Length (Default: 12)**

D 2 of 5 - Two Discrete Lengths

D 2 of 5 - Length Within Range

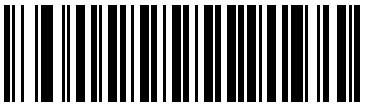
D 2 of 5 - Any Length

Codabar (NW - 7)

Parameter # 7

SSI # 07h

Scan one of the following bar codes to enable or disable Codabar.



***Enable Codabar**
(1)

Disable Codabar
(0)

Set Lengths for Codabar

L1 = Parameter # 24
SSI # 18h

L2 = Parameter # 25
SSI # 19h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Codabar to any length, one or two discrete lengths, or lengths within a specific range. The default is **Length Within Range:** 5 to 55.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Codabar symbols containing a selected length. Select the length using the bar codes 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-3*.
- **Two Discrete Lengths** - Decode only Codabar symbols containing either of two lengths. Select lengths using the bar codes 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-3*.
- **Length Within Range** - Decode Codabar symbols with a specific length range. Select lengths using the bar codes 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-3*.
- **Any Length** - Decode Codabar symbols containing any number of characters within the engine's capability.

Set Lengths for Codabar (continued)

Codabar - One Discrete Length

Codabar - Two Discrete Lengths

***Codabar - Length Within Range (Default: 5 to 55)**

Codabar - Any Length

CLSI Editing

Parameter # 54

SSI # 36h

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

NOTE Symbol length does not include start and stop characters.

Enable CLSI Editing
(1)

***Disable CLSI Editing**
(0)

NOTIS Editing

Parameter # 55

SSI # 37h

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

Enable NOTIS Editing
(1)

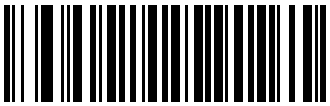
***Disable NOTIS Editing**
(0)

Codabar Upper or Lower Case Start/Stop Characters

Parameter # 855

SSI # F2h 57h

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



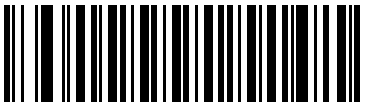
Lower Case
(1)

***Upper Case**
(0)

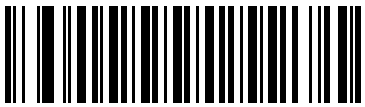
MSI

Parameter # 11
SSI # 0Bh

Scan one of the following bar codes to enable or disable MSI.



Enable MSI
(1)



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

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only MSI symbols containing a selected length. Select the length using the bar codes 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-3*.
- **Two Discrete Lengths** - Decode only MSI symbols containing either of two lengths. Select lengths using the bar codes 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-3*.
- **Length Within Range** - Decode MSI symbols with a specific length range. Select lengths using the bar codes 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-3*.

Set Lengths for MSI (continued)

- **Any Length** - Decode MSI symbols containing any number of characters within the engine'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 bar code. To prevent this, select specific lengths (**MSI - One Discrete Length, Two Discrete Lengths**) for MSI applications.

MSI - One Discrete Length

MSI - Two Discrete Lengths

***MSI - Length Within Range**
(Default: 4 to 55)

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** bar code to enable verification of the second check digit.

See *MSI Check Digit Algorithm on page 11-66* to select second digit algorithms.

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

Two MSI Check Digits
(1)

Transmit MSI Check Digit(s)

Parameter # 46

SSI # 2Eh

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

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

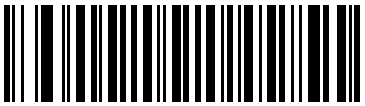
***Do Not Transmit MSI Check Digit(s) (Disable)**
(0)

MSI Check Digit Algorithm

Parameter # 51

SSI # 33h

Two algorithms are available for verifying the second MSI check digit. Scan one of the following bar codes to select the algorithm used to encode the check digit.



MOD 11/MOD 10
(0)

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

MSI Reduced Quiet Zone

Parameter # 1392

SSI # F8h 05h 70h

Scan one of the following bar codes to enable or disable decoding MSI bar codes with reduced quiet zones. If you select **Enable**, select a *1D Quiet Zone Level on page 11-80*.

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

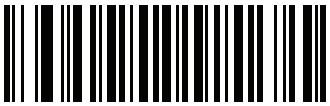
Enable MSI Reduced Quiet Zone
(1)

Chinese 2 of 5

Parameter # 408

SSI # F0h 98h

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



Enable Chinese 2 of 5
(1)

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

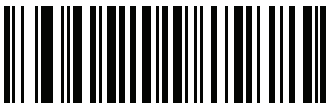
Matrix 2 of 5

Parameter # 618

SSI # F1h 6Ah

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

Enable Matrix 2 of 5
(1)



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

Set Lengths for Matrix 2 of 5

L1 = Parameter # 619
SSI # F1h 6Bh

L2 = Parameter # 620
SSI # F1h 6Ch

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Matrix 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range. The default is **One Discrete Length: 14**.

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

Scan one of the following bar codes to select a length option:

- **One Discrete Length** - Decode only Matrix 2 of 5 symbols containing a selected length. Select the length using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only Matrix 2 of 5 symbols with 14 characters, scan **Matrix 2 of 5 - One Discrete Length**, and then scan **1, 4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Two Discrete Lengths** - Decode only Matrix 2 of 5 symbols containing either of two lengths. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode only Matrix 2 of 5 symbols containing either 2 or 14 characters, scan **Matrix 2 of 5 - Two Discrete Lengths**, and then scan **0**, **2**, **1**, **4**. To correct an error or change the selection, scan *Cancel on page B-3*.
- **Length Within Range** - Decode Matrix 2 of 5 symbols with a specific length range. Select lengths using the bar codes in *Appendix B, Numeric Bar Codes*. For example, to decode Matrix 2 of 5 symbols containing between 4 and 12 characters, scan **Matrix 2 of 5 - Length Within Range**, and then scan **0**, **4**, **1, 2**. To correct an error or change the selection, scan *Cancel on page B-3*.

Set Lengths for Matrix 2 of 5 (continued)

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

***Matrix 2 of 5 - One Discrete Length (Default: 14)**

Matrix 2 of 5 - Two Discrete Lengths

Matrix 2 of 5 - Length Within Range

Matrix 2 of 5 - Any Length

Matrix 2 of 5 Check Digit

Parameter # 622

SSI # F1h 6Eh

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

Enable Matrix 2 of 5 Check Digit
(1)

***Disable Matrix 2 of 5 Check Digit**
(0)

Transmit Matrix 2 of 5 Check Digit

Parameter # 623

SSI # F1h 6Fh

Scan one of the following bar codes to transmit Matrix 2 of 5 data with or without the check digit.

Transmit Matrix 2 of 5 Check Digit
(1)

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

Inverse 1D

Parameter # 586
SSI # F1h 4Ah

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

- **Regular Only** - The engine decodes regular 1D bar codes only.
- **Inverse Only** - The engine decodes inverse 1D bar codes only.
- **Inverse Autodetect** - The engine decodes both regular and inverse 1D bar codes.

