

MP72 Scanner Scale



ZEBRA

Barcode Programming Guide

2025/07/24

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About This Guide

This guide includes programming barcodes that configure the MP72 Scanner Scale.

Notational Conventions

The following notational conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
 - Dialog box, window, and screen names
 - Dropdown list and list box names
 - Checkbox and radio button names
 - Icons on a screen
 - Key names on a keypad
 - Button names on a screen
- Bullets (•) indicate:
 - Action items
 - List of alternatives
 - Lists of required steps that are not necessarily sequential
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following visual indicators are used throughout the documentation set.



NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.



IMPORTANT: The text here indicates information that is important for the user to know.



CAUTION: If the precaution is not heeded, the user could receive a minor or moderate injury.



WARNING: If danger is not avoided, the user CAN be seriously injured or killed.



DANGER: If danger is not avoided, the user WILL be seriously injured or killed.

Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at: zebra.com/support.

When contacting support, please have the following information available:

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

Zebra responds to calls by email, telephone, or fax within the time limits set forth in support agreements.

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

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

123Scan and Software Tools

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

123Scan

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

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

Through 123Scan, a user can:

- Configure a scanner using a wizard.
 - Program the following scanner settings.
 - Beeper tone/volume settings.
 - Enable/disable symbologies.
 - Communication settings.
 - Modify data before transmission to a host using:
 - Advanced Data Formatting (ADF) - Scan one barcode per decode initiation.
 - Multicode Data Formatting (MDF) - Scan many barcodes in one decode initiation (select scanners).
 - Preferred Symbol - Single out one barcode on label of many (select scanners).
- Load parameter settings to a scanner via the following.
 - Barcode scanning.
 - Scan a paper barcode.
 - Scan a barcode from a smart phone screen.
 - Download over a USB cable.
 - Load settings to one scanner.
 - Stage up to 5 scanners simultaneously (Powered USB Hub recommended with 0.5 amp / port).

- Validate scanner setup.
 - View scanned data within the utility's Data view screen.
 - Capture an image and save to a PC within the utility's Data view screen.
 - Review settings using the Parameter Report.
 - Clone settings from an already deployed scanner from the Start screen.
- Upgrade scanner firmware.
 - Load settings to one scanner.
 - Stage up to 5 scanners simultaneously (Powered USB Hub recommended with 0.5 amp / port).
- View statistics such as:
 - Asset tracking information.
 - Time and usage information.
 - Barcodes scanned by symbology.
- Generate the following reports.
 - Barcode Report - Programming barcode, included parameter settings, and supported scanner models.
 - Parameter Report - Parameters programmed within a configuration file.
 - Inventory Report - Scanner asset tracking information.
 - Validation Report - Scanned data from the Data view.
 - Statistics Report - All statistics retrieved from the scanner.

For more information go to: 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 10 or 11
- Scanner
- USB cable

123Scan Information

Use these links to learn more about using 123Scan and Zebra software tools.

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

For a one-minute tour of 123Scan, go to [How-to Videos For Zebra Scanners](#)

To see a list of all of our software tools, go to zebra.com/scannersoftware

Scanner SDK, Other Software Tools, and Videos

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

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

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



NOTE: For a list of SDK supported scanner functionality by communication protocol, see [Communication Protocol Functionality](#).

Advanced Data Formatting

Advanced Data Formatting (ADF) allows customizing data before transmission to the host device. Use ADF to edit scanned data to suit the host application's requirements. With ADF you scan one barcode per trigger pull. ADF is programmed using 123Scan.

For a video on Creating an Advanced Data Formatting (ADF) Rule using 123Scan, go to [How-to Videos For Zebra Scanners](#).

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

Multicode Data Formatting

Multicode Data Formatting (MDF) enables a 2D imaging scanner to scan all barcodes on a label with a single trigger pull, and then modify and transmit the data to meet host application requirements. MDF supports programming up to nine unique labels into one scanner. MDF also supports scanning multiple barcodes on opposite sides of a box by holding the trigger.

Programming options include:

- Output all or specific barcodes.
- Control the barcode output sequence.
- Apply unique multicode data formatting (MDF) to each output barcode.
- Discard scanned data if all required barcodes are not present.

For more information, refer to the Multicode Data Formatting and Preferred Symbol User Guide, p/n MN-002895-xx.

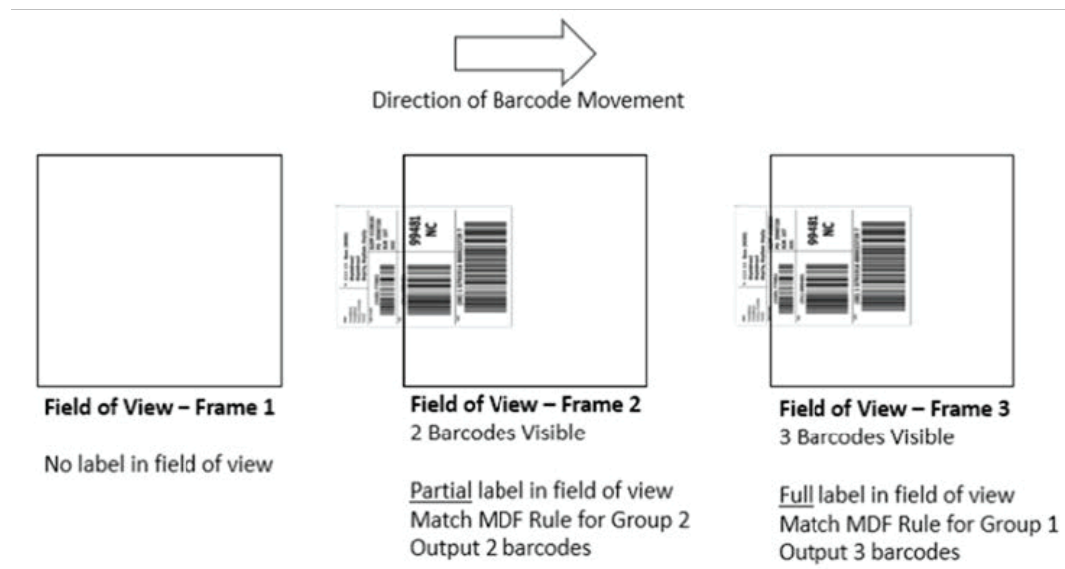
For a video on Creating an Multicode Data Formatting (MDF) Rule using 123Scan, go to [How-to Videos For Zebra Scanners](#).

Multicode Data Formatting Use

Multicode Data Formatting may yield multiple unexpected and undesired outputs when a label (most likely on a complex label) passes through the scanner's field of view. This problem happens when the complex label's barcodes can be matched by more than one group (for example, Group 1 represents all barcodes present, and Group 2 represent some barcodes present).

1. As the label is moving through the field of view, it is first partially read (some of the barcodes in the field of view in Frame 2).
2. Then, the second decode occurs as it is fully read (all the barcodes in the field of view in Frame 3).
3. This yields two different outputs (instead of the expected single output) from the presentation of a label. This problem is driven by a complex label inadvertently matching two different MDF rules/groups, thereby yielding two outputs.

Figure 1 Scanning Label in a Horizontal Orientation

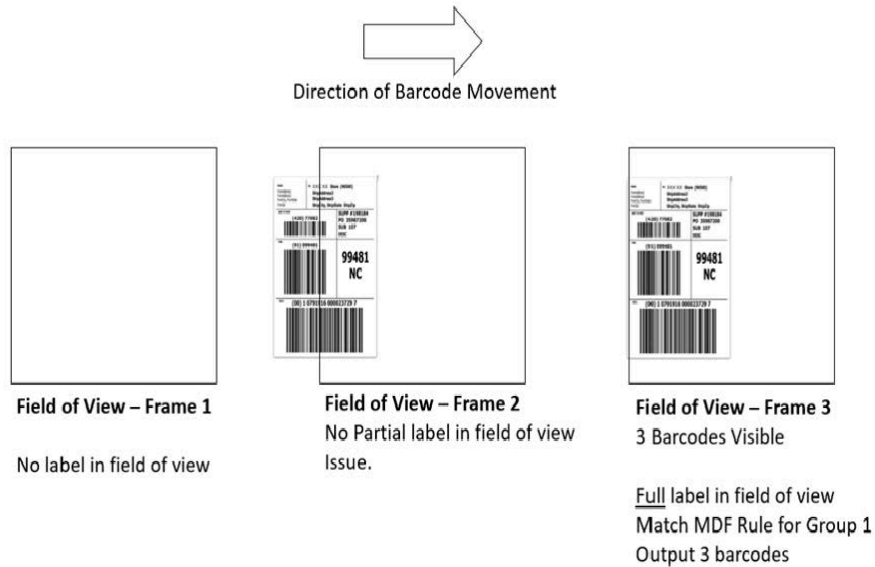


MDF for Best Practices

Suggestions to minimize the undesired multiple outputs when scanning with MDF.

- Scan barcodes in a vertical orientation.

Figure 2 Scanning Label in a Vertical Orientation



- When creating the MDF programming with multiple groups, the Group 1's pattern match should be the most complicated (hardest to match), which equals to the most number of barcodes and criteria. Then Group 2, 3, and so on should be progressively matched more easily.
- When defining criteria, avoid enabling an output when the pattern is not matched. Set **Output if NO pattern match** set as **Discard barcode**.

Figure 3 Figure Match Setting for Output

Pattern Match

A pattern match is the criteria used to determine if a set of scanned bar codes qualify for manipulation with Multicode Data Formatting.
If the pattern match criteria are met, the MDF will be applied to the output of "Output if pattern match".
If the pattern match criteria are not met, the MDF will be applied to the output of "Output if NO pattern match".

Is bar code required for pattern match [What is this?](#)

☒ Required for match
☐ Not part of match

Output if pattern match.
Transmit bar code [What is this?](#)

Output if NO pattern match.
Discard bar code [What is this?](#)

Discard bar code

- Select **Discard barcode(s) NOT within the pattern match** in the 123Scan MDF setting. For more details, select **What is this?** located next to this selection.

- To prevent double decodes of the same symbol, increase the **Timeout Between Same Symbols** setting. See [Timeout Between Decodes, Same Symbol](#) for more details.
- Turn the scanner's aimer on to assist operators in scanning the barcode in a more consistent manner.
- Other reasons a label/barcode may not be decoded while in the field of view are as follows:
 - The label out of focus (too close or too far away).
 - Specular reflection (reflection off a shiny surface).
 - The label is presented at an extreme angle to the scanner.

Preferred Symbol

Preferred Symbol is a barcode prioritization technique that enables favored decoding of high-priority barcode(s). The Preferred Symbol is the only barcode that is decoded and output within the preset Preferred Symbol Timeout. During this time, the scanner attempts to decode the prioritized barcode and reports only this barcode.

For more information, refer to the Multicode Data Formatting and Preferred Symbol User Guide, p/n MN-002895-xx.

To program Preferred Symbol via 123Scan, select **123Scan > Configuration Wizard > Symbologies** screen, and then select **Preferred Symbol** from the drop-down menu. Preferred Symbol programming is saved in the 123Scan configuration file.

Figure 4 Preferred Symbol Programming Options

Preferred Symbol ▼

☐ Preferred Symbol [What is this?](#)

⬆ Options

Prioritized symbologies

Preferred Symbol Options [Edit](#)

Identify exact bar code

Preferred symbol criteria [View / Edit](#)

Prioritization time (ms) [What is this?](#)

USB Interface

This section describes how to set up the scanner with a USB host. The scanner connects directly to a USB host, or a powered USB hub, which powers it.

The scanner ships with the settings shown in [USB Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

USB Parameter Defaults

The following table lists defaults for USB host parameters. You can change default values in one of two ways:

- Scan the appropriate barcodes in this section. The new value replaces the standard default value in memory. To recall default parameter values, see [Default Parameters](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).

Table 1 USB Interface Parameter Defaults

Parameter	Default
USB Device Type	IBM Table-top USB
USB CDC Host Variant	Standard USB CDC
Country Keyboard Types (Country Codes)	US English (North American)
USB Keystroke Delay	No Delay
USB Caps Lock Override	Do Not Override Caps Lock Key (Disable)
Scan Disable Mode	Full Disable
USB Barcodes with Unknown Characters	Send Barcodes with Unknown Characters
USB Convert Unknown to Code 39	Disable
USB Fast HID	Enable
USB Polling Interval	3 msec
Keypad Emulation	Enable
Quick Keypad Emulation	Enable
Keypad Emulation with Leading Zero	Enable

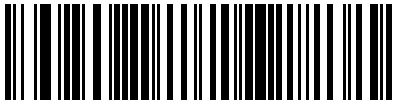
Table 1 USB Interface Parameter Defaults (Continued)

Parameter	Default
USB Keyboard FN1 Substitution	Disable
Function Key Mapping	Disable
Simulated Caps Lock	Disable
Convert Case	No Case Conversion
USB Static CDC	Enable
TGCS (IBM) USB Direct I/O Beep	Ignore
USB IBM Long Direct I/O	Disable
TGCS (IBM) USB Beep Directive	Ignore
TGCS (IBM) USB Barcode Configuration Directive	Ignore
TGCS (IBM) USB Specification Version	Original
IBM Flash Update	Enable
IBM Scanner Generic Management Information	Enable
IBM Scanner Vendor Specific Management Information	Enable
IBM Scale Generic Management Information	Enable
IBM USB Scale Default Response Status	Enable

USB Device Type

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

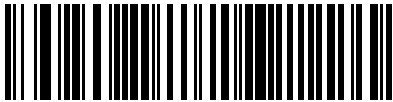
- When changing USB device types, the scanner resets and issues the standard startup beep sequences.
- When connecting two scanners to a host, IBM does not allow selecting two of the same device type. If you require two connections, select an IBM Table-top USB for one scanner and an IBM Hand-held USB for the second scanner.
- Select OPOS (IBM Hand-held with Full Disable) to completely shut off the scanner when an IBM register issues a Scan Disable command, including aim, illumination, decoding, and data transmission.
- Before selecting USB CDC Host, ensure your host OS has a USB CDC driver installed. For reference, Windows 10 includes a native (built-in) USB CDC driver. To recover a scanner stalled (non-functional) in USB CDC mode, install a USB CDC driver.