NOTE This parameter does not apply to GS1 DataBar code types.

The Inverse 1D setting may impact Composite or Inverse Composite decoding. See *Composite Inverse on page 11-83*.

***Regular**
(0)

Inverse Only
(1)

Inverse Autodetect
(2)

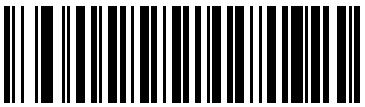
GS1 DataBar

The variants of GS1 DataBar are DataBar-14, DataBar Expanded, and DataBar Limited. The limited and expanded versions have stacked variants. Scan the appropriate bar codes to enable or disable each variant of GS1 DataBar.

GS1 DataBar-14

Parameter # 338

SSI # F0h 52h



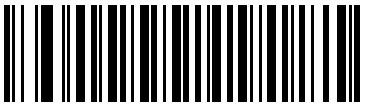
***Enable GS1 DataBar-14**
(1)

Disable GS1 DataBar-14
(0)

GS1 DataBar Limited

Parameter # 339

SSI # F0h 53h



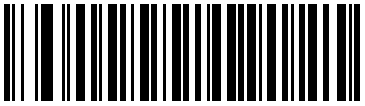
***Enable GS1 DataBar Limited**
(1)

Disable GS1 DataBar Limited
(0)

GS1 DataBar Expanded

Parameter # 340

SSI # F0h 54h



***Enable GS1 DataBar Expanded**
(1)

Disable GS1 DataBar Expanded
(0)

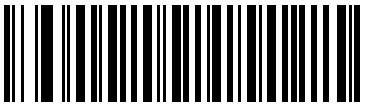
Convert GS1 DataBar to UPC/EAN/JAN

Parameter # 397

SSI # F0h, 8Dh

This parameter only applies to GS1 DataBar-14 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 bar code as EAN-13.

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



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

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

GS1 DataBar Security Level

Parameter # 1706

SSI # F8h 06h AAh

The engine offers four levels of decode security for GS1 DataBar (GS1 DataBar-14, GS1 DataBar Limited, GS1 DataBar Expanded) bar codes.

- **Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- **Security Level 1** - This setting eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Security Level 2** - Select this option with greater bar code 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 1**
(1)

GS1 DataBar Security Level 2
(2)

GS1 DataBar Security Level 3
(3)

GS1 DataBar Limited Margin Check

Parameter # 728

SSI # F1h D8h

The engine offers four levels of decode security for GS1 DataBar Limited bar codes. There is an inverse relationship between the level of margin check and engine 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 bar code 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 bar codes when scanning some UPC symbols. If a misdecode is detected, the engine operates in Level 3 or Level 1.
- **Margin Check Level 3** – Margin check level reflects the newly proposed GS1 standard that requires a five times trailing clear margin.
- **Margin Check Level 4** – Security level extends beyond the standard required by GS1. This level of margin check requires a five times leading and trailing clear margin.

GS1 DataBar Limited Margin Check Level 1
(1)

GS1 DataBar Limited Margin Check Level 2
(2)

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

GS1 DataBar Limited Margin Check Level 4
(4)

GS1 DataBar Expanded Security Level

Parameter # 1707

SSI # F8h 06h ABh

The engine offers four levels of decode security for GS1 DataBar Expanded bar codes.

- **Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- **Security Level 1** - This setting eliminates most misdecodes while maintaining reasonable aggressiveness.
- **Security Level 2** - Select this option with greater bar code 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 Expanded Security Level 0
(0)

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

GS1 DataBar Expanded Security Level 2
(2)

GS1 DataBar Expanded Security Level 3
(3)

Symbology-Specific Security Features

Redundancy Level

Parameter # 78

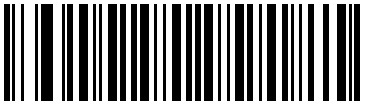
SSI # 4Eh

The engine offers four levels of decode redundancy. Select higher redundancy levels for decreasing levels of bar code quality. As redundancy levels increase, the engine's aggressiveness decreases.

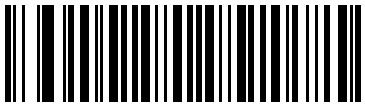
Scan one of the following bar codes to select the redundancy level appropriate for the bar code quality:

- **Redundancy Level 1** - The engine must read the following code types twice before decoding:
  - Codabar (8 characters or less)
  - MSI (4 characters or less)
  - D 2 of 5 (8 characters or less)
  - I 2 of 5 (8 characters or less)
- **Redundancy Level 2** - The engine must read all code types twice before decoding.
- **Redundancy Level 3** - The engine must read code types other than the following twice before decoding, but must read the following codes three times:
  - Codabar (8 characters or less)
  - MSI (4 characters or less)
  - D 2 of 5 (8 characters or less)
  - I 2 of 5 (8 characters or less)
- **Redundancy Level 4** - The engine must read all code types three times before decoding.

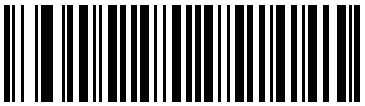
Redundancy Level (continued)



*Redundancy Level 1
(1)



Redundancy Level 2
(2)



Redundancy Level 3
(3)

Redundancy Level 4
(4)

Security Level

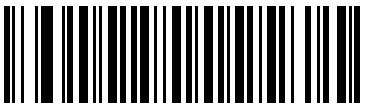
Parameter # 77

SSI # 4Dh

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

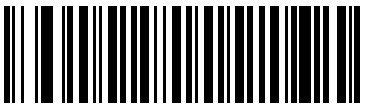
- **Security Level 0** - The engine operates in its most aggressive state, while providing sufficient security decoding most in-spec bar codes.
- **Security Level 1** - This default setting eliminates most misdecodes.
- **Security Level 2** - Select this option if Security Level 1 fails to eliminate 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 bar codes, and significantly impairs the decoding ability of the engine. If this level of security is required, try to improve the quality of the bar codes.



Security Level 0
(0)

***Security Level 1**
(1)



Security Level 2
(2)

Security Level 3
(3)

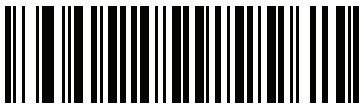
1D Quiet Zone Level

Parameter # 1288

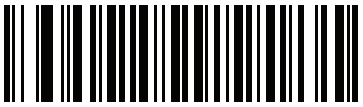
SSI # F8h 05h 08h

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

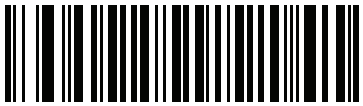
- **1D Quiet Zone Level 0** - The engine performs normally in terms of quiet zone.
- **1D Quiet Zone Level 1** - The engine performs more aggressively in terms of quiet zone.
- **1D Quiet Zone Level 2** - The engine only requires a quiet zone at the end of bar code for decoding.
- **1D Quiet Zone Level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



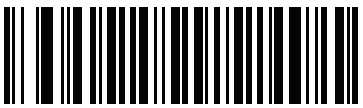
1D Quiet Zone Level 0
(0)



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



1D Quiet Zone Level 2
(2)



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 bar code printing technologies, this gap can grow larger than the maximum size allowed, preventing the engine from decoding the symbol. If this problem occurs, scan the **Large Intercharacter Gaps** parameter to tolerate these out-of-specification bar codes.