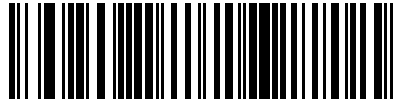
USB HID Keyboard



*IBM Table-top USB



IBM Hand-held USB

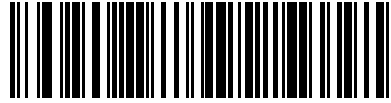


OPOS (IBM Hand-held with Full Disable)

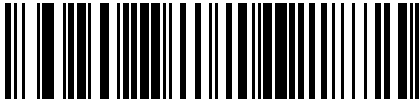
USB Device Type (continued)



USB CDC Host



SSI over USB CDC



Symbol Native API (SNAPI) with Imaging Interface



Symbol Native API (SNAPI) without Imaging Interface

USB CDC Host Variant

Parameter # 1713

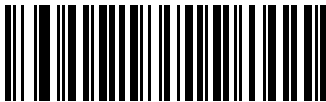
When USB Device Type is set to USB CDC Host, the CDC Host Variant selects which type of CDC variant is used. The default USB CDC host variant is Standard CDC Host Mode.



*Standard USB CDC (0)



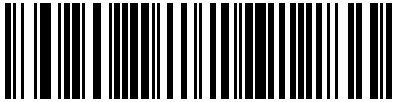
NCR USB CDC (9)



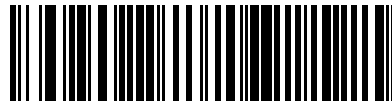
NCR USB CDC Datalogic (10)

USB Keystroke Delay

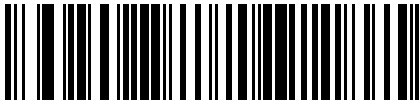
This parameter sets the delay, in milliseconds, between emulated keystrokes. Select a longer delay for hosts that require slower data transmission.



*No Delay



Medium Delay (20 msec)



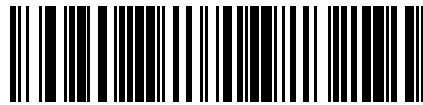
Long Delay (40 msec)

USB Caps Lock Override

This option applies only to the USB HID Keyboard device. Select 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 cannot be disabled.



Override Caps Lock Key (Enable)



*Do Not Override Caps Lock Key (Disable)

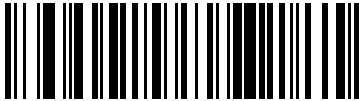
Scan Disable Mode

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

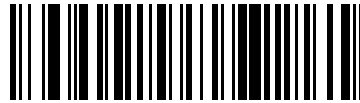
- *Full Disable - Scanning barcodes is disabled
- Transmit Disable - The device might scan barcodes, but transmission of barcode data is disabled.
- Auto Disable - The device disables scanning after transmission of a barcode, and remains disabled until the host sends a Scan Enable.



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



*Full Disable (0)



Transmit Disable (1)



Auto Disable (2)

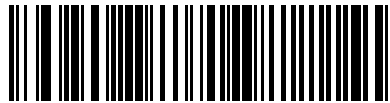
USB Barcodes with Unknown Characters

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

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



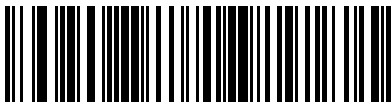
*Send Barcodes with Unknown Characters



Do Not Send Barcodes with Unknown Characters

USB Convert Unknown to Code 39

This option applies only to the IBM hand-held, IBM table-top, and OPOS devices. Select an option to enable or disable converting unknown barcode type data to Code 39.



Enable Convert Unknown to Code 39



*Disable Convert Unknown to Code 39

USB Fast HID

Select 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

Select an option to set the polling interval, which is the rate at which data transmits between the scanner and host computer. A lower number indicates a faster data rate.



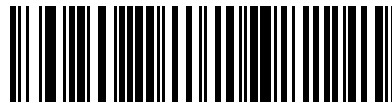
NOTE: When changing the USB polling interval, the scanner restarts and issues a power-up beep sequence.



IMPORTANT: Ensure the host supports the selected data rate.



1 msec



2 msec



*3 msec



4 msec

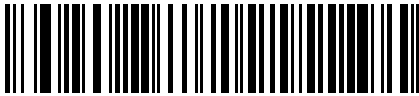
USB Polling Interval (continued)



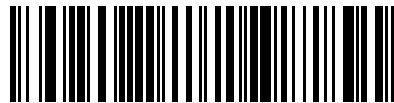
5 msec



6 msec



7 msec



8 msec

USB Polling Interval (continued)



9 msec



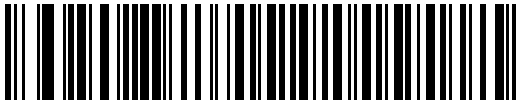
10 msec

Keypad Emulation

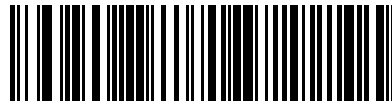
Select Enable Keypad Emulation to send all characters as ASCII sequences over the numeric keypad. For example, ASCII A transmits as “ALT make” 0 6 5 “ALT Break”.



NOTE: If your keyboard type is not listed in the country code list (see [Country Codes](#)), disable [Quick Keypad Emulation](#) and enable Keypad Emulation.



*Enable Keypad Emulation



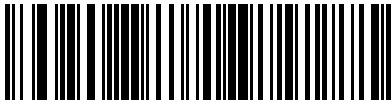
Disable Keypad Emulation

USB Quick Keypad Emulation

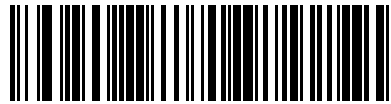
Enable Quick Keypad Emulation for a quick method of emulation using the numeric keypad where ASCII sequences are only sent for ASCII characters not found on the keyboard.



NOTE: Quick Keypad Emulation only applies to the USB HID Keyboard device when Keypad Emulation is enabled.



*Enable Quick Keypad Emulation



Disable Quick Keypad Emulation

Keypad Emulation with Leading Zero

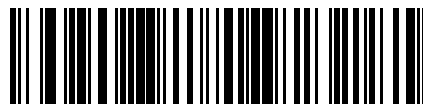
Select Enable Keypad Emulation with Leading Zero to send character sequences sent over the numeric keypad as ISO characters which have a leading zero. For example, ASCII A transmits as “ALT MAKE” 0 0 6 5 “ALT BREAK”.



NOTE: This parameter only applies if [Emulate Keypad](#) is enabled.



*Enable Keypad Emulation with Leading Zero

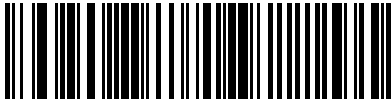


Disable Keypad Emulation with Leading Zero

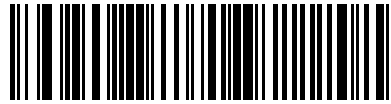
USB Keyboard FN1 Substitution

This option applies Code 128 and ISBT 128 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](#) to set the Key Category and Key Value.



Enable USB Keyboard FN1 Substitution



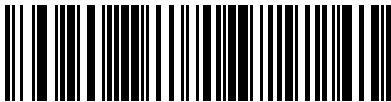
*Disable USB Keyboard FN1 Substitution

USB Function Key Mapping

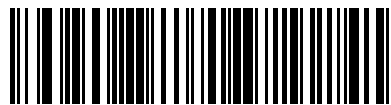
ASCII values under 32 are normally sent as a control-key sequence. Select **Enable Function Key Mapping** to send the keys in bold instead of the standard key mapping. Table entries that do not have a bold equivalent remain the same regardless of whether you enable this parameter.



NOTE: See [ASCII Character Sets](#) for the ASCII character set information.



Enable Function Key Mapping



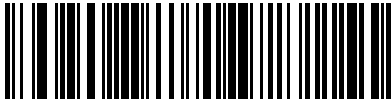
*Disable Function Key Mapping

USB Simulated Caps Lock

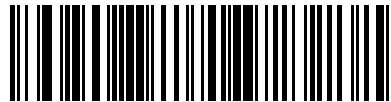
Select Enable Simulated Caps Lock to invert upper and lower case characters on the barcode as if the Caps Lock state is enabled on the keyboard. This inversion occurs regardless of the keyboard's Caps Lock state.



NOTE: Simulated Caps Lock applies to ASCII characters only. Do not enable this if [Caps Lock Override](#) is enabled.



Enable Simulated Caps Lock



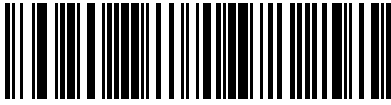
*Disable Simulated Caps Lock

USB Convert Case

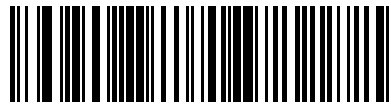
Use this parameter to convert all of the barcode data to the selected case.



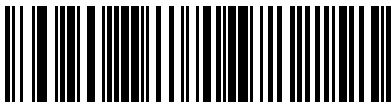
NOTE: Convert Case applies to ASCII characters only.



*No Case Conversion



Convert All to Upper Case



Convert All to Lower Case

USB Static CDC

Parameter # 670

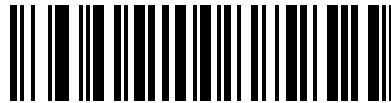
You can connect devices to the same COM port or different COM ports.

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 (1)

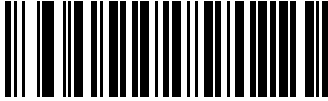


Disable USB Static CDC (0)

TGCS (IBM) USB Direct I/O Beep

Parameter # 1360

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



Honor Direct I/O Beep



*Ignore Direct I/O Beep

USB IBM Long Direct I/O

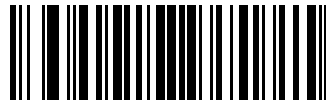
Parameter # 1147

Use this option to enable or disable USB IBM Long Direct I/O.

This determines the packet size used during flash update downloads. The standard Direct I/O packet size of 11 bytes is set by the default value of 0. Enabling Long Direct I/O with the value 1 uses a 240 byte packet size and increases the speed in which the flash update occurs.



*Disable (0)



Enable (1)

TGCS (IBM) USB Beep Directive

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



Honor Beep Directive



*Ignore Beep Directive

TGCS (IBM) USB Barcode Configuration Directive

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



Honor Barcode Configuration Directive



*Ignore Barcode Configuration Directive

TGCS (IBM) USB Specification Version

Parameter # 45026

You can specify code types as unknown or specify the code types with an appropriate IBM identifier.

Select IBM Specification Level (Original) to send the following code types as Unknown:

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

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



*IBM Specification Level (Original)



IBM Specification Level Version 2.2 or higher

IBM Flash Update

Parameter # 1727

This parameter enables and disables IBM Flash update.



*Enable IBM Flash Update (1)



Disable IBM Flash Update (0)

IBM Scanner Generic Management Information

Parameter # 1940

Enable this to return generic scanner management information.



*Enable IBM Scanner Generic Management Information (1)

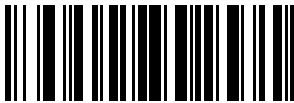


Disable IBM Scanner Generic Management Information (0)

IBM Scanner Vendor Specific Management Information

Parameter # 1941

Enable this to return contests and format information determined by the scanner/scale manufacturer.



*Enable IBM Scanner Vendor Specific Management Information (1)



Disable IBM Scanner Vendor Specific Management Information (0)

IBM Scale Generic Management Information

Parameter # 1942

Enable this to return statistics and health information about the scale device.



*Enable IBM Scale Generic Management
Information (1)



Disable IBM Scale Generic Management
Information (0)

IBM USB Scale Default Response Status

Parameter # 1286

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

*2-byte Scale Status

Extended Scale Status Disabled: The 2-byte scale status sent to the IBM POS consists of the information shown in [Scale Status Byte 0](#) and [Scale Status Byte 1](#).

Table 2 Scale Status Byte 0

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

Table 3 Scale Status Byte 1

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

3-byte Scale Status

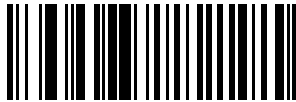
Extended Scale Status Enabled: When enabled, the scanner/scale sends an additional scale status byte to the IBM POS with the information shown in [Scale Status Byte 2](#).



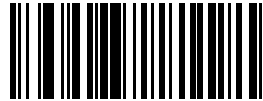
NOTE: Some IBM POS applications require a 3-byte extended scale status for better price/weight transaction performance.

Table 4 Scale Status Byte 2

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



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



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

USB ASCII Character Sets

See [ASCII Character Sets](#) for the following information:

- [ASCII Character Sets](#)
- [ALT Key Character Set](#)
- [GUI Key Character Set](#)
- [PF Key Character Set](#)
- [F Key Character Set](#)
- [Numeric Key Character Set](#)
- [Extended Key Character Set](#)

RS-232 Interface

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

The scanner ships with the settings shown in [RS-232 Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

If your host does not appear in [RS-232 Host-Specific Parameter Settings](#), refer to the documentation for the host device to set communication parameters to match the host.



NOTE: The scanner uses TTL RS-232 signal levels, which interface with most system architectures. For system architectures requiring RS-232C signal levels, Zebra offers different cables providing TTL-to-RS-232C conversion. Contact support for more information.

RS-232 Parameter Defaults

The following table lists defaults for RS-232 host parameters. You can change the default 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](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).

Table 5 RS-232 Interface Parameter Defaults

Parameter	Default
RS-232 Host Types	Standard
Baud Rate	9600
Parity	None
Stop Bits	1 Stop Bit
Data Bits	8-bit
Check Receive Errors	Enable
Hardware Handshaking	None
Software Handshaking	None
Host Serial Response Timeout	2 Seconds

Table 5 RS-232 Interface Parameter Defaults (Continued)

Parameter	Default
RTS Line State	Low RTS
Beep on <BEL>	Disable
Intercharacter Delay	0 msec
RS-232 Power On Mode	Disable
Nixdorf Beep/LED Options	Normal Operation
Barcodes with Unknown Characters	Send Barcode With Unknown Characters
Datalogic Host Format	Enable
Datalogic Supported Commands	Disable
NCR Use Prefix	Enable
NCR Prefix	1002 (STX)
NCR Suffix	1003 (ETX)
NCR Use Block Check Character	Enable
NCR Interface	Follow System
NCR Scale Beep After Weight Request	Disable
NCR 2D Label-ID Mode	NCR Mode
Reject Same Weight	Enable

RS-232 Host-Specific Parameter Settings

Some RS-232 hosts use their own parameter default settings.

You can select standard, ICL, Fujitsu, Wincor-Nixdorf Mode A or B, OPOS/JPOS, Olivetti, Omron, Common Use Terminal Equipment (CUTE-LP/LG barcode readers), NCR, or Datalogic and set the appropriate default.