***Normal Intercharacter Gaps**
(6)

Large Intercharacter Gaps
(10)

Composite

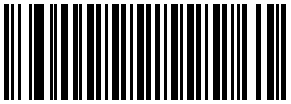
Composite CC-C

Parameter # 341

SSI # F0h 55h

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

Enable CC-C
(1)



***Disable CC-C**
(0)

Composite CC-A/B

Parameter # 342

SSI # F0h 56h

Scan one of the following bar codes to enable or disable Composite bar codes of type CC-A/B.

Enable CC-A/B
(1)

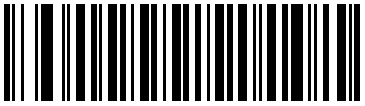
***Disable CC-A/B**
(0)

Composite TLC-39

Parameter # 371

SSI # F0h 73h

Scan one of the following bar codes to enable or disable Composite bar codes of type TLC-39.



Enable TLC39
(1)

***Disable TLC39**
(0)

Composite Inverse

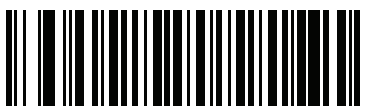
Parameter # 1113

SSI # F8h 04h 59h

Select an option to set Composite for either regular decode or inverse decode.

- **Regular Only** - The engine decodes regular Composite bar codes only. Before selecting this, set *Inverse 1D on page 11-71* to **Regular Only** or **Inverse Autodetect**.
- **Inverse Only** - The engine decodes inverse Composite bar codes only. This mode only supports Composite Inverse that includes DataBar combined with CCAB, and does not support other 1D/2D combinations. Before selecting this, first enable *Composite CC-A/B on page 11-82*, and set *Inverse 1D on page 11-71* to **Inverse Only** or **Inverse Autodetect.**

***Regular Only**
(0)



Inverse Only
(1)

UPC Composite Mode

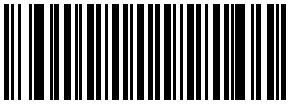
Parameter # 344

SSI # F0h 58h

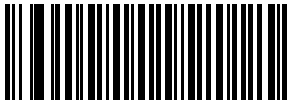
Select an option for linking UPC symbols with a 2D symbol during transmission as if they were one symbol:

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

UPC Never Linked
(0)



***UPC Always Linked**
(1)



Autodiscriminate UPC Composites
(2)

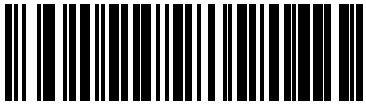
Composite Beep Mode

Parameter # 398

SSI # F0h, 8Eh

Scan one of the following bar codes to select the number of decode beeps that sound upon decoding a Composite bar code.

Single Beep After Both are Decoded
(0)



***Beep as Each Code Type is Decoded**
(1)

Double Beep After Both are Decoded
(2)

GS1-128 Emulation Mode for UCC/EAN Composite Codes

Parameter # 427

SSI # F0h, ABh

Scan one of the following bar codes to enable or disable this mode.

Enable GS1-128 Emulation Mode for UCC/EAN Composite Codes
(1)

***Disable GS1-128 Emulation Mode for UCC/EAN Composite Codes**
(0)

2D Symbologies

PDF417

Parameter # 15

SSI # 0Fh

Scan one of the following bar codes to enable or disable PDF417.

***Enable PDF417**
(1)

Disable PDF417
(0)

MicroPDF417

Parameter # 227

SSI # E3h

Scan one of the following bar codes to enable or disable MicroPDF417.

Enable MicroPDF417
(1)

***Disable MicroPDF417**
(0)

Code 128 Emulation

Parameter # 123

SSI # 7Bh

Enable this parameter to transmit data from certain MicroPDF417 symbols as Code 128. You must enable *AIM Code ID Character (1) on page 6-30* 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 bar codes to enable or disable Code 128 Emulation.

NOTE Linked MicroPDF codewords 906, 907, 912, 914, and 915 are not supported. Use GS1 Composites instead.

Enable Code 128 Emulation (1)

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

Data Matrix

Parameter # 292

SSI # F0h, 24h

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

***Enable Data Matrix**
(1)

Disable Data Matrix
(0)

Data Matrix Inverse

Parameter # 588

SSI # F1h 4Ch

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

- **Regular Only** - The engine decodes regular Data Matrix bar codes only.
- **Inverse Only** - The engine decodes inverse Data Matrix bar codes only.
- **Inverse Autodetect** - The engine decodes both regular and inverse Data Matrix bar codes.

Regular Only
(0)

Inverse Only
(1)

***Inverse Autodetect**
(2)

Decode Data Matrix Mirror Images

Parameter # 537

SSI # F1h 19h

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

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

Never
(0)

Always
(1)

***Auto**
(2)

Maxicode

Parameter # 294

SSI # F0h, 26h

Scan one of the following bar codes to enable or disable Maxicode.

Enable Maxicode
(1)

***Disable Maxicode**
(0)

QR Code

Parameter # 293

SSI # F0h, 25h

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

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

***Enable QR Code**
(1)

Disable QR Code
(0)

MicroQR

Parameter # 573

SSI # F1h 3Dh

Scan one of the following bar codes to enable or disable MicroQR.

***Enable MicroQR**
(1)

Disable MicroQR
(0)

Aztec

Parameter # 574

SSI # F1h 3Eh

Scan one of the following bar codes to enable or disable Aztec.

✓ ***NOTE*** Enabling this also enables Linked Aztec.

***Enable Aztec**
(1)

Disable Aztec
(0)

Aztec Inverse

Parameter # 589

SSI # F1h 4Dh

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

- **Regular Only** - The engine decodes regular Aztec bar codes only.
- **Inverse Only** - The engine decodes inverse Aztec bar codes only.
- **Inverse Autodetect** - The engine decodes both regular and inverse Aztec bar codes.

Regular Only
(0)

Inverse Only
(1)

***Inverse Autodetect**
(2)

Han Xin

Parameter # 1167

SSI # F8h 04h 8Fh

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

Enable Han Xin
(1)

***Disable Han Xin**
(0)

Han Xin Inverse

Parameter # 1168

SSI # F8h 04h 90h

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

- **Regular Only** - The engine decodes Han Xin bar codes with normal reflectance only.
- **Inverse Only** - The engine decodes Han Xin bar codes with inverse reflectance only.
- **Inverse Autodetect** - The engine decodes both regular and inverse Han Xin bar codes.

***Regular Only**
(0)

Inverse Only
(1)

Inverse Autodetect
(2)

Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The engine 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 bar codes 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.