Table 6 RS-232 Host-Specific Settings

Parameter	ICL	Fujitsu	Wincor-Nixdorf Mode A	Wincor-Nixdorf Mode B/OPOS/JPOS
Baud Rate	9600	9600	9600	9600
Parity	Even	None	Odd	Odd
Stop Bits	One	One	One	One
Data Bits	8-bit	8-bit	8-bit	8-bit
Hardware Handshaking	RTS/CTS Option 3	None	RTS/CTS Option 3	RTS/CTS Option 3
Software Handshaking	None	None	None	None
Serial Response Timeout	9.9 Seconds	2 Seconds	None	None

Table 6 RS-232 Host-Specific Settings (Continued)

Parameter	ICL	Fujitsu	Wincor-Nixdorf Mode A	Wincor-Nixdorf Mode B/OPOS/JPOS
RTS Line State	High	Low	Low	Low = No data to send
Beep On <BEL>	Disable	Disable	Disable	Disable
Transmit Code ID	Yes	Yes	Yes	Yes
Data Transmission Format	Data/Suffix	Data/Suffix	Data/Suffix	Data/Suffix
Prefix	None	None	None	None
Suffix	CR (1013)	CR (1013)	CR (1013)	CR (1013)
In the Wincor-Nixdorf Mode A/B, when CTS is low, scanning is disabled and when CTS is high, scanning is enabled. If you scan Wincor-Nixdorf RS-232 Mode A/B without connecting the scanner to the proper host, it may appear unable to scan. In this case, scan a different RS-232 host type within 5 seconds of cycling power to the scanner.				

Table 7 RS-232 Host-Specific Settings

Parameter	Olivetti	Omron	CUTE	NCR	Datalogic
Baud Rate	9600	9600	9600	9600	9600
Parity	Even	None		Odd	Odd
Stop Bits	One	One		One	One
Data Bits	7-bit	8-bit		7-bit	7-bit
Hardware Handshaking	None	None	None	None	None
Software Handshaking	ACK/NAK	None	None	None	None
Serial Response Timeout	9.9 Seconds	9.9 Seconds	9.9 Seconds	9.9 Seconds	9.9 Seconds
RTS Line State	Low	High	High	High	High
Beep On <BEL>	Disable	Disable	Disable	Disable	Enable
Transmit Code ID	Yes	Yes	Yes	Yes	Yes
Data Transmission Format	Prefix/Data/Suffix	Data/Suffix	Prefix/Data/Suffix	Prefix/ Suffix	Data/Suffix
Prefix	STX (1002)	None	STX (1002)	STX	None
Suffix	ETX (1003)	CR (1013)	CR (1013) ETX (1003)	ETX	CR (1013)
The CUTE host disables all parameter scanning, including Set Defaults. If you inadvertently select CUTE, scan Enable Parameter Barcode Scanning , and then change the host selection.					

RS-232 Host Specific Code ID Characters

Selecting ICL, Fujitsu, Wincor-Nixdorf Mode A, Wincor-Nixdorf Mode B, OPOS/JPOS, Olivetti, Omron, Common Use Terminal Equipment (CUTE-LP/LG barcode readers), NCR, or Datalogic enables the transmission of code ID characters listed in the following tables. These characters are not programmable; do not enable the Transmit Code ID feature for these hosts.

Table 8 Host Specific Code ID Characters

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

Table 9 Host Specific Code ID Characters 2

Code Type	Olivetti	Omron	CUTE	NCR	Datalogic
UPC-A	A	A	A	A	A

Table 9 Host Specific Code ID Characters 2 (Continued)

Code Type	Olivetti	Omron	CUTE	NCR	Datalogic
UPC-E	C	E	None	E	E
EAN-8/JAN-8	B	FF	None	FF	FF
EAN-13/JAN-13	A	F	A	F	F
Bookland EAN	A	F	None	F	None
Code 39	M <len>	C <len>	3	B1	*
Code 39 Full ASCII	None	None	3	None	None
Trioptic	None	None	None	None	\$T
Code 32	None	None	None	None	AE
Codabar	N <len>	N <len>	None	N	%
Code 128	K <len>	L <len>	5	B3	#
GS1-128	P <len>	L <len>	5	JC1	None
Code 93	L <len>	None	None	None	&
I 2 of 5	I <len>	I <len>	1	B	i
D 2 of 5	H <len>	H <len>	2	None	None
MSI	O <len>	None	None	None	@
IATA	H <len>	H <len>	2	None	IA
GS1 DataBar Variants	None	None	None	Je0	GS1 DataBar - R4 GS1 DataBar Limited - RL GS1 DataBar Expanded - RX
PDF417	None	None	6	JL2*	P
MicroPDF417	None	None	6	JL2*	mP
Data Matrix	None	None	4	Jd0*	Dm
QR Codes	None	None	7	JQ0	QR
Aztec/Aztec Rune	None	None	8	Jz0	Az

*In NCR-LEGACY mode the Code-ID transmits a P.

RS-232 Host Types

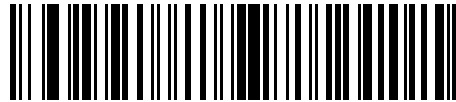
Select an RS-232 host interface using one of the following options.

Notes on using RS-232 host types:

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



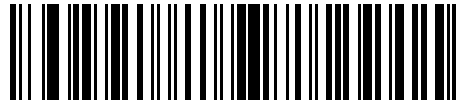
*Standard RS-232



ICL RS-232

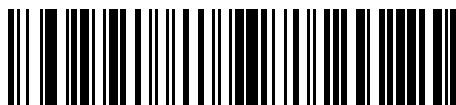


Nixdorf RS-232 Mode A



Nixdorf RS-232 Mode B

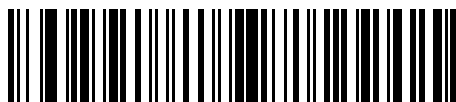
RS-232 Host Types (continued)



Olivetti ORS4500



Omron

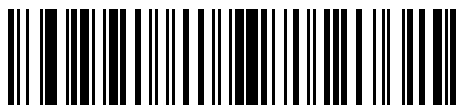


OPOS/JPOS



Fujitsu RS-232

RS-232 Host Types (continued)



CUTE



NCR

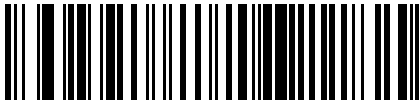


Datalogic Variant

RS-232 Baud Rate

The RS-232 baud rate is the number of bits of data transmitted per second.

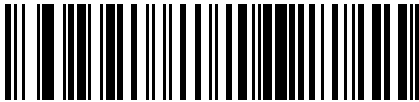
Select an option to set the scanner's baud rate to match the baud rate setting of the host device. Otherwise, data may not reach the host device or may reach it in distorted form.



*Baud Rate 9600



Baud Rate 19,200

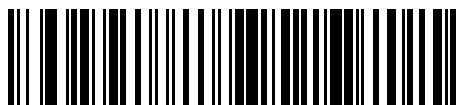


Baud Rate 38,400



Baud Rate 57,600

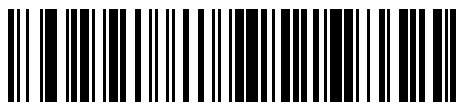
RS-232 Baud Rate (continued)



Baud Rate 115,200



Baud Rate 230,400



Baud Rate 460,800

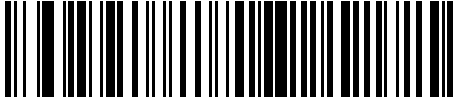


Baud Rate 921,600

RS-232 Parity

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

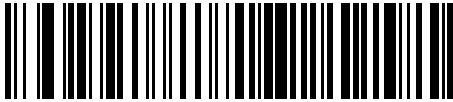
- Odd - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an odd number of 1 bits.
- Even - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an even number of 1 bits.
- None - No parity bit is required.



Odd



Even



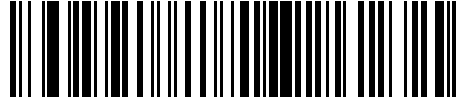
*None

RS-232 Stop Bits

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



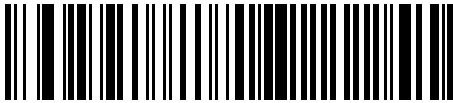
*1 Stop Bit



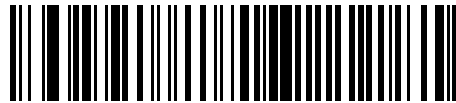
2 Stop Bits

Data Bits

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



7-bit



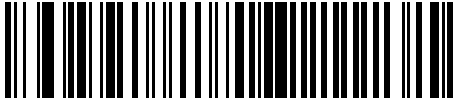
*8-bit

Check Receive Errors

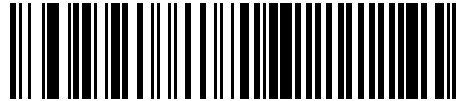
This parameter determines whether to check the parity, framing, and overrun of received characters.



NOTE: The parity value of received characters is verified against the value set for [Parity](#).



*Check For Received Errors



Do Not Check For Received Errors

Hardware Handshaking

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

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



NOTE: The DTR signal is jumpered to the active state.

You can choose one of the following options:

None

This disables hardware handshaking and transmits scan data as it becomes available.

Standard RTS/CTS

This sets standard RTS/CTS hardware handshaking and transmits scanned data. The scanner reads the CTS line for activity according to the following sequence:

- If the CTS line is de-asserted, the scanner asserts the RTS line and waits up to [Host Serial Response Timeout](#) for the host to assert CTS, and then transmits data when asserted. If, after the timeout, the CTS line is not asserted, the scanner sounds a transmit error and discards the data.
- If CTS is asserted, the scanner waits up to [Host Serial Response Timeout](#) for the host to de-assert CTS. If after this timeout the CTS line is still asserted, the scanner sounds a transmit error and discards the scanned data.
- The scanner de-asserts RTS after sending the last character of data.
- The host negates CTS. The scanner checks for a de-asserted CTS upon the next data transmission.



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

RTS/CTS Option 1

The scanner asserts RTS before transmitting and ignores the state of CTS. The scanner de-asserts RTS when transmission completes.

RTS/CTS Option 2

RTS is always high or low (user-programmed logic level). However, the scanner waits for the host to assert CTS before transmitting data. If CTS is not asserted within the [Host Serial Response Timeout](#), the scanner sounds a transmit error and discards the data. During data transmission, if CTS is deasserted for more than 50 ms between characters, the scanner sounds a transmit error and discards the data.

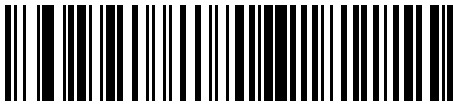
RTS/CTS Option 3

This transmits scanned data according to the following sequence:

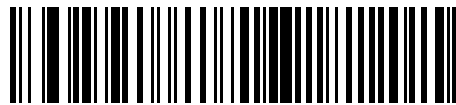
- The scanner asserts RTS before data transmission, regardless of the state of CTS.
- The scanner waits up to the [Host Serial Response Timeout](#) for the host to assert CTS, and then transmits data when asserted. If, after the timeout, the CTS line is not asserted, the scanner sounds a transmit error and discards the data.
- The scanner de-asserts RTS after sending the last character of data.
- The host negates CTS. The scanner checks for a de-asserted CTS upon the next data transmission.



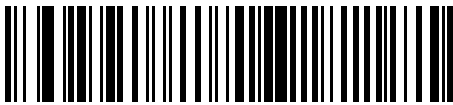
NOTE: During data transmission, if CTS is deasserted for more than 50 ms between characters, the scanner sounds a transmit error and discards the data. The data must be re-scanned.



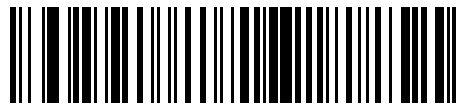
*None



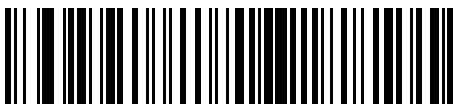
Standard RTS/CTS



RTS/CTS Option 1



RTS/CTS Option 2

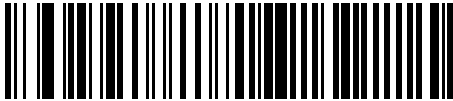


RTS/CTS Option 3

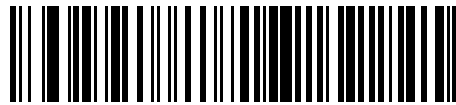
Software Handshaking

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

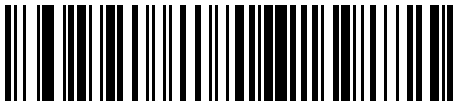
- **None** - This transmits data immediately. The scanner expects no response from the host.
- **ACK/NAK** - After transmitting data, the scanner waits for an ACK or NAK response from the host. If it receives a NAK, the scanner transmits the data again and waits for an ACK or NAK. After three unsuccessful attempts to send data after receiving NAKs, the scanner sounds a transmit error and discards the data. The scanner waits up to the programmable [Host Serial Response Timeout](#) to receive an ACK or NAK. If the scanner does not get a response in this time, it sounds a transmit error and discards the data. There are no reattempts.
- **ENQ** - The scanner waits for an ENQ character from the host before transmitting data. If it does not receive an ENQ within the [Host Serial Response Timeout](#), the scanner sounds a transmit error and discards the data. The host must transmit an ENQ character at least every [Host Serial Response Timeout](#) to prevent transmission errors.
- **ACK/NAK with ENQ** - This combines the two previous options. An additional ENQ is not required to re-transmit data due to a NAK from the host.
- **XON/XOFF** - An XOFF character stops data transmission until the scanner receives an XON character. There are two situations for XON/XOFF:
 - The scanner receives an XOFF before it has data to send. When the scanner has data, it waits up to the [Host Serial Response Timeout](#) for an XON character before transmitting. If it does not receive the XON within this time, the scanner sounds a transmit error and discards the data.
 - The scanner receives an XOFF during data transmission and stops transmission after sending the current byte. When the scanner receives an XON character, it sends the rest of the data. The scanner waits indefinitely for the XON.



*None



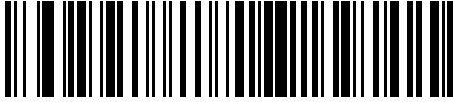
ACK/NAK



ENQ



ACK/NAK with ENQ



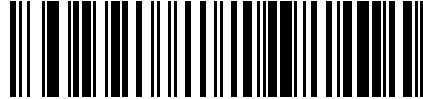
XON/XOFF

RS-232 Host Serial Response Timeout

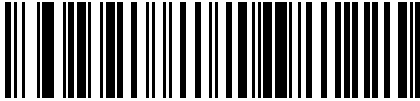
This parameter specifies how long the scanner waits for an ACK, NAK, or CTS before determining that a transmission error occurred. This only applies when in one of the ACK/NAK software handshaking modes, or RTS/CTS hardware handshaking mode.



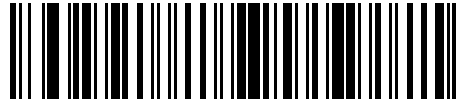
*Minimum: 2 Seconds



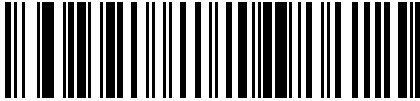
Low: 2.5 Seconds



Medium: 5 Seconds



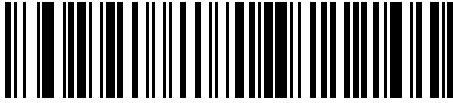
High: 7.5 Seconds



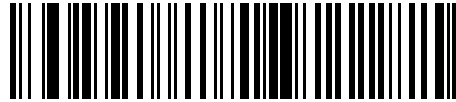
Maximum: 9.9 Seconds

RTS Line State

This parameter sets the idle state of the serial host RTS line to Low RTS or High RTS.



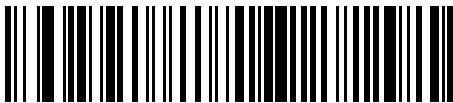
*Host: Low RTS



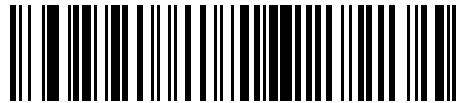
Host: High RTS

Beep on <BEL>

This parameter sets whether the scanner issues a beep when it detects a <BEL> character on the RS-232 serial line. <BEL> indicates an illegal entry or another important event.



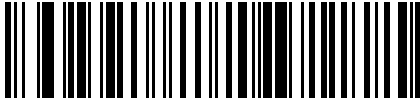
Beep On <BEL> Character (Enable)



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

Intercharacter Delay

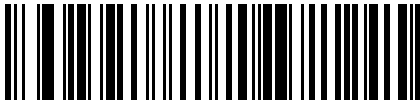
This parameter specifies the intercharacter delay inserted between character transmissions.



*Minimum: 0 msec



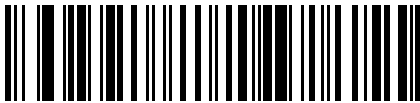
Low: 25 msec



Medium: 50 msec



High: 75 msec



Maximum: 99 msec

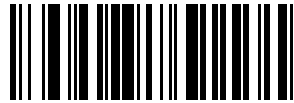
RS-232 Power On Mode

Parameter # 1939

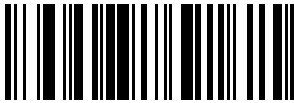
Select the 1-byte, 3-byte, or 13-byte bar code if the first bar code is lost after bootup. The 1-byte bar code consists of one NULL character, 3-byte bar code consists of three NULL characters, and the 13-byte bar code consists of 13 NULL characters. Depending on the bar code type (1-byte, 3-byte, or 13-byte), the scanner sends the bar code data during the bootup process.



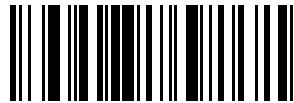
* Disable (0)



1-byte Pseudo Bar Code (1)



3-byte Byte Pseudo Bar Code (2)

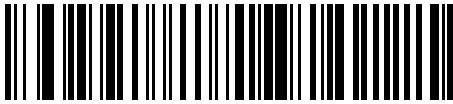


13-byte Byte Pseudo Bar Code (3)

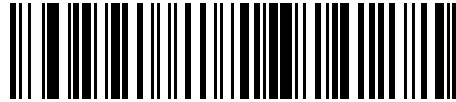
Nixdorf Beep/LED Options

Parameter # 45062 SSI = F8h B0h 06h

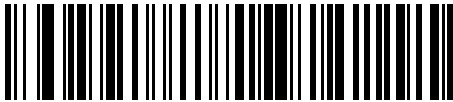
If you selected Nixdorf Mode B, use this parameter to determine when the scanner beeps and turns on its LED after a decode.



*Normal Operation (Beep/LED Immediately After Decode)



Beep/LED After Transmission

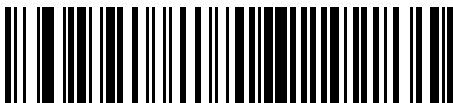


Beep/LED After CTS Pulse

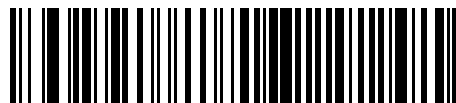
RS-232 Barcodes with Unknown Characters

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

Select Do Not Send Barcodes With Unknown Characters to send barcode data up to the first unknown character. The scanner issues an error beep.



*Send Barcodes With Unknown Characters



Do Not Send Barcodes With Unknown Characters

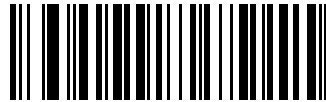
Datalogic Host Format

Parameter # 2253 (SSI # F8 08 CD)

When this parameter is enabled (default), the Datalogic host variant appends a code ID and a suffix value (CR) to the decoded data. When this parameter is disabled, only the decode data is transmitted. These commands are supported over RS232 or USB CDC.



*Enable (1)



Disable (0)

Datalogic Supported Commands

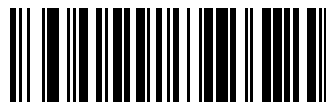
Parameter # 2260 (SSI # F8 08 D4)

This parameter allows serial scan to enable or disable commands for a standard RS232 host.

- 'E' or 'e' = Enable Scanning
- 'D' or 'd' = Disable Scanning
- 'R' = Reset the scanner
- 'F' = Indicate to the scanner that Datalogic is not on file
- 'B' = Issue a good read beep
- 1 (Not an ASCII Character – This is a decimal number 1) = Force a good read beep
- 7 (Not an ASCII Character – This is a decimal number 7) = Force a good read beep



Enable (1)



*Disable (0)

NCR Host Preferences

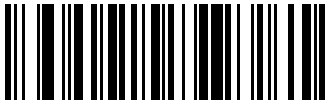
If you select NCR as an RS-232 Host Type, you can choose select parameters for communications.

NCR Use Prefix

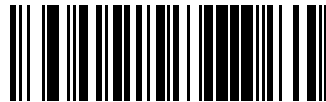
Parameter # 1238

You can enable or disable NCR using the prefix.

If you selected NCR from [RS-232 Host Types](#), use this parameter to enable or disable using the prefix for all communications.



*Enable NCR Use Prefix (1)



Disable NCR Use Prefix (0)

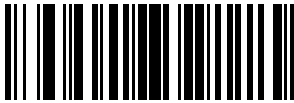
NCR Prefix

Parameter # 1282

You can set the prefix character to use if you enabled NCR.

If you selected NCR from [RS-232 Host Types](#) and enabled [NCR Use Prefix](#), set the prefix character to use for all communications.

To do this, scan the following barcode, and then scan four numeric barcodes from [Numeric Barcodes](#) that correspond to the desired character in [NCR Use Prefix](#). The default is 1002 (STX).



NCR Prefix

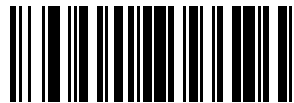
NCR Suffix

Parameter # 1283

You can set the suffix (terminator) character to use if you enabled NCR.

If you selected NCR from [RS-232 Host Types](#), set the suffix (terminator) character to use for all communications.

To do this, scan the following barcode, and then scan four numeric barcodes from [Numeric Barcodes](#) that correspond to the desired character in [ASCII Character Sets](#). The default is 1003 (ETX).



NCR Suffix

NCR Use Block Check Character (BCC)**Parameter # 1239**

You can enable Block Check Character if you enabled NCR.

If you selected NCR from [RS-232 Host Types](#), use this parameter to enable or disable using the Block Check Character (after the Terminator byte) for all communications.



*Enable NCR Use BCC (1)



Disable NCR Use BCC (0)

NCR Interface

Parameter # 1240

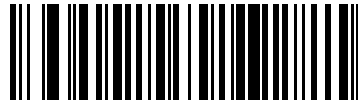
You can set the NCR interface if you enabled NCR.

If you selected NCR from [RS-232 Host Types](#), select an option to set the NCR interface to use for all communications:

- Follow System - Select this for auto system detection. If the system includes a scale, the scanner/scale interface is used; if the system has no scale, only the scanner is used.
- Scanner Only - The system uses the scanner only interface regardless of whether a scale is installed.
- Scanner/Scale - The system uses the scanner/scale interface regardless of whether a scale is installed.



*Follow System (0)



Scanner Only (1)



Scanner/Scale (2)

NCR Scale Beep After Weight Request

Parameter # 1353

You can set if a scale sounds a beep after a successful weight request. Use this parameter to select whether the scale sounds a single beep after the POS system issues a successful weight request.



Enable NCR Beep After Weight Request (1)



*Disable NCR Beep After Weight Request (0)

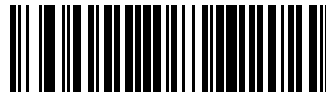
NCR 2D Label-ID Mode**Parameter # 1948**

Select an NCR 2D Label-ID mode for the defined bar code prefix type.

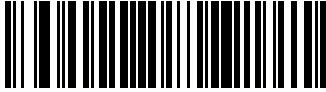
- NCR Mode - Adds an NCR prefix to a bar code. This is the default.
- Legacy Mode - Adds an non-NCR prefix to a bar code.
- Suppress Mode - No prefix is added to a bar code.



* NCR Mode (0)



Legacy Mode (1)



Suppress Mode (2)

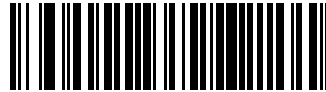
Reject Same Weight

Parameter # 1968

Reject Same Weight enables some variants (NCR or ICL OMRON) from rejecting a request to retransmit an item with the same weight previously transmitted. For example, if this parameter is enabled, an item is placed on the scale, its weight is only transmitted to the host one time. This parameter is enabled by default.



* Enable (1)



Disable (0)

RS-232 ASCII Character Sets

You can refer to the ASCII Character Sets for prefix and suffix values.

See [ASCII Character Sets](#) for prefix/suffix values.

IBM 468X / 469X Interface

This section describes how to set up the scanner with an IBM 468X/469X host.

The scanner ships with the settings shown in [IBM Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

IBM Parameter Defaults

The following table lists defaults for the IBM 468X/469X interface parameters. You can change default 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](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).

Table 10 IBM 468X/469X Interface Parameter Defaults

Parameter	Default
Port Address	None
Scale Port Address	None
Convert Unknown to Code 39	Disable
RS-485 Beep Directive	Ignore
RS-485 Barcode Configuration Directive	Ignore
Scan Disable Mode	Full Disable
IBM-485 Specification Version	Original Specification
IBM Commands	Ignore, Reboot

IBM Host Parameters

Port Address

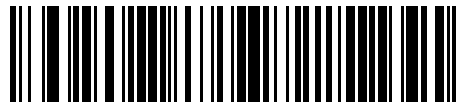
This parameter selects the IBM 468X/469X port.



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



*None



Hand-held Scanner Emulation (Port 9B)



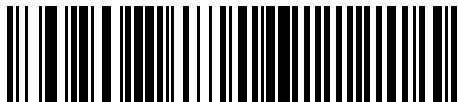
Non-IBM Scanner Emulation (Port 5B)



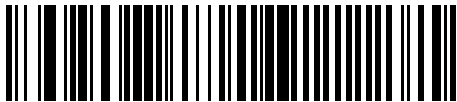
Table-top Scanner Emulation (Port 17)

Scale Port Address

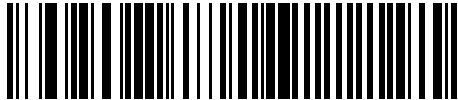
The scale port address must be configured for the scale to operate on the IBM RS-485 bus.



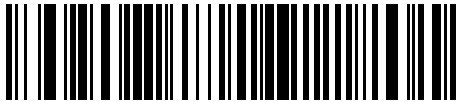
*None Selected



Port 6A



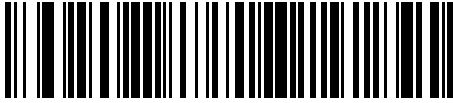
Port 6B



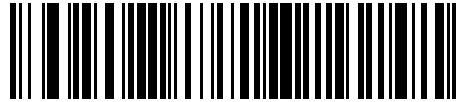
Port 6E

Convert Unknown to Code 39

This parameter enables or disables converting unknown barcode type data to Code 39.



Enable Convert Unknown to Code 39



*Disable Convert Unknown to Code 39

RS-485 Beep Directive

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



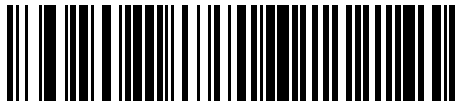
Honor Beep Directive



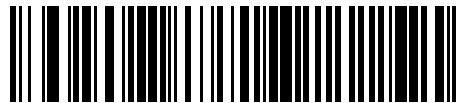
Ignore Beep Directive

RS-485 Barcode Configuration Directive

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



Honor Barcode Configuration Directive



*Ignore Barcode Configuration Directive

Scan Disable Mode

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

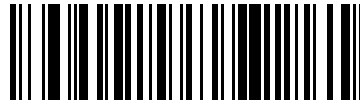
- *Full Disable - Scanning barcodes is disabled
- Transmit Disable - The device might scan barcodes, but transmission of barcode data is disabled.
- Auto Disable - The device disables scanning after transmission of a barcode, and remains disabled until the host sends a Scan Enable.



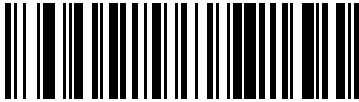
NOTE: This feature is currently supported by IBM Table Top USB, IBM Hand-held USB, and all IBM 46XX interfaces.



*Full Disable (0)



Transmit Disable (1)



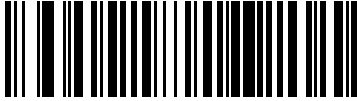
Auto Disable (2)

IBM-485 Specification Version

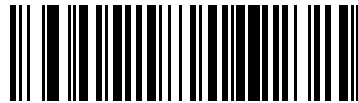
Parameter # 1729 (SSI # F8h 06h C1h)

This parameter determines which symbologies are reported.

- IBM-485 Original Specification - reports only symbologies historically supported on each port as known.
- IBM-485 - reports all symbologies supported in the new IBM specification as known with the respective code types.



*IBM-485 Original Specification (0)



IBM-485 (1)

IBM Commands

Parameter # 1345 (SSI # F8h 04h 41h)

This parameter allows the IBM commands Reset and Clear Scale Pole Display to be handled uniquely by the device.



NOTE: Additionally the IBM/TGCS host may send an unknown or unsupported command. This parameter allows you to specify how these commands are to be processed.