Flush Macro Buffer

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

Abort Macro PDF Entry

Postal Codes

US Postnet

Parameter # 89

SSI # 59h

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

Enable US Postnet
(1)

***Disable US Postnet**
(0)

US Planet

Parameter # 90

SSI # 5Ah

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

Enable US Planet
(1)

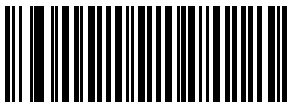
***Disable US Planet**
(0)

Transmit US Postal Check Digit

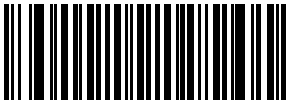
Parameter # 95

SSI # 5Fh

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



***Transmit US Postal Check Digit**
(1)



Do Not Transmit US Postal Check Digit
(0)

UK Postal

Parameter # 91

SSI # 5Bh

Scan one of the following bar codes to enable or disable UK Postal.

Enable UK Postal
(1)

***Disable UK Postal**
(0)

Transmit UK Postal Check Digit

Parameter # 96

SSI # 60h

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

***Transmit UK Postal Check Digit**
(1)

Do Not Transmit UK Postal Check Digit
(0)

Japan Postal

Parameter # 290

SSI # F0h, 22h

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

Enable Japan Postal
(1)

***Disable Japan Postal**
(0)

Australia Post

Parameter # 291

SSI # F0h, 23h

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

Enable Australia Post
(1)

***Disable Australia Post**
(0)

Australia Post Format

Parameter # 718

SSI # F1h, CEh

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

- **Autodiscriminate** (or Smart mode) - Decode the Customer Information Field using the N and C Encoding Tables.

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

- **Raw Format** - Output raw bar patterns as a series of numbers 0 through 3.
- **Alphanumeric Encoding** - Decode the Customer Information Field using the C Encoding Table.
- **Numeric Encoding** - Decode the Customer Information Field using the N Encoding Table.

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

***Autodiscriminate**
(0)

Raw Format
(1)

Alphanumeric Encoding
(2)

Numeric Encoding
(3)

Netherlands KIX Code

Parameter # 326

SSI # F0h, 46h

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

Enable Netherlands KIX Code
(1)

***Disable Netherlands KIX Code**
(0)

USPS 4CB/One Code/Intelligent Mail

Parameter # 592

SSI # F1h 50h

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

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

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

UPU FICS Postal

Parameter # 611

SSI # F1h 63h

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

Enable UPU FICS Postal
(1)

***Disable UPU FICS Postal**
(0)

123SCAN AND SOFTWARE TOOLS

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 bar code 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
    - Preferred Symbol
  - Modify data before transmission to a host using Advanced Data Formatting (ADF)
- Load parameter settings to a scanner via:
  - Bar code scanning:
    - Scan a paper bar code
    - Scan a bar code from a PC screen
    - Scan a bar code 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
  - Bar codes scanned by symbology
  - Battery diagnostics
  - Communication diagnostics
- Generate the following reports:
  - Barcode Report - Programming bar code, 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 Android
  - Scanner SDK for iOS
  - Scanner SDK for Linux
- 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
- Scan-To-Connect Utility
  - Android
  - iOS
  - Windows
  - Zebra AppGallery
- 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 bar code 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.*

APPENDIX A STANDARD PARAMETER DEFAULTS

Table A-1 *Parameter Defaults*

Parameter	Parameter Number [1]	SSI Number [2]	Default	Page Number
User Preferences				
Set Default Parameter			N/A	*6-5*
Parameter Bar Code Scanning	236	ECh	Enable	*6-6*
Lock Parameter Scanning	802	F2h 22h	N/A	*6-7*
Unlock Parameter Scanning	803	F2h 23h	N/A	*6-7*
User Parameter Pass Through	625	F1h 71h	Disable	*6-8*
Validate Concatenated Parameter Bar Codes	692	F1h B4h	Disable	*6-9*
Beep After Good Decode	56	38h	Enable	*6-10*
Beeper Volume	140	8Ch	High	*6-11*
Beeper Tone	145	91h	Medium	*6-12*
Beeper Duration	628	F1h 74h	Medium	*6-13*
Suppress Power Up Beeps	721	F1h D1h	Do Not Suppress	*6-13*
LED on Good Decode	744	F1h E8h	Enable	*6-14*
Direct Decode Indicator	859	F2h 5Bh	Disable	*6-15*
Low Power Mode	128	80h	Enable	*6-16*
Time Delay to Low Power Mode	146	92h	1 Second	*6-17*
Trigger Mode	138	8Ah	Standard (Level)	*6-19*

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
Picklist Mode	402	F0h 92h	Disable Picklist Mode Always	6-21
Continuous Bar Code Read	649	F1h 89h	Disable	6-22
Unique Bar Code Reporting	723	F1h D3h	Disable	6-22
Mirrored Image	624	F1h 70h	Disable	6-23
Decode Session Timeout	136	88h	9.9 Seconds	6-23
Timeout Between Decodes, Same Symbol	137	89h	0.6 Seconds	6-24
Timeout Between Decodes, Different Symbols	144	90h	0.1 Seconds	6-24
Mobile Phone/Display Mode	716	F1h CCh	Disable	6-25
PDF Prioritization	719	F4h F1h CFh	Disable	6-26
PDF Prioritization Timeout	720	F1h D0h	200 ms	6-27
Low Light Scene Detection	810	F2h 2Ah	Disable	6-28
Miscellaneous Options				
Enter Key	N/A	N/A	N/A	6-29
Tab Key	N/A	N/A	N/A	6-29
Transmit Code ID Character	45	2Dh	None	6-30
Prefix Value	99, 105	63h, 69h	7013 <CR><LF>	6-31
Suffix 1 Value Suffix 2 Value	98, 104 100, 106	62h, 68h 64h, 6Ah	7013 <CR><LF>	6-31
Scan Data Transmission Format	235	EBh	Data As Is	6-32
FN1 Substitution Values	103, 109	67h, 6Dh	7013 <CR><LF>	6-34
Transmit “No Read” Message	94	5E	Disable	6-35
Send Versions				
Report Version	N/A	N/A	N/A	6-36
Report Decoder Manufacturing Information	N/A	N/A	N/A	6-36
Report Scan Engine Manufacturing Information	N/A	N/A	N/A	6-36

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
Image Capture Preferences				
Operational Modes	N/A	N/A	N/A	*7-4*
Aim Brightness	668	F1h 9Ch	2 (High)	*7-5*
Illumination Brightness	669	F1h 9Dh	7	*7-6*
Decoding Autoexposure	297	F0h 29h	Enable	*7-6*
Decoding Illumination	298	F0h 2Ah	Enable	*7-7*
Decode Aiming Pattern	306	F0h 32h	Enable	*7-7*
Image Capture Illumination	361	F0h 69h	Enable	*7-8*
Image Capture Autoexposure	360	F0h 68h	Enable	*7-8*
Exposure Time	567	F4h F1h 37h	100 (10 ms)	*7-9*
Analog Gain	1232	F4h D0h	Analog Gain 1	*7-10*
Snapshot Mode Timeout	323	F0h 43h	0 (30 seconds)	*7-11*
Snapshot Aiming Pattern	300	F0h 2Ch	Enable	*7-12*
Image Size (Number of Pixels)	302	F0h 2Eh	Full	*7-13*
Image Brightness (Target White)	390	F0h 86h	180	*7-14*
Image File Format Selection	304	F0h 30h	JPEG	*7-15*
Image Rotation	665	F1h 99h	0	*7-16*
Video View Finder	324	F0h 44h	Disable	*7-17*
Target Video Frame Size	328	F0h 48h	2200 bytes	*7-18*
Video View Finder Image Size	329	F0h 49h	1700 bytes	*7-18*
Video Resolution	667	F1h 9Bh	1/4 resolution	*7-19*
USB Host Parameters				
USB Device Type	N/A	N/A	SNAPI with Imaging	*8-4*
USB Country Keyboard Types (Country Codes)	N/A	N/A	North American	*8-6*
Symbol Native API (SNAPI) Status Handshaking	N/A	N/A	Enable	*8-6*
USB Keystroke Delay	N/A	N/A	No Delay	*8-7*

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 Caps Lock Override	N/A	N/A	Disable	*8-7*
Barcodes with Unknown Characters	N/A	N/A	Send Barcodes with Unknown Characters	*8-8*
USB Fast HID	N/A	N/A	Disable	*8-8*
USB Polling Interval	N/A	N/A	8 msec	*8-9*
Keypad Emulation	N/A	N/A	Disable	*8-11*
Quick Keypad Emulation	N/A	N/A	Disable	*8-11*
Keypad Emulation with Leading Zero	N/A	N/A	Disable	*8-12*
USB FN1 Substitution	N/A	N/A	Disable	*8-12*
Function Key Mapping	N/A	N/A	Disable	*8-13*
Simulated Caps Lock	N/A	N/A	Disable	*8-13*
Convert Case	N/A	N/A	None	*8-11*
USB Static CDC	N/A	N/A	Enable	*8-11*
SSI Host Parameters				
Select SSI Host	N/A	N/A	N/A	*9-12*
Baud Rate	156	9Ch	9600	*9-13*
Parity	158	9Eh	None	*9-13*
Check Parity	151	97h	Disable	*9-15*
Stop Bits	157	9Dh	1	*9-15*
Software Handshaking	159	9Fh	ACK/NAK	*9-16*
Host RTS Line State	154	9Ah	Low	*9-17*
Decode Data Packet Format	238	EEh	Send Raw Decode Data	*9-17*
Host Serial Response Timeout	155	9Bh	2 Seconds	*9-18*
Host Character Timeout	239	EFh	200 msec	*9-19*
Multipacket Option	334	F0h 4Eh	Option 1	*9-20*
Interpacket Delay	335	F0h 4Fh	0 msec	*9-21*
Event Reporting				
Decode Event	256	F0h 00h	Disable	*9-22*

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
Boot Up Event	258	F0h 02h	Disable	*9-23*
Parameter Event	259	F0h 03h	Disable	*9-23*
RS-232 Host Parameters				
RS-232 Host Types	N/A	N/A	Standard	*10-8*
Baud Rate	N/A	N/A	9600	*10-10*
Parity	N/A	N/A	None	*10-11*
Stop Bits	N/A	N/A	1 Stop Bit	*10-12*
Data Bits	N/A	N/A	8-bit	*10-12*
Check Receive Errors	N/A	N/A	Enable	*10-13*
Hardware Handshaking	N/A	N/A	None	*10-14*
Software Handshaking	N/A	N/A	None	*10-16*
Host Serial Response Timeout	N/A	N/A	2 Seconds	*10-18*
RTS Line State	N/A	N/A	Low RTS	*10-19*
Beep on <BEL>	N/A	N/A	Disable	*10-19*
Intercharacter Delay	N/A	N/A	0 msec	*10-20*
Nixdorf Beep/LED Options	N/A	N/A	Normal Operation	*10-21*
Bar Codes with Unknown Characters	N/A	N/A	Send Bar Code With Unknown Characters	*10-21*
Enable/Disable All Code Types				*11-8*
1D Symbologies				
UPC/EAN/JAN				
UPC-A	1	01h	Enable	*11-9*
UPC-E	2	02h	Enable	*11-9*
UPC-E1	12	0Ch	Disable	*11-10*
EAN-8/JAN 8	4	04h	Enable	*11-10*
EAN-13/JAN 13	3	03h	Enable	*11-11*
Bookland EAN	83	53h	Disable	*11-11*
Bookland ISBN Format	576	F1h 40h	ISBN-10	*11-12*

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
ISSN EAN	617	F1h 69h	Disable	*11-13*
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	16	10h	Ignore	*11-14*
User-Programmable Supplementals Supplemental 1: Supplemental 2:	 579 580	 F4h F1h 43h F4h F1h 44h	000	*11-17*
UPC/EAN/JAN Supplemental Redundancy	80	50h	10	*11-17*
Decode UPC/EAN/JAN Supplemental AIM ID	672	F1h A0h	Combined	*11-18*
Transmit UPC-A Check Digit	40	28h	Enable	*11-19*
Transmit UPC-E Check Digit	41	29h	Enable	*11-19*
Transmit UPC-E1 Check Digit	42	2Ah	Enable	*11-20*
UPC-A Preamble	34	22h	System Character	*11-21*
UPC-E Preamble	35	23h	System Character	*11-22*
UPC-E1 Preamble	36	24h	System Character	*11-23*
Convert UPC-E to A	37	25h	Disable	*11-24*
Convert UPC-E1 to A	38	26h	Disable	*11-24*
EAN/JAN Zero Extend	39	27h	Disable	*11-25*
UCC Coupon Extended Code	85	55h	Disable	*11-25*
Coupon Report	730	F1h DAh	New Coupon Format	*11-26*
UPC Reduced Quiet Zone	1289	F8h 05h 09h	Disable	*11-27*
Code 128				
Code 128	8	08h	Enable	*11-28*
Set Length(s) for Code 128	209, 210	D1h, D2h	Any Length	*11-28*
GS1-128 (formerly UCC/EAN-128)	14	0Eh	Enable	*11-30*
ISBT 128	84	54h	Enable	*11-30*
ISBT Concatenation	577	F1h 41h	Disable	*11-31*
Check ISBT Table	578	F1h 42h	Enable	*11-32*