Honor Unknown Commands Reboot on Reset
Commands Honor Clear Scale Pole Display
Commands (0)



*Ignore Unknown Commands Reboot on Reset
Commands Honor Clear Scale Pole Display
Commands (1)



Honor Unknown Commands Do Not Reboot on
Reset Commands Honor Clear Scale Pole Display
Commands (2)

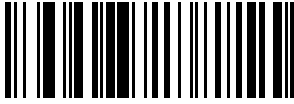


Ignore Unknown Commands Do Not Reboot on
Reset Commands Honor Clear Scale Pole Display
Commands (3)

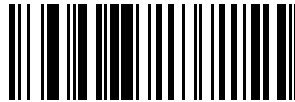
IBM Commands (continued)



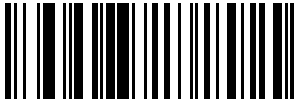
NOTE: Additionally the IBM/TGCS host may send an unknown or unsupported command. This parameter allows you to specify how these commands are to be processed.



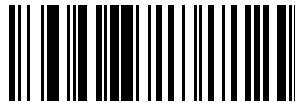
Honor Unknown Commands Reboot on Reset
Commands Ignore Clear Scale Pole Display
Commands (4)



Ignore Unknown Commands Reboot on Reset
Commands Ignore Clear Scale Pole Display
Commands (5)



Honor Unknown Commands Do Not Reboot on
Reset Commands Ignore Clear Scale Pole Display
Commands (6)



Ignore Unknown Commands Do Not Reboot on
Reset Commands Ignore Clear Scale Pole Display
Commands (7)

Scale Configuration

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

The scanner ships with the settings shown in [Scale Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

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

Scale Parameter Defaults

This section lists defaults for scale parameters. To change these values, scan the appropriate barcodes in this guide.

To recall the default parameter values, see [Default Parameters](#).

Table 11 Scale Parameter Defaults

Parameter	Parameter Number	Default
Legal Scale Units	995	Pounds
Legal Scale Dampening Filter Setting	996	Very Low Vibration Sensitivity
Scale Enable	1197	Enable
Scale Reset	6009	N/A
Scale Display Configuration	986	Disable
Scale Enforce Zero Return	987	Disable
Scale Beep After Weight Request	988	Disable
Scale Port Address	N/A	Not Selected
Ignore Scale Pole Directives	1242	Ignore
Maximum Initial Zero Setting Range	1285	15% maximum weight capacity
Maximum Scale Zeroing Weight Limit	1366	60
Weighing Behind Zero Mode	1326	Allowed

Table 11 Scale Parameter Defaults (Continued)

Parameter	Parameter Number	Default
Scale 5 Digit Directive	1842	Honor
Third-Party Scale Weight Guard Beam Break Pin Polarity	2499	0

Legal Scale Units

Parameter # 995

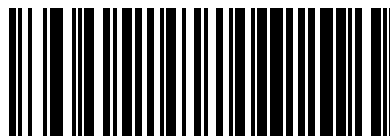
Select a weight unit to set the legal weight units for the scanner. Select Kilograms for international units; select Pounds for the United States.



NOTE: This legal scale unit can only be programmed when the scale is placed into a legal scale calibration mode. Refer to the Integration Guide for detailed information about scale calibration.



Kilograms (0)



*Pounds (1)

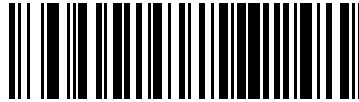
Legal Scale Dampening Filter Setting

Parameter # 996

Select an option to set the vibration sensitivity of the scale. The higher the number value, the less sensitive the scale is to vibration. The scale must be in a calibration mode to program this parameter.



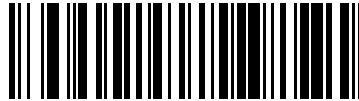
Normal (Higher) Vibration Sensitivity (0)



*Low Vibration Sensitivity (1)



Very Low Vibration Sensitivity (2)

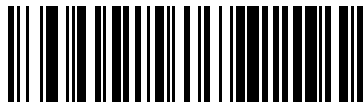


Ultra Low Vibration Sensitivity (3)

Scale Enable

Parameter # 1197

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



*Scale Enable (1)

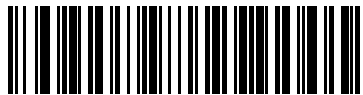


Scale Disable (0)

Scale Reset

Parameter # 6009

Select STISCLRST to reset the scale. This parameter can be selected in any mode of operation. If a pole display is enabled, and installed, it repeats the 7-segment test. Refer to the Integration Guide for details.



STISCLRST

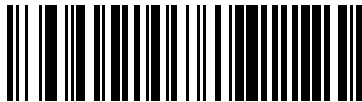
Scale Display Configuration

Parameter # 986

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

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

Refer to the Integration Guide for detailed information about the audit trail, scale calibration, and error/warning conditions.



Enable Scale Display Configuration (1)



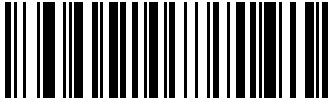
*Disable Scale Display Configuration (0)

Scale Enforce Zero Return

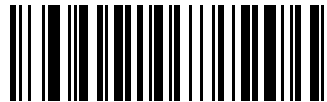
Parameter # 987

Use this parameter to enable or disable enforce zero return.

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



Enable Scale Enforce Zero Return (1)



*Disable Scale Enforce Zero Return (0)

Scale Beep After Weight Request

Parameter # 988

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

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



Enable Scale Beep After Weight (1)



*Disable Scale Beep After Weight (0)

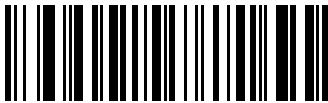
Ignore Scale Pole Directives

Parameter # 1242

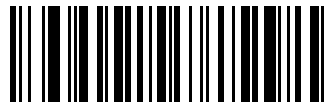
The pole display is required to be consumer facing if the POS system is not certified for displaying live gross weight.

When Ignore Scale Pole Directives is set to honor scale pole directives (Honor Scale Pole Directives), a Remote display required but not detected status is returned to the POS system (see bit position 5 in [Scale Status Byte 0](#)) if the pole display configuration was set to Enable Scale Display Configuration (see [Scale Display Configuration](#)), and a pole display was either uninstalled, or failed at the scale display port on the scanner (refer to the Integration Guide for the pole display port). The 7-segment display scrolls a U23 fault code under this condition. This prevents the POS display from showing live gross weight, and does not allow the POS to complete a price/weight transaction unless a pole display is connected, and shows live gross weight.

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



*Ignore Scale Pole Directives (1)



Honor Scale Pole Directives (0)

Maximum Initial Zero Setting Range

Parameter # 1285

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

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

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

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

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

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

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

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

If you frequently leave items on the platter during periods of non-use (like a cash drawer) you should set this value to 2 (0.9lb or 0.45kg). This prevents the need to reboot the scanner due to exceeding this maximum power on weight limit (see [Parameter Value Settings](#)).

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



NOTE: A lower setting may result in more frequent legal scale calibrations.

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

Table 12 Parameter Value Settings

Parameter Value	Lbs	Kgs
2 (minimum)	0.6	0.30
3	0.9	0.45
4	1.2	0.60
5	1.5	0.75

Table 12 Parameter Value Settings (Continued)

Parameter Value	Lbs	Kgs
6	1.8	0.90
7	2.1	1.05
8	2.4	1.20
9	2.7	1.35
10	3.0	1.50
11	3.3	1.65
12	3.6	1.80
13	3.9	1.95
14	4.2	2.10
15 (maximum/default)	4.5	2.25

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



Set Scale Maximum Initial Zero Setting Range

Maximum Scale Zeroing Weight Limit

Parameter # 1366

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

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



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

To set a Weight Limit value, scan Set Max Scale Zeroing Weight Limit below, then scan two numeric barcodes from [Numeric Barcodes](#) that correspond to the desired value. Enter a leading zero for single digit numbers. For example, to set a Weight Limit of 0.05 lbs, scan the barcode below, then scan the 0 and 5 barcodes. To correct an error or change the selection, scan [Cancel](#).

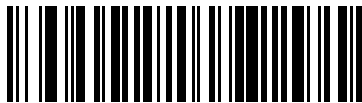


Set Max Scale Zeroing Weight Limit

Weighing Behind Zero Mode

Parameter # 1326

The scale is below zero when the platter is empty and the pole display shows dashes (----). When the scale is below zero and **Weighing Behind Zero Mode** is not allowed adding items to the scale (e.g., bananas) prevents the POS from performing weight transactions. The cashier/operator must press the **Scale Zero** button to clear the under weight condition before weight transactions can be performed.



*Weighing Behind Zero Mode Allowed (1)



Weighing Behind Zero Mode Not Allowed (0)

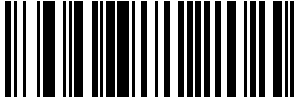
Scale 5 Digit Directive

Parameter # 1842

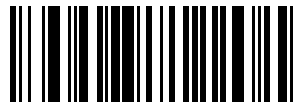
Some POS systems send a command to set the scale to 5 digit mode even though the POS is expected to function in 4 digit mode. If your POS system sends this command, select **Ignore 5 Digit Directive** to keep the scanner in 4 digit mode.



IMPORTANT: Verify with Legal Metrology Authorities that your POS system is within specification.



*Honor 5 Digit Directive (0)



Ignore 5 Digit Directive (1)

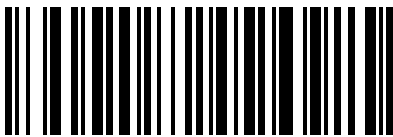
Third-Party Scale Weight Guard Beam Break Pin Polarity

Parameter # 2499 (SSI # F8h 09h C3h)

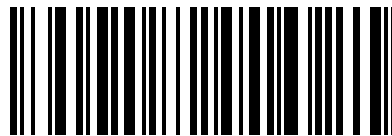
This parameter controls the polarity of the 3rd Party Scale Weight Guard beam break signal.

The default value is 0

- 0 - The beam break signal is set to 0 (Low) indicating a beam break event. The beam break signal is set to 1 (High) indicating there is no beam break event at the moment.
- 1 - The beam break signal is set to 1 (High) indicating a beam break event. The beam break signal is set to 0 (Low) indicating there is no beam break event at the moment.



*0 - Low



1 - High

User Preferences and Miscellaneous Options

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

The scanner ships with the settings shown in [User Preferences Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

User Preferences/Miscellaneous Options

This section lists defaults for user preferences parameters. Change these values in one of two ways:

- Scan the appropriate barcodes in this chapter. The new value replaces the standard default value in memory. To recall default parameter values, see [Default Parameters](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).



NOTE: Standard parameter defaults are available in each chapter of this guide.

Table 13 User Preferences Parameter Defaults

Parameter	Parameter Number ^a	SSI Number ^b	Default
User Preferences			
Set Default Parameter	N/A	N/A	N/A
Parameter Barcode Scanning	236	ECh	Enable
Beep After Good Decode	56	38h	Enable
Beeper Volume	140	8Ch	Highest
Beeper Tone	145	91h	Medium
Beeper Duration	628	F1h 74h	Medium
Tone/Volume Button	1287	F8h 05h 07h	Enable Tone, Enable Volume
Suppress Power Up Beeps	721	F1h D1h	Do Not Suppress
Hands-Free Decode Session Timeout	400	F0h 90h	6.6 Seconds
Timeout Between Decodes, Same Symbol	137	89h	0.5 Seconds
Same Symbol Timeout Mode	724	F8h 02h D4h	Unconditional

Table 13 User Preferences Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
Enhanced Same Symbol Timeout Mode	1844	F8h 07h 34h	Disable Enhanced Same Symbol Timeout Mode
Extended Same Symbol Timeout – GS1 Databar	2399		20 (2 Seconds)
Same Symbol Report Timeout	1284	F8h 05h 04h	Disable
Timeout Between Decodes, Different Symbols	144	90h	0.1 Seconds
Trigger on Scan Disable / Enable Sequence	2398		Disable
Object Detect Field of View	2431		Platter (Horizontal) and Tower (Vertical) Views
Mobile Phone/Display Mode	716	F1h CCh	Disable
PDF Prioritization	719	F4h F1h CFh	Disable
PDF Prioritization Timeout	720	F1h D0h	200 ms
USB Serial Number Format	1832	F8h 07h 28h	Serial Number
RS-232 Device Port Configuration	1246	F8h 04h DEh	0
RS-232 Auxiliary Port Scale Protocol	1247	F8h 04h DFh	SASI
Third Party Scale	1294	F8 05 0E	Disable
Third Party Scale LED Pin	1295	F8 05 0F	Active High
Third Party Scale Zero Pin	1296	F8 05 10	Active High
Weight Guard Enable	2427	F1h 74h	Disable
Product ID (PID) Type	1281	F8h 05h 01h	IBM Unique
Product ID (PID) Value	1725	F8h 06h BDh	0
ECLevel	1710	F8h 06h AEh	0
Miscellaneous Options			
Enter Key	N/A	N/A	N/A
Tab Key	N/A	N/A	N/A
Transmit Code ID Character	45	2Dh	None
Prefix Value	99, 105	63h, 69h	7013 <CR><LF>
Suffix 1 Value	98, 104	62h, 68h	7013 <CR><LF>
Suffix 2 Value	100, 106	64h, 6Ah	7013 <CR><LF>
Scan Data Transmission Format	235	EBh	Data As Is
FN1 Substitution Values	103, 109	67h, 6Dh	7013 <CR><LF>
Copy Statistics to a Staging Flash Drive	1137	F8h 04h 71h	Enable Copy Statistics to a Staging Flash Drive
Alternate Beep Volume for Not on File Event	2384	N/A	Disable

Table 13 User Preferences Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
Not On File Beep Volume	2383	N/A	Low Volume
Sync Bootup Beep Volume	2412	N/A	Disable
Not on File Number of Beeps	2411	N/A	5 Beeps
User Data	1825	F8h 07h 11h	N/A
Report Software Version	N/A	N/A	N/A

^a Parameter number decimal values are used for programming via RSM commands.

^b SSI number hex values are used for programming via SSI commands.

User Preferences

Set feature values by scanning the desired parameter values.

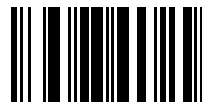
Default Parameters

Scan one of the following barcodes to reset the scanner to its default settings.

- Restore Defaults resets all default parameters as follows:
 - If you configured custom default parameter values via the Write to Custom Defaults barcode, scanning the Restore Defaults barcode restores these custom values.
 - If you did not configure custom default parameter values, scanning the Restore Defaults barcode restores the factory default values. Default values are available at the beginning of each section.
- Set Factory Defaults clears all custom default values and sets the factory default values. Default values are available at the beginning of each section.