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
ISBT Concatenation Redundancy	223	DFh	10	*11-32*
Ignore Code 128 <FNC4>	1254	F8h 04h E6h	Honor	*11-33*
Code 128 Security Level	751	F1h EFh	Security Level 1	*11-34*
Code 128 Reduced Quiet Zone	1208	F8h 04h B8h	Disable	*11-36*
Code 39				
Code 39	0	00h	Enable	*11-37*
Trioptic Code 39	13	0Dh	Disable	*11-37*
Convert Code 39 to Code 32 (Italian Pharmacy Code)	86	56h	Disable	*11-38*
Code 32 Prefix	231	E7h	Disable	*11-38*
Set Length(s) for Code 39	18, 19	12h, 13h	Length Within Range: 2 to 55	*11-39*
Code 39 Check Digit Verification	48	30h	Disable	*11-40*
Transmit Code 39 Check Digit	43	2Bh	Disable	*11-41*
Code 39 Full ASCII Conversion	17	11h	Disable	*11-41*
Code 39 Security Level	750	F1h EEh	Security Level 1	*11-42*
Code 39 Reduced Quiet Zone	1209	F8h 04h B9h	Disable	*11-44*
Code 93				
Code 93	9	09h	Enable	*11-45*
Set Length(s) for Code 93	26, 27	1Ah, 1Bh	Length Within Range: 4 to 55	*11-45*
Code 11				
Code 11	10	0Ah	Disable	*11-47*
Set Lengths for Code 11	28, 29	1Ch, 1Dh	Length Within Range: 4 to 55	*11-47*
Code 11 Check Digit Verification	52	34h	Disable	*11-49*
Transmit Code 11 Check Digit(s)	47	2Fh	Disable	*11-50*
Interleaved 2 of 5 (ITF)				
Interleaved 2 of 5 (ITF)	6	06h	Disable	*11-51*
Set Lengths for I 2 of 5	22, 23	16h, 17h	One Discrete Length = 14	*11-51*
I 2 of 5 Check Digit Verification	49	31h	Disable	*11-53*

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
Transmit I 2 of 5 Check Digit	44	2Ch	Disable	*11-54*
Convert I 2 of 5 to EAN 13	82	52h	Disable	*11-54*
I 2 of 5 Security Level	1121	F8h 04h 61h	Security Level 1	*11-55*
I 2 of 5 Reduced Quiet Zone	1210	F8h 04h BAh	Disable	*11-56*
Discrete 2 of 5 (DTF)				
Discrete 2 of 5	5	05h	Disable	*11-57*
Set Length(s) for D 2 of 5	20, 21	14h 15h	One Discrete Length = 12	*11-57*
Codabar (NW - 7)				
Codabar	7	07h	Enable	*11-59*
Set Lengths for Codabar	24, 25	18h, 19h	Length Within Range: 5 to 55	*11-59*
CLSI Editing	54	36h	Disable	*11-61*
NOTIS Editing	55	37h	Disable	*11-61*
Codabar Upper or Lower Case Start/ Stop Characters Detection	855	F2h 57h	Upper Case	*11-62*
MSI				
MSI	11	0Bh	Disable	*11-63*
Set Length(s) for MSI	30, 31	1Eh, 1Fh	Length Within Range: 4 to 55	*11-63*
MSI Check Digits	50	32h	One	*11-65*
Transmit MSI Check Digit	46	2Eh	Disable	*11-65*
MSI Check Digit Algorithm	51	33h	Mod 10/Mod 10	*11-66*
MSI Reduced Quiet Zone	1392	F8h 05h 70h	Disable	*11-66*
Chinese 2 of 5				
Chinese 2 of 5	408	F0h 98h	Disable	*11-67*
Matrix 2 of 5				
Matrix 2 of 5	618	F1h 6Ah	Disable	*11-68*
Matrix 2 of 5 Lengths	619 620	F1h 6Bh F1h 6Ch	One Discrete Length = 14	*11-68*
Matrix 2 of 5 Check Digit	622	F1h 6Eh	Disable	*11-70*

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
Transmit Matrix 2 of 5 Check Digit	623	F1h 6Fh	Disable	*11-70*
Inverse 1D	586	F1h 4Ah	Regular	*11-71*
GS1 DataBar				
GS1 DataBar-14	338	F0h 52h	Enable	*11-72*
GS1 DataBar Limited	339	F0h 53h	Enable	*11-72*
GS1 DataBar Expanded	340	F0h 54h	Enable	*11-73*
Convert GS1 DataBar to UPC/EAN/JAN	397	F0h 8Dh	Disable	*11-73*
GS1 DataBar Security Level	1706	F8h 06h AAh	Level 1	*11-74*
GS1 DataBar Limited Margin Check	728	F1h D8h	Level 3	*11-75*
Symbology-Specific Security Features				
Redundancy Level	78	4Eh	1	*11-77*
Security Level	77	4Dh	1	*11-79*
1D Quiet Zone Level	1288	F8h 05h 08h	1	*11-80*
Intercharacter Gap Size	381	F0h 7Dh	Normal	*11-81*
Composite Codes				
Composite CC-C	341	F0h 55h	Disable	*11-82*
Composite CC-A/B	342	F0h 56h	Disable	*11-82*
Composite TLC-39	371	F0h 73h	Disable	*11-83*
Composite Inverse	1113	F8h 04h 59h	Regular	*11-83*
UPC Composite Mode	344	F0h 58h	UPC Always Linked	*11-84*
Composite Beep Mode	398	F0h 8Eh	Beep As Each Code Type is Decoded	*11-85*
GS1-128 Emulation Mode for UCC/EAN Composite Codes	427	F0h ABh	Disable	*11-85*
2D Symbologies				
PDF417	15	0Fh	Enable	*11-86*
MicroPDF417	227	E3h	Disable	*11-86*
Code 128 Emulation	123	7Bh	Disable	*11-87*

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
Data Matrix	292	F0h 24h	Enable	*11-88*
Data Matrix Inverse	588	F1h 4Ch	Inverse Autodetect	*11-89*
Decode Data Matrix Mirror Images	537	F1h 19h	Auto	*11-90*
Maxicode	294	F0h 26h	Disable	*11-91*
QR Code	293	F0h 25h	Enable	*11-92*
MicroQR	573	F1h 3Dh	Enable	*11-92*
Aztec	574	F1h 3Eh	Enable	*11-93*
Aztec Inverse	589	F1h 4Dh	Inverse Autodetect	*11-94*
Han Xin	1167	F8h 04h 8Fh	Disable	*11-95*
Han Xin Inverse	1168	F8h 04h 90h	Regular	*11-96*
Macro PDF				
Flush Macro PDF Buffer	N/A	N/A	N/A	*11-97*
Abort Macro PDF Entry	N/A	N/A	N/A	*11-97*
Postal Codes				
US Postnet	89	59h	Disable	*11-98*
US Planet	90	5Ah	Disable	*11-98*
Transmit US Postal Check Digit	95	5Fh	Enable	*11-99*
UK Postal	91	5Bh	Disable	*11-99*
Transmit UK Postal Check Digit	96	60h	Enable	*11-100*
Japan Postal	290	F0h 22h	Disable	*11-100*
Australia Post	291	F0h 23h	Disable	*11-101*
Australia Post Format	718	F1h CEh	Autodiscriminate	*11-102*
Netherlands KIX Code	326	F0h 46h	Disable	*11-103*
USPS 4CB/One Code/Intelligent Mail	592	F1h 50h	Disable	*11-103*
UPU FICS Postal	611	F1h 63h	Disable	*11-104*

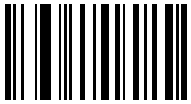
1. Parameter number decimal values are used for programming via RSM commands.
2. SSI number hex values are used for programming via SSI commands.

APPENDIX B NUMERIC BAR CODES

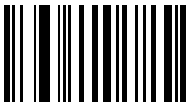
Numeric Bar Codes

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

0



1



2

3

Numeric Bar Codes (continued)

4

5

6

7

8

9

Cancel

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

Cancel

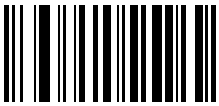
APPENDIX C ALPHANUMERIC BAR CODES

Cancel

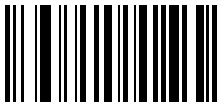
To correct an error or change a selection, scan the following bar code.

Cancel

Alphanumeric Bar Codes



Space



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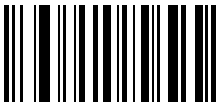

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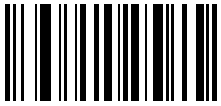

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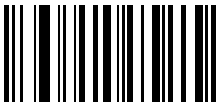
Alphanumeric Bar Codes (continued)



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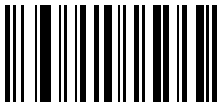

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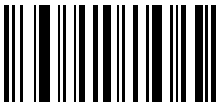

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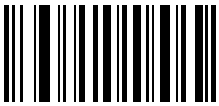

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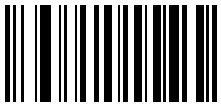

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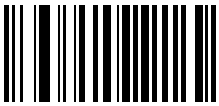

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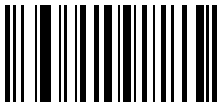

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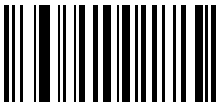

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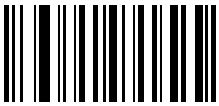

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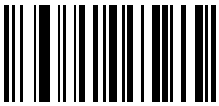

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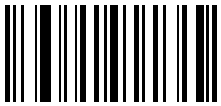

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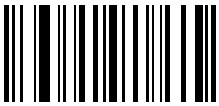

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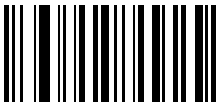

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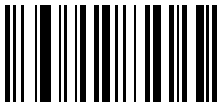

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Alphanumeric Bar Codes (continued)

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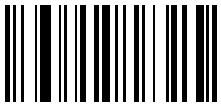

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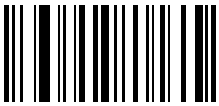

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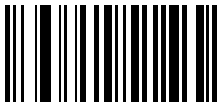

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Alphanumeric Bar Codes (continued)

NOTE Do not confuse the following bar codes with those on the numeric keypad.

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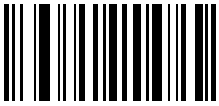

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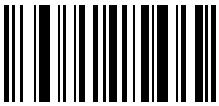

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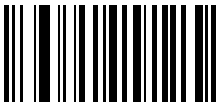

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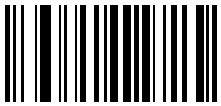

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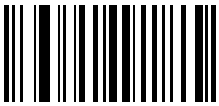

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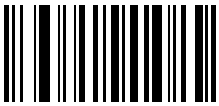
End of Message

Cancel

Alphanumeric Bar Codes (continued)



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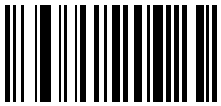

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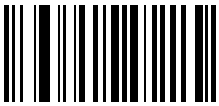

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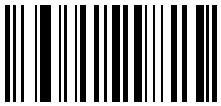

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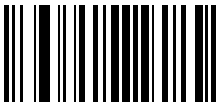

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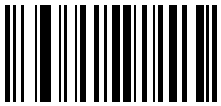

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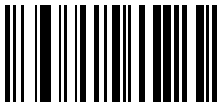

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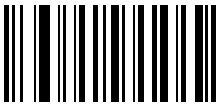

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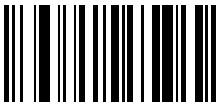

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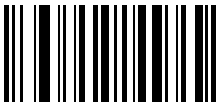

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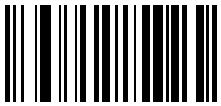

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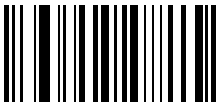

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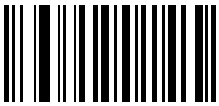

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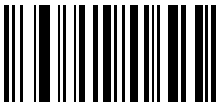

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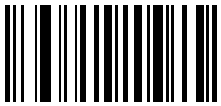

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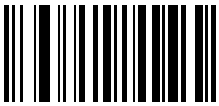

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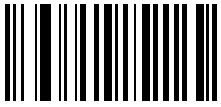

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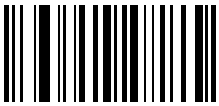

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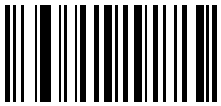

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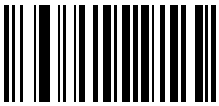

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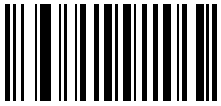

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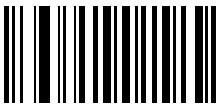

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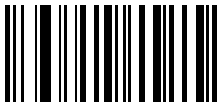

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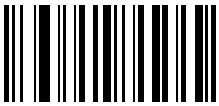

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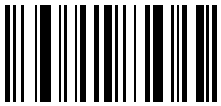

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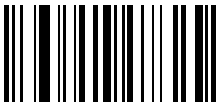

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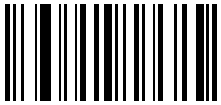

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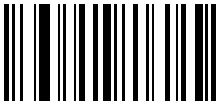

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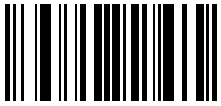

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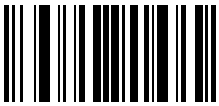

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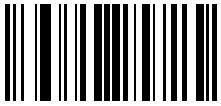

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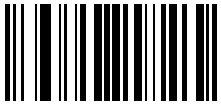

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Alphanumeric Bar Codes (continued)

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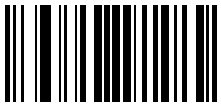

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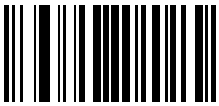

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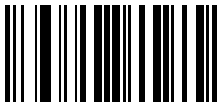

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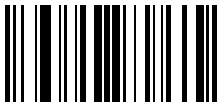

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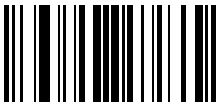

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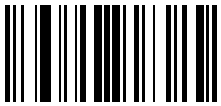

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APPENDIX D ASCII CHARACTER SETS

✓ ***NOTE*** For the Keyboard Wedge Interface, Code 39 Full ASCII interprets the bar code 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

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	*	*
1043	/K	+	+

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)
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
1071	G	G	G
1072	H	H	H

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)
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
1099	+C	c	c
1100	+D	d	d
1101	+E	e	e

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)
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	I	|
1125	%R	}	}
1126	%S	~	~
1127			Undefined
7013			ENTER

Table D-2 *ALT Key Character Set*

ALT Keys	Keystroke
2045	ALT -
2050	ALT 2
2054	ALT 6
2064	ALT @
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
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y