Restore Defaults

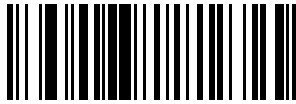


Set Factory Defaults

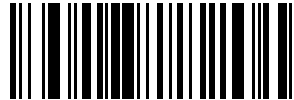
Parameter Barcode Scanning

Parameter # 236 (SSI # ECh)

This parameter selects whether to enable or disable the decoding of parameter barcodes, including the **Set Defaults** barcodes.



*Enable Parameter Barcode Scanning (1)

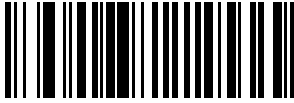


Disable Parameter Barcode Scanning (0)

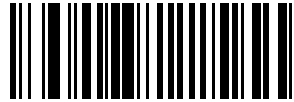
Beep After Good Decode

Parameter # 56 (SSI # 38h)

This parameter selects whether or not the scanner beeps after a good decode. If you select **Disable Beep After Good Decode**, the beeper still operates during parameter menu scanning and to indicate error conditions.



*Enable Beep After Good Decode (1)

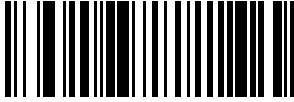


Disable Beep After Good Decode (0)

Beeper Volume

Parameter # 140 (SSI # 8Ch)

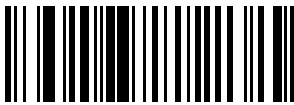
This parameter selects a beeper volume.



Low Volume (2)



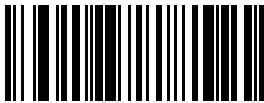
Medium Volume (1)



High Volume (0)



Higher Volume (3)



*Highest Volume (4)

Beeper Tone

Parameter # 145 (SSI # 91h)

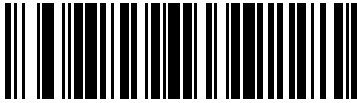
This parameter selects a beeper tone for a good decode beep.



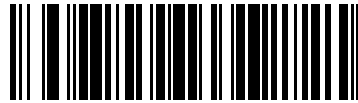
Disable Tone (3)



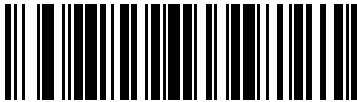
Low Tone (2)



*Medium Tone (1)



High Tone (0)



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

Beeper Duration

Parameter # 628 (SSI # F1h 74h)

This parameter selects the duration for the good decode beep.



Short Duration (0)



*Medium Duration (1)

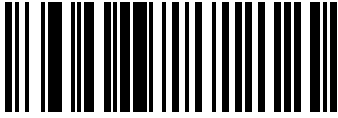


Long Duration (2)

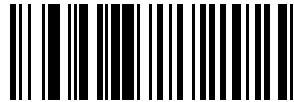
Tone/Volume Button

Parameter # 1287 (SSI # F8h 05h 07h)

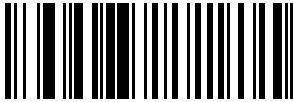
Enable this parameter to use the physical Volume button on the front panel of the scanner to change the speaker volume and tone. Disable this parameter to prevent the speaker volume and tone from being changed using the physical Volume button on the front panel of the scanner.



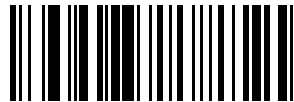
*Enable Tone, Enable Volume (1)



Disable Tone, Disable Volume (0)



Disable Tone, Enable Volume (2)

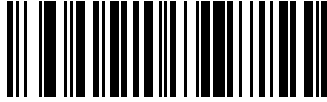


Enable Tone, Disable Volume (3)

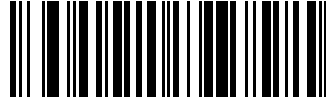
Suppress Power Up Beeps

Parameter # 721 (SSI # F1h D1h)

This parameter selects whether or not to suppress the scanner's power-up beeps.



*Do Not Suppress Power Up Beeps (0)



Suppress Power Up Beeps (1)

Hands-Free Decode Session Timeout

Parameter # 400 (SSI # F0 90)

This parameter is the hands-free compliment to the Decode Session Timeout. It configures the minimum and maximum decode processing time during a hands-free scan attempt. It only applies to the hands-free trigger mode or when a scanner is placed in the gooseneck stand.

The range for this parameter is 2-255 with a default value of 66.

The minimum decode processing time is defined as the time in which the scanner stops decoding when an object is removed or left stationary in the imaging field of view.

The maximum decode processing time is defined as the time in which the scanner stops decoding when an object is left in or is moving in the field of view.

Both the maximum and minimum times are configured using a single setting. The relationship of this setting is as follows:

Setting Value ^a	Minimum Time	Maximum Time
$X < 25$	250 ms	2.5 seconds
$252 > X \geq 25$	$X * 10$ ms	$X * 100$ ms

^a value must be three digits.

For example, a setting value of 100 results in the scanner turning off approximately 1 second after an object is removed from the field of view or 10 seconds while an object is in the field of view moving.

The default value of the setting is 66, which results in a minimum time of 660 ms and a maximum time of 6.6 sec.

Adjust this setting based on your requirements. For example, when doing PDF prioritization, this parameter should be set to a value where the maximum time is above the PDF prioritization timeout.

To set a three-digit value, scan the following barcode and then scan three barcodes from [Numeric Barcodes](#). Enter a leading zero for single-digit numbers. To correct an error or change a selection, scan Cancel.



Hands-Free Decode Session Timeout

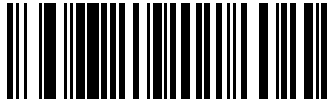
Timeout Between Decodes, Same Symbol

Parameter # 137 (SSI # 89h)

Use this option in presentation mode or Continuous Barcode Read mode to prevent the scanner from continuously decoding the same barcode when it is left in the scanner's field of view. The barcode must be out of the field of view for the timeout period before the scanner reads the same consecutive symbol.

Timeout Between Decodes, Same Symbol is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The default interval is 0.5 seconds.

To select the timeout between decodes for the same symbol, scan the following barcode, and then scan two barcodes from [Numeric Barcodes](#) that correspond to the desired interval, in 0.1 second increments.



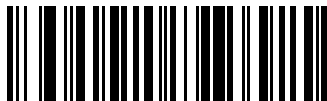
Timeout Between Decodes, Same Symbol

Same Symbol Timeout Mode

Parameter # 724 (SSI # F8h 02h D4h)

This parameter determines how Timeout Between Decodes, Same Symbol is applied.

- **Unconditional** - The time specified by [Timeout Between Decodes, Same Symbol](#) must fully expire before the next item with the same symbol decodes.
- **Fast On Exit** - A second same item can decode as soon as the first item exits the FOV (possibly in less time than [Timeout Between Decodes, Same Symbol](#)). This mode may provide faster decode performance.



Fast On Exit (0)



*Unconditional (1)

Enhanced Same Symbol Timeout Mode

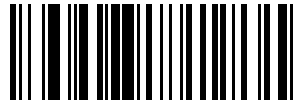
Parameter # 1844 (SSI # F8h 07h 34h)

When two barcodes with the same content but different symbologies are presented at the same time, this parameter determines whether one or both barcodes decode.

- ***Disable Enhanced Same Symbol Timeout Mode** - both barcodes decode.
- **Enable Enhanced Same Symbol Timeout Mode** - only one barcode decodes. Barcodes with the same content but different symbologies are common on some mobile phone applications such as WECHAT.



*Disable Enhanced Same Symbol Timeout Mode (0)



Enable Enhanced Same Symbol Timeout Mode (1)

Extended Same Symbol Timeout – GS1 Databar

Parameter # 2399

This parameter allows additional time for same symbol decoding of GS1 Databar barcodes.

This parameter value must be greater than the standard [Timeout Between Decodes, Same Symbol](#) setting to apply. If less, the **Timeout Between Decodes, Same Symbol** setting applies.

To select the Extended Same Symbol Timeout, scan the following barcode, and then scan two barcodes from [Numeric Bar Codes](#) that correspond to the desired interval, in 0.1 second increments from 0.0 to 9.9 seconds. The default is 20 (2 seconds).



Extended Same Symbol Timeout for GS1 Databar

Same Symbol Report Timeout

Parameter # 1284 (SSI # F8h 05h 04h)

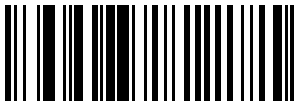
This parameter affects how the Timeout Between Decodes, Same Symbol parameter is applied.

- *Disable - a barcode in the decode region decodes only once, even if the barcode remains indefinitely in the region.

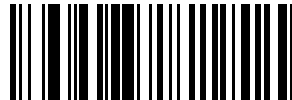
The user must remove the barcode, and reintroduce the barcode into the region before it decodes a second time.

- Enable - a barcode in the decode region decodes each time the same symbol timeout expires.

Use Enable mode when using fast two-handed scanning of two of the same items. This usage scenario has a tendency to not decode the second of the two items. By enabling this mode the second item unconditionally decodes after the same symbol timeout expires. After enabling this setting the user may need to adjust the [Timeout Between Decodes, Same Symbol](#) so that the second item does not decode too quickly.



*Disable (0)



Enable (1)

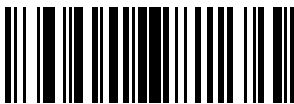
Timeout Between Decodes, Different Symbols

Parameter # 144 (SSI # 90h)

Use this option in presentation mode or Continuous Barcode Read to control the time the scanner waits before decoding a different symbol.

Timeout Between Decodes, Different Symbols 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 barcode, and then scan two barcodes from [Numeric Barcodes](#) that correspond to the desired interval, in 0.1 second increments.



Timeout Between Decodes, Different Symbols

Trigger on Scan Disable / Enable Sequence

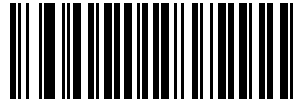
Parameter # 2398

This parameter enables and disables an automatic trigger scanning session after a scan disable / scan enable sequence to prevent decoding an item left on the platter or in the field of view a second time.

Select **Enable** to enable an automatic trigger after a scan disable / enable sequence.



Enable Trigger on Scan Disable / Enable
Sequence (1)

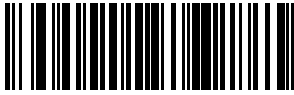


*Disable Trigger on Scan Disable / Enable
Sequence (0)

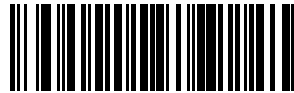
Object Detect Field of View

Parameter # 2431

This parameter determines the field of view used to detect motion and wake the system for decoding.



Use Platter (Horizontal) View Only to Detect
Motion (0)



*Use Both Platter (Horizontal) and Tower (Vertical)
Views to Detect Motion (1)

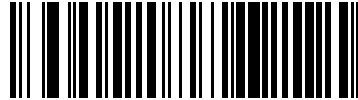
Mobile Phone/Display Mode

Parameter # 716 (SSI #F1h CCh)

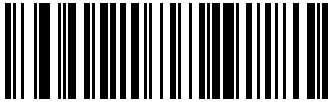
This mode improves barcode reading performance off mobile phones and electronic displays. Scan one of the following barcodes to enable or disable this mode, or select Enhanced mode.



Enable Mobile Phone/Display Mode (3)



*Disable Mobile Phone/Display Mode (0)



Enhanced Mobile Phone/Display Mode (8)

PDF Prioritization

Parameter # 719 (SSI # F4h F1h CFh)

Enable this parameter to delay decoding certain 1D barcodes by the value specified in PDF Prioritization Timeout.

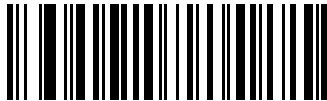
During the [PDF Prioritization Timeout](#) time, the scanner attempts to decode a PDF417 symbol (for example, on a US driver's license), and if successful, reports this only. If it does not decode (cannot find) a PDF417 symbol, it reports the 1D symbol after the timeout. The 1D symbol must be in the device's field of view for the scanner to report it. This parameter does not affect decoding other symbologies.

The 1D Code 128 barcode lengths include the following:

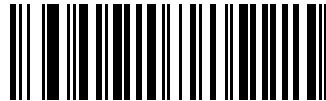
- 7 to 10 characters
- 14 to 22 characters
- 27 to 28 characters

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

- 8 characters
- 12 characters



Enable PDF Prioritization (1)



*Disable PDF Prioritization (0)

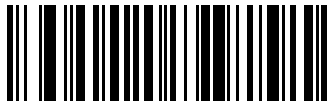
PDF Prioritization Timeout

Parameter # 720 (SSI # F1h D0h)

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

The PDF Prioritization Timeout range is 0 to 5000 ms, and the default is 200 ms.

Scan the following barcode, and then scan four barcodes from [Numeric Barcodes](#) that specify the timeout in milliseconds. For example, to enter 400 ms, scan the following barcode, and then scan 0400.



PDF Prioritization Timeout

USB Serial Number Format

Parameter # 1832 (SSI # F8h 07h 28h)

This parameter determines the format of the iSerial Number USB Descriptor during USB enumeration.

The following examples demonstrate the values for the USB Serial Number formats.

Value = 0 (Serial Number)

iSerialNumber = "17204010505799"

Value = 1 (GUID, Firmware, Interface)

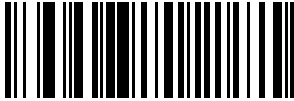
iSerialNumber = "S/N:E658CFB6A2654A0EB5E1D1E31EBD00CD Rev:PAADGS00-001-R082"

Value = 2 (GUID, Interface)

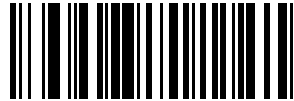
iSerialNumber = "S/N:E658CFB6A2654A0EB5E1D1E31EBD00CD:2"

Value = 3 (Serial Number, Interface)

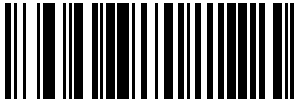
iSerialNumber = "17204010505799:2"



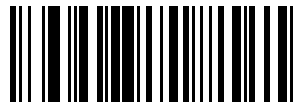
*Serial Number (0)



GUID, Firmware, Interface (1)



GUID, Interface (2)



Serial Number, Interface (3)

RS-232 Device Port Configuration

Parameter # 1246 (SSI # F8h 04h DEh)

This parameter allows the user to select which devices to attach to the scanner, and to which port they are attached. Select the appropriate options to select the proper configuration.