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

ALT Keys	Keystroke
2090	ALT Z
2091	ALT [
2092	ALT \
2093	ALT]

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
3072	GUI H
3073	GUI I

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
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

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, ISBT 128, ISBT 128 Concatenated
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
H	Code 11
J	MSI
K	GS1-128
L	Bookland EAN
M	Trioptic Code 39
N	Coupon Code
R	GS1 DataBar Family
S	Matrix 2 of 5
T	UCC Composite, TLC 39
U	Chinese 2 of 5

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

Code Character	Code Type
V	Korean 3 of 5
X	ISSN EAN, PDF417, Macro PDF417, Micro PDF417
z	Aztec, Aztec Rune
P00	Data Matrix
P01	QR Code, MicroQR
P02	Maxicode
P03	US Postnet
P04	US Planet
P05	Japan Postal
P06	UK Postal
P08	Netherlands KIX Code
P09	Australia Post
P0A	USPS 4CB/One Code/Intelligent Mail
P0B	UPU FICS Postal
P0H	Han Xin
P0X	Signature Capture

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*)

Table E-2 *Aim Code Characters*

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, ISBT 128, ISBT 128 Concatenated, GS1-128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar Family
F	Codabar
G	Code 93
H	Code 11
h	Han Xin
I	Interleaved 2 of 5
L	PDF417, Macro PDF417, Micro PDF417
L2	TLC 39
M	MSI
Q	QR Code, MicroQR
S	Discrete 2 of 5, IATA 2 of 5
U	Maxicode
z	Aztec, Aztec Rune
X	Bookland EAN, ISSN EAN, Trioptic Code 39, Chinese 2 of 5, Matrix 2 of 5, Korean 3 of 5, US Postnet, US Planet, UK Postal, Japan Postal, Australia Post, Netherlands KIX Code, USPS 4CB/One Code/ Intelligent Mail, UPU FICS Postal, Signature Capture

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 bar code with check character W, **A+I+MI+DW**, is transmitted as **]A7**AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as **]X0**412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character ^{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 bar code 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 bar code 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 bar code 012345678905 is transmitted as **]G0**012345678905	
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as **]M1**4123	

Table E-3 *Modifier Characters (continued)*

Code Type	Option Value	Option
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as **]S0**4123	
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 bar code 012345678905 is transmitted as **]E0**0012345678905	
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as **]X0**123456789X	
ISSN EAN	0	No options specified at this time. Always transmit 0.
	Example: An ISSN EAN bar code 123456789X is transmitted as **]X0**123456789X	
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
GS1 DataBar Family		No option specified at this time. Always transmit 0. GS1 DataBar-14 and GS1 DataBar Limited transmit with an Application Identifier “01”. Note: In GS1-128 emulation mode, GS1 DataBar is transmitted using Code 128 rules (i.e.,]C1).
	Example: A GS1 DataBar-14 bar code 0110012345678902 is transmitted as **]e**00110012345678902.	

Table E-3 *Modifier Characters (continued)*

Code Type	Option Value	Option
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.
		GS1-128 emulation Note: UPC portion of composite is transmitted using UPC rules.
	1	Data packet is a GS1-128 symbol (i.e., data is preceded with]JC1).
PDF417, Micro 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 bar code contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The bar code contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The bar code contains a GS1-128 symbol, and the first codeword is in the range 910-911.
	Example: A PDF417 bar code ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.	

Table E-3 *Modifier Characters (continued)*

Code Type	Option Value	Option
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.
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.
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.
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.

APPENDIX F NON-PARAMETER ATTRIBUTES

Introduction

This appendix defines non-parameter attributes.

Attributes

Model Number

Attribute #533

Model number of the scanner. This electronic output matches the printout on the physical device label, for example **SE2707-LS000R**.

Type	S
Size (Bytes)	18
User Mode Access	R
Values	Variable

Serial Number

Attribute #534

Unique serial number assigned in the manufacturing facility. This electronic output matches the printout on the physical device label, for example **K09Q46TB**.

Type	S
Size (Bytes)	16
User Mode Access	R
Values	Variable

Date of Manufacture

Attribute #535

Date of device manufacture assigned in the manufacturing facility. This electronic output matches the printout on the physical device label, for example **30APR14** (which reads the 30th of April 2014).

Type	S
Size (Bytes)	7
User Mode Access	R
Values	Variable

Date of First Programming

Attribute #615

Date of first electronic programming represents the first time settings where electronically loaded to the scanner either by 123Scan or via SMS, for example **18MAY14** (which reads the 18th of May 2014).

Type	S
Size (Bytes)	7
User Mode Access	R
Values	Variable

Configuration Filename

Attribute #616

The name assigned to the configuration settings loaded electronically to the device either by 123Scan or via SMS.

NOTE Scanning the **Set Defaults** bar code automatically changes the configuration filename to *factory defaults*.

To indicate the configuration settings loaded to the device were changed, the configuration filename changes to *Modified* upon scanning any parameter bar code.

Type	S
Size (Bytes)	17
User Mode Access	RW
Values	Variable

Beeper/LED

Attribute #6000

Activate the beeper and/or LED.

Type X
Size (Bytes) N/A
User Mode Access W
Values:

Beep / LED Action	Value
1 high short beep	0
2 high short beeps	1
3 high short beeps	2
4 high short beeps	3
5 high short beeps	4
1 low short beep	5
2 low short beeps	6
3 low short beeps	7
4 low short beeps	8
5 low short beeps	9
1 high long beep	10
2 high long beeps	11
3 high long beeps	12
4 high long beeps	13
5 high long beeps	14
1 low long beep	15
2 low long beeps	16
3 low long beeps	17
4 low long beeps	18
5 low long beeps	19
Fast warble beep	20
Slow warble beep	21
High-low beep	22
Low-high beep	23
High-low-high beep	24
Low-high-low beep	25
High-high-low-low beep	26

Parameter Defaults

Attribute #6001

This attribute restores all parameters to their factory defaults.

Type	X
Size (Bytes)	n/a
User Mode Access	W
Values	0 = Restore Defaults 1 = Restore Factory Defaults 2 = Write Custom Defaults

Beep on Next Bootup

Attribute #6003

This attribute configures (enables or disables) beep on next boot up of scanner.

Type	X
Size (Bytes)	n/a
User Mode Access	W
Values	0 = Disable beep on next bootup 1 = Enable beep on next bootup

Reboot

Attribute #6004

This attribute initiates a device reboot.

Type	X
Size (Bytes)	n/a
User Mode Access	W
Values	n/a

Firmware Version

Attribute #20004

The scanner's operating system version. For example, **CAADLS00-001-N09D0.DAT**.

Type	S
Size (Bytes)	Variable
User Mode Access	R
Values	Variable

Scankit Version

Attribute #20008

Identifies the 1D decode algorithms resident on the device, for example **IMGKIT_6.04T05.03**.

Type	S
Size (Bytes)	Variable
User Mode Access	R
Values	Variable