The available configurations options are:

- *0 = Aux 1 Sensormatic, and Aux 2 Scanner
- 1 = Aux 1 Dual Cable Scale, and Aux 2 Scanner
- 2 = Aux 1 Sensormatic, and Aux 2 Dual Cable Scale
- 4 = Aux 1 Third Party Scale, Aux 2 Sensormatic
- 5 = Aux 1 Sensormatic, and Aux 2 Disabled
- 6 = Aux 1 Dual Cable Scale, and Aux 2 Disabled
- 7 = Aux 1 Third Party Scale, and Aux 2 Disabled
- 8 = Aux 1 Disabled, and Aux 2 Scanner
- 9 = Aux 1 Disabled, and Aux 2 Dual Cable Scale
- 10= Aux 1 Disabled, and Aux 2 Sensormatic
- 11= Aux 1 Disabled, and Aux 2 Disabled

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

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

Table 14 Device Specific Default Values (Inherited Defaults)

Device	Baud	Data Bits	Stop Bits	Parity
Scanner	9600	8	1	None
Sensormatic	9600	8	1	None
Dual Cable Scale: SASI Protocol	9600	7	1	Even
Dual Cable Scale: DIGI Protocol	9600	7	2	Even
Dual Cable Scale: ICL Protocol	9600	7	1	Even

Table 14 Device Specific Default Values (Inherited Defaults) (Continued)

Device	Baud	Data Bits	Stop Bits	Parity
Third Party Scale	NA	NA	NA	NA



NOTE: For Dual Cable Scales, see [RS-232 Auxiliary Port Scale Protocol](#) for details on selecting a scale protocol.



NOTE:

Changes to this parameter do not take effect until the next power cycle (power cycling does not apply to 123Scan).

Perform one of the functions below after scanning a device port parameter.

- Cycle power to the scanner (disconnect, and re-connect scanner cable).
- Use the scanner reset button (a button combination to reboot the scanner).



*Aux 1 Sensormatic and Aux 2
Scanner (0)



Aux 1 Dual Cable Scale and Aux
2 Scanner (1)



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

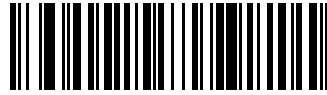


Aux 1 Third Party Scale, Aux 2
Sensormatic (4)

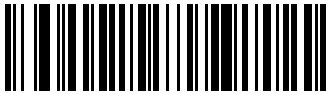
RS-232 Device Port Configuration (continued)



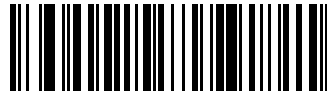
Aux 1 Sensormatic, and Aux 2 Disabled (5)



Aux 1 Dual Cable Scale, and Aux 2 Disabled (6)



Aux 1 Third Party Scale, and Aux 2 Disabled (7)

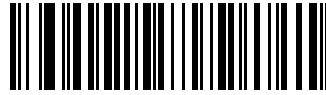


Aux 1 Disabled, and Aux 2 Scanner (8)

RS-232 Device Port Configuration (continued)



Aux 1 Disabled, and Aux 2 Dual Cable Scale (9)



Aux 1 Disabled, and Aux 2 Sensormatic (10)



Aux 1 Disabled, and Aux 2 Disabled (11)

RS-232 Auxiliary Port Scale Protocol

Parameter # 1247 (SSI # F8h 04h DFh)

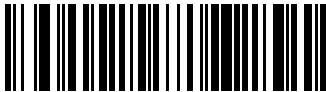
Use this parameter to select the desired scale protocol.

When selecting RS-232 Auxiliary Port Scale Protocol, use the Dual Cable Scale option via the [RS232 Device Port Configuration](#) setting to assign a scale device to either the Aux 1 or Aux 2 port.

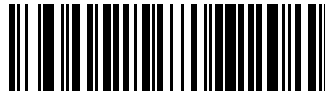
The available RS-232 Auxiliary Port Scale Protocol options are:

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

For details about configuring the RS-232 ports, see Aux 1 and Aux 2 Baud Rates, Data Bits, Stop Bits, and Parity settings in Auxiliary Scanner Bar Codes.



*SASI (0)



DIGI (1)



ICL OMRON (2)



ICL Old OMRON (3)



ICL Portugal (4)

Third Party Scale

Parameter # 1294 (SSI # F8 05 0E)

This parameter enables or disables Third Party Scale functionality. When disabled, **Third Party Scale LED Pin** (parameter # 1295) and **Third Party Scale Zero Pin** (parameter # 1296) are ignored or overridden.



Enable Third Party Scale (1)

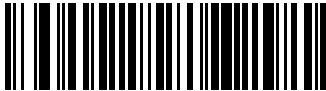


*Disable Third Party Scale (0)

Third Party Scale LED Pin

Parameter # 1295 (SSI # F8 05 0F)

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



Active Low (0)

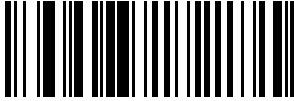


*Active High (1)

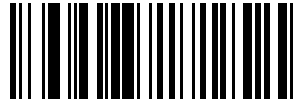
Third Party Scale Zero Pin

Parameter # 1296 (SSI # F8 05 10)

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



Active Low (0)

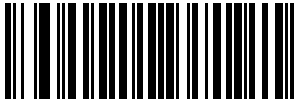


*Active High (1)

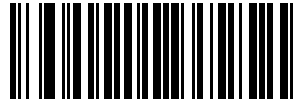
Weight Guard Enable

Parameter # 2427 (SSI # F1h 74h)

This parameter enables and disables the off-platter detection feature of the Weight Guard system.



Enable Weight Guard (1)

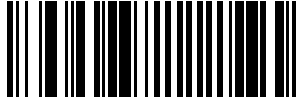


*Disable Weight Guard (0)

Product ID (PID) Type

Parameter # 1281 (SSI # F8h 05h 01h)

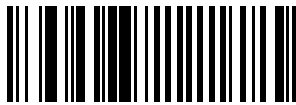
This parameter defines the PID value reported in USB enumeration.



Host Type Unique (0)



Product Unique (1)



*IBM Unique (2)

Product ID (PID) Value

Parameter # 1725 (SSI # F8h 06h BDh)

This parameter sets a Product ID (PID) value.



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

To set a Product ID value, scan **Set PID Value**, and then scan four numeric barcodes in [Numeric Barcodes](#) that correspond to the value. Enter a leading zero for single-digit numbers. To correct an error, or change a selection, scan [Cancel](#). The range is (0, 1600 - 1649).



Set PID Value

ECLevel

Parameter # 1710 (SSI # F8h 06h AEh)

This parameter sets an ECLevel.



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

Contact Zebra Support at zebra.com/support for more information.

To set an ECLevel value, scan **Set ECLevel**, and then scan five numeric barcodes in [Numeric Barcodes](#) that correspond to the desired level. Enter a leading zero for single digit numbers. To correct an error, or change a selection, scan [Cancel](#).



Set ECLevel

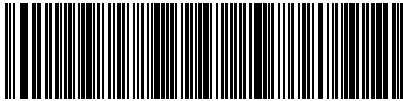
Miscellaneous Scanner Parameters

This section provides additional barcodes and parameters for miscellaneous options.

Enter Key

This parameter adds an Enter key (carriage return or line feed) after scanned data.

To program other prefixes and/or suffixes, see [Prefix/Suffix Values](#).



Add Enter Key (Carriage Return/Line Feed)

Tab Key

This parameter adds a Tab key after scanned data.



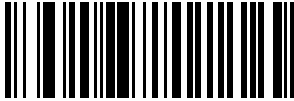
Tab Key

Transmit Code ID Character

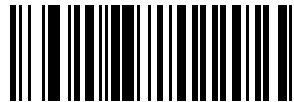
Parameter # 45 (SSI # 2Dh)

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

Select no Code ID character, a Symbol Code ID character, or an AIM Code ID character. For Code ID characters, see [Symbol Code Identifiers](#) and [AIM Code Identifiers](#).



Symbol Code ID Character (2)



AIM Code ID Character (1)



*None (0)

Prefix Suffix Values

Key Category Parameter # P = 99, S1 = 98, S2 = 100

Key Category SSI # P = 63h, S1 = 62h, S2 = 64h

Decimal Value Parameter # P = 105, S1 = 104, S2 = 106

Decimal Value SSI # P = 69h, S1 = 68h, S2 = 6Ah

This parameter appends up to one prefix or up to two suffix values to scan data for use in data editing. The default prefix and suffix value is 7013 <CR><LF> (Enter key).

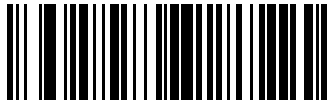


NOTE: To use Prefix/Suffix values, first set the [Scan Data Transmission Format](#).

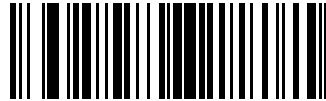
To set a value for a prefix or suffix, scan one of the following barcodes, and then scan four barcodes from [Numeric Barcodes](#) that correspond to that value. See [ASCII Character Sets](#) for the four-digit codes.

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 [ASCII Character Sets](#) for the four-digit codes.

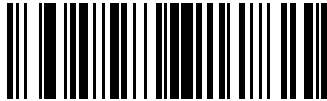
To correct an error or change a selection, scan [Cancel](#).



Scan Prefix (7)



Scan Suffix 1 (6)



Scan Suffix 2 (8)



Data Format Cancel

Scan Data Transmission Format

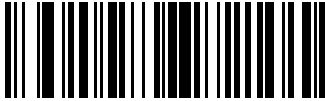
Parameter # 235 (SSI # EBh)

This parameter selects the scan data format.

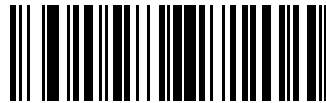


NOTE: If using this parameter do not use ADF rules to set the prefix/suffix.

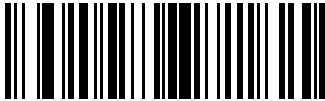
To set values for the prefix or suffix, see [Prefix Suffix Values](#).



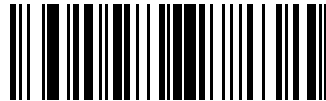
*Data As Is (0)



<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 (SSI # 67h)

Decimal Value Parameter # 109 (SSI # 6Dh)

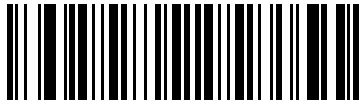
Keyboard wedge and USB HID keyboard hosts support a FN1 substitution feature. Enabling this substitutes any FN1 character (0x1b) in an EAN128 barcode with a value. This value defaults to 7013 <CR><LF> (Enter key).

When using host commands to set the FN1 substitution value, set the key category parameter to 1, and then set the 3-digit keystroke value. See the [ASCII Character Sets](#) on page 424 for the current host interface for the desired value.

Selecting a FN1 Substitution Value

Select a FN1 substitution value via the following barcode menus.

1. Scan the following barcode.



Set FN1 Substitution Value

2. Locate the keystroke desired for FN1 Substitution in the ASCII Character Set table for the current host interface, and enter the 4-digit ASCII value by scanning four barcodes from [Numeric Barcodes](#).

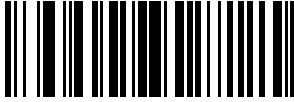
To correct an error or change the selection, scan [Cancel](#).

To enable FN1 substitution for USB HID keyboard, scan the [Enable FN1 Substitution](#) barcode.

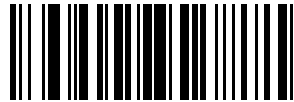
Copy Statistics to a Staging Flash Drive

Parameter # 1137 (SSI # F8h 04h 71h)

When this parameter is enabled, you can copy all data and configurations from the device to a staging USB flash drive.



Disable Copy Statistics to a Staging Flash Drive (0)

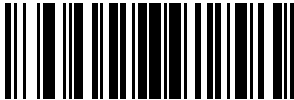


*Enable Copy Statistics to a Staging Flash Drive (1)

Alternate Beep Volume for Not on File Event

Parameter # 2384

This parameter is used for protocol based NOF beep events and allows setting an alternate beep volume.



Enable Alternate Beep Volume for Not on File Event (1)

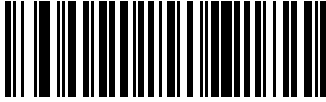


*Disable Alternate Beep Volume for Not on File Event (0)

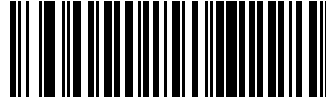
Not On File Beep Volume

Parameter # 2383

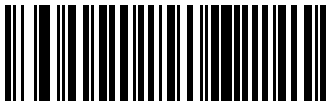
This parameter sets the alternate volume used by [Alternate Beep Volume for Not on File Event](#).



*Low Volume (02)



Medium Volume (01)



High Volume (00)



Higher Volume (03)



Highest Volume (04)

Sync Bootup Beep Volume

Parameter # 2412

This parameter synchronizes the Bootup Beep sequence volume with the system volume. In the default state of disabled, the Bootup Beep sequence is played at maximum volume.



Enable Sync Bootup Beep Volume (1)

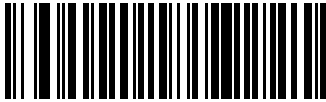


*Disable Sync Bootup Beep Volume (0)

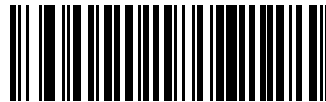
Not on File Number of Beeps

Parameter # 2411

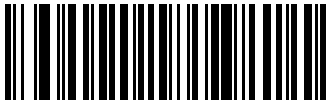
This parameter specifies the number of beeps that sound when a protocol-based Not on File (NoF) is received.



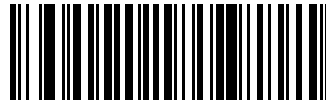
1 Beep (01)



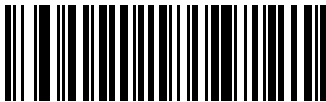
2 Beeps (02)



3 Beeps (03)



4 Beeps (04)



*5 Beeps (05)

User Data

Parameter # 1825 (SSI # F8h 07h 11h)

User Data is a 50 character string programmable by the customer that can include any information the customer chooses.

For example, this field could be used to program a store number and/or lane number for each scanner across the customer enterprise.

This parameter persists upon scanning Restore Defaults but reverts to the default value (Null String) upon scanning [Set Factory Defaults](#).

Report Software Version

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



Report Software Version

Image Capture Preferences

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



NOTE: Only the Symbol Native API (SNAPI) with Imaging interface supports image capture. See [USB Device Type](#) to enable this host.

The imager ships with the settings shown in [Image Capture Preferences Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

Image Capture Preferences Parameter Defaults

The image capture preferences parameter defaults lists defaults for image capture preference parameters.

You can change 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](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).

Table 15 Image Capture Preferences Parameter Defaults

Parameter	Parameter Number ^a	SSI Number ^b	Default
Snapshot Mode Timeout	323	F0h 43h	30 seconds
Image Cropping	301	F0h 2Dh	Disable
Crop to Pixel Addresses	315 316 317 318	F4h F0h 3Bh F4h F0h 3Ch F4h F0h 3Dh F4h F0h 3Eh	0 top 0 left 1199 bottom 1919 right
Image Size (Number of Pixels)	302	F0h 2Eh	Full
JPEG Image Options	299	F0h 2Bh	Quality
JPEG Quality Value	305	F0h 31h	65
JPEG Size Value	561	F1h 31h	160 kB
Image Enhancement	564	F1h 34h	Low (1)

Table 15 Image Capture Preferences Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
Image File Format Selection	304	F0h 30h	JPEG
Image Rotation	665	F1h 99h	0
Bits Per Pixel	303	F0h 2Fh	8 BPP
Camera Button	1716	F8h 06h B4h	Disable
Camera Button Delay	1717	F8h 06h B5h	20 ms
Color Camera Mode	2385	F8h 09h 51h	0

^a Parameter number decimal values are used for programming via RSM commands.

^b SSI number hex values are used for programming via SSI commands.

Image Capture Preferences Modes and Parameters

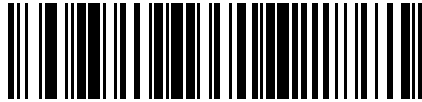
The parameters in this section control image capture characteristics.

Snapshot Mode Timeout

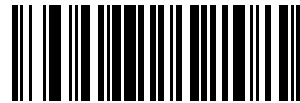
Parameter # 323 (SSI # F0h 43h)

This parameter sets the amount of time the imager remains in Snapshot Mode.

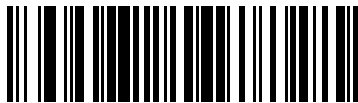
- Set Snapshot Mode Timeout - scan this parameter and then scan a barcode from [Numeric Barcodes](#). Values increment by 30. For example, 1 = 60 seconds, 2 = 90 seconds.
- 30 Seconds - resets timeout to 30 seconds.
- No Timeout - the imager remains in Snapshot Mode until you press the trigger.



Set Snapshot Mode Timeout



*30 Seconds



No Timeout

Image Cropping

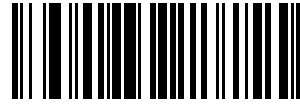
Parameter # 301 (SSI # F0h 2Dh)

This parameter crops a captured image to the pixel addresses set in Crop to Pixel Addresses.

- Enabled - Crops the captured image.
- Disabled - Does not crop the captured image.



Enable Image Cropping (1)



*Disable Image Cropping (Use Full 1920 x 1200 Pixels) (0)

Crop to Pixel Addresses

Parameter # 315 (SSI # F4h F0h 3Bh) (Top)

Parameter # 316 (SSI # F4h F0h 3Ch) (Left)

Parameter # 317 (SSI # F4h F0h 3Dh) (Bottom)

Parameter # 318 (SSI # F4h F0h 3Eh) (Right)

When Image Cropping is enabled, use this parameter to set the pixel addresses.

The pixel addresses value range is (0,0) to 1919 x 1199.

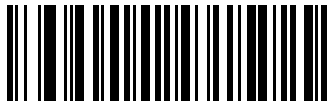
- Top Pixel Address - A value with the left pixel address to begin an image crop.
- Left Pixel Address - A value with the top pixel address to begin an image crop.
- Right Pixel Address - A value with the right pixel address to end an image crop.
- Bottom Pixel Address - A value with the right pixel address to end an image crop.

Columns are numbered from 0 to 1919, rows from 0 to 1199. Specify values for Top, Left, Bottom, and Right, where Top and Bottom correspond to row pixel addresses, and Left and Right correspond to column pixel addresses.



NOTE: The imager has a cropping resolution of 4 pixels. Setting the cropping area to less than 4 pixels (after resolution adjustment, see [Image Size](#)) transfers the entire image.

To crop to the pixel addresses, enable Image Cropping, and then scan four numeric barcodes from [Numeric Barcodes](#) representing the value.



Top Pixel Address (0 - 1199 Decimal)



Left Pixel Address (0 - 1919 Decimal)



Bottom Pixel Address (0 - 1199 Decimal)



Right Pixel Address (0 - 1919 Decimal)

Image Size (Number of Pixels)

Parameter # 302 (SSI # F0h 2Eh)

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

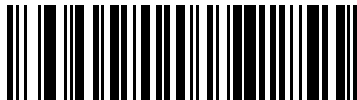
Select a resolution value to produce an image size.

Table 16 Image Size

Resolution Value	Uncropped Image Size
Full	1920 x 1200
1/2	960 x 600
1/4	480 x 300



*Full Resolution (0)



1/2 Resolution (1)



1/4 Resolution (3)

JPEG Image Options

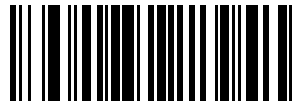
Parameter # 299 (SSI # F0h 2Bh)

This parameter changes the JPEG image quality or size.

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



*JPEG Quality Selector (1)



JPEG Size Selector (0)

JPEG Quality Value

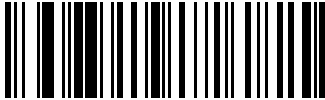
Parameter # 305 (SSI # F0h 31h)

This parameter adjusts the quality of the JPEG.



NOTE: Use this parameter if you selected **JPEG Quality Selector** as a JPEG Image Option.

Scan **JPEG Quality Value**, and then scan three barcodes from [Numeric Barcodes](#) corresponding to a value from 5 to 100, where 100 represents the highest quality image. Leading zeros are required. For example, to set an image quality value of 55, scan 0, 5, 5.



JPEG Quality Value (Default: 065) (5 - 100 Decimal)

JPEG Size Value

Parameter # 561 (SSI # F1h 31h)

Type: Word

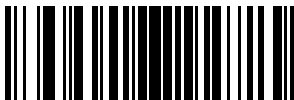
Range: 5-350

If you selected **JPEG Size Selector**, use **JPEG Size Value** to set the JPEG size.



CAUTION: JPEG compression may take 10 to 15 seconds based on the amount of information in the target image. Selecting [JPEG Quality Selector](#) produces a compressed image that is consistent in quality and compression time.

To set the JPEG size, scan **JPEG Size Value** and then scan three numeric barcodes from [Numeric Barcodes](#) representing the target JPEG file size in kilobytes (KB). Leading zeros are required. For example, to set an image file size value of 99, scan 0, 9, 9.



JPEG Size Value (Default: 160) (3 digits)

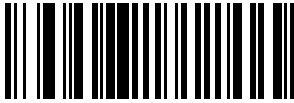
Image Enhancement

Parameter # 564 (SSI # F1h 34h)

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

Select the level of image enhancement:

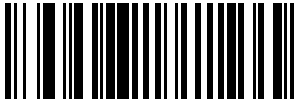
- Off (0)
- *Low (1)
- Medium (2)
- High (3)



Off (0)



*Low (1)



Medium (2)



High (3)

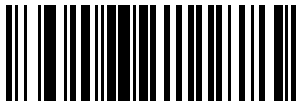
Image File Format Selector

Parameter # 304 (SSI # F0h 30h)

Use this parameter to select an image format appropriate for the system (BMP, TIFF, or JPEG). The imager stores captured images in the selected format.



BMP File Format (3)



*JPEG File Format (1)



TIFF File Format (4)

Image Rotation

Parameter # 665 (SSI # F1h 99h)

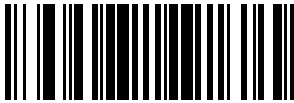
Use this parameter to rotate an image by 90-degree increments (0, 90, 180, or 270).



*Rotate 0° (0)



Rotate 90° (1)



Rotate 180° (2)



Rotate 270° (3)

Bits Per Pixel

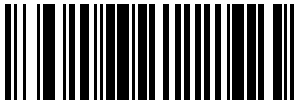
Parameter # 303 (SSI # F0h 2Fh)

Use this parameter to select the number of significant bits per pixel (BPP) to use when capturing an image.

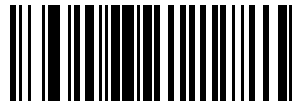
- 1 BPP - For a black and white image.
- 4 BPP - Assigns 1 of 16 levels of grey to each pixel.
- 8 BPP - Assigns 1 of 256 levels of grey to each pixel.



NOTE: The imager ignores these settings for JPEG file formats, which only support 8 BPP. TIFF file formats only support 4 BPP and 8 BPP. Selecting **1 BPP** for TIFF applies the 4 BPP option.



1 BPP (0)



4 BPP (1)



*8 BPP (2)

Camera Button

Parameter # 1716 (SSI # F8h 06h B4h)

This parameter allows the camera button on the front of the tower to capture images. This parameter allows the programmable button to be used as a camera button to capture images.

- Disable - The camera button cannot be used.
- Enable - The camera button is used. The camera button is configured for the decode sensor.
- Enable (color camera) - The camera button configured for color camera sensor. The color camera must be attached.



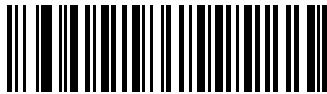
NOTE: The parameter is only valid if the scanner is in USB SNAP! with Imaging mode (see [USB Device Type](#)).

When the Camera Button is enabled, pressing the programmable button enacts the following sequence:



NOTE: You can either press and hold the programmable button for half a second or press it briefly twice.

1. The scanner enters Snapshot Mode.
 - Scanner's LED blinks green in 1-second intervals.
2. The scanner adjusts to the lighting conditions for >2 seconds.
3. An image is captured with the camera.
4. The scanner returns to Decode Mode.



*Disable Camera Button (0)



Enable Camera Button (1)



Enable Camera Button: Color Camera (2)

Camera Button Delay

Parameter # 1717 (SSI # F8h 06h B5h)

This parameter controls the time delay between pressing the camera button and capturing the image. This parameter is only applicable in Presentation Mode.

This delay allows the user time to place the item into the proper position for capturing the image. Units of time are in increments of 100 ms.

Range: 0-255 ms.

Image Capture Preferences

Scan Camera Shutter Delay to set a time delay value, and then scan three barcodes from [Numeric Barcodes](#). Enter a leading zero for single-digit numbers. To correct an error or change a selection, scan [Cancel](#).



Camera Shutter Delay

Color Camera Mode

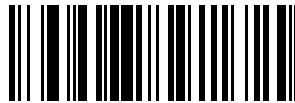
Parameter # 2385 (SSI # F8h 09h 51h)

Supports color camera streaming video when the scanner is in object detect mode. Scan one of the following barcodes to set up the scanner for the appropriate color camera mode.

- 0* - Keep this setting if the color camera is **not** set to Video Mode = 2/Continuous Mode (the default mode).
- 2 – Select this setting when the color camera is set to Video Mode = 2/Continuous Mode.



0*



2

Electronic Article Surveillance (EAS)

You can program the scanner to perform various functions, or activate different features. This section describes the Electronic Article Surveillance (EAS) features and provides programming options for selecting these features.

The scanner ships with the settings shown in [EAS Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

EAS Parameter Defaults

This section lists EAS parameter defaults. Change these values in one of two ways:

- Scan the appropriate options in this section. The new value replaces the standard default value in memory. To recall default parameter values, see [Default Parameters](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).



NOTE: EAS LED behavior depends on the EAS device used. In a Sensormatic EAS system, the EAS LED is always on, and blinks when a tag is detected. For a Checkpoint EAS system, scan [EAS LED On Mode](#) to turn on the EAS LED. The LED does not blink.

Table 17 EAS Parameter Defaults

Parameter	Parameter Number	Default
EAS Parameters		
Operating Modes	977	EAS Disable Mode
Sensormatic Deactivation Timeout	982	10 seconds
Sensormatic EAS Deactivation	979	Enable
Sensormatic EAS Soft Tag Beeps	984	Soft Tag Beep 1
Sensormatic Hard Tag Beeps	985	Hard Tag Beep 1
Sensormatic EAS Tag Detected Any Time Beep	980	Enable
Sensormatic Deactivation Fail Beep	1213	Disable
Sensormatic Request Communication/Connection Message	978	Enable
Sensormatic Request Voltage Message	1130	Enable
Sensormatic Request Scan Time Message	1136	Enable
Checkpoint Interlock Polarity	983	Active Low

Table 17 EAS Parameter Defaults (Continued)

Parameter	Parameter Number	Default
EAS Deactivation Override Button	981	Enable
EAS Checkpoint Pulse	2102	0

EAS Parameters

Use these parameters with EAS.

EAS Operating Modes

Parameter # 977

In addition to EAS preferences, the following EAS operating modes for the scanner enable EAS functionality, independent of whether EAS equipment is connected.

The installer must match the mode with the installed equipment. Enabling a mode without EAS equipment, or with the wrong equipment installed, results in EAS error messages.

Select the appropriate mode to configure the scanner with the selected mode.

- [Sensormatic Auto Mode](#)
- [Sensormatic Always Enable Deactivation Mode](#)
- [Sensormatic Barcode Interlock Mode](#)
- [Sensormatic Barcode Auto Interlock Mode](#)
- [Barcode Hold Off Mode](#)
- [Sensormatic Scan Enable Interlock Mode](#)
- [Checkpoint Barcode Interlock Mode](#)
- [Checkpoint Scan Enable Interlock Mode](#)
- [EAS LED On Mode](#)
- [EAS Disable Mode](#)

Sensormatic Auto Mode

This mode depends on the **Scan Enable Time** value the scanner reads from the Sensormatic ScanMax Pro control box, set by Sensormatic during installation.

- If the **Scan Enable Time** equals 0 seconds or 30 seconds, the scanner operates in [Sensormatic Scan Enable Interlock Mode](#).
- If the **Scan Enable Time** is set from 1 - 29 seconds, tag deactivation is active following a barcode decode, and remains active until this timer expires.



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



Sensormatic Auto Mode (0)

Sensormatic Always Enable Deactivation Mode

Tag deactivation is always enabled when the scanner is powered on.



NOTE: In this mode, the scanner always deactivates tags in the deactivation field.



Sensormatic Always Enable Deactivation Mode (1)

Sensormatic Barcode Interlock Mode

Tag deactivation is enabled only after a barcode is decoded.

The tag deactivation time uses the value set for [Sensormatic Deactivation Timeout](#).



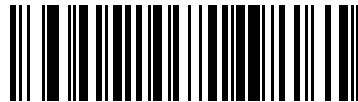
NOTE: Tags in the deactivation field can also be deactivated during the deactivation time.



Sensormatic Barcode Interlock Mode (2)

Sensormatic Barcode Auto Interlock Mode

Tag deactivation is enabled only after a barcode is decoded. The deactivation state only lasts 1.2 seconds to avoid subsequent tag deactivation.



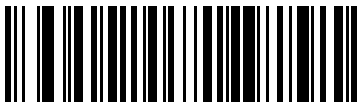
Sensormatic Barcode Auto Interlock Mode (3)

Barcode Hold Off Mode

If the scanner detects a tag, it does not decode barcodes (the scanner does not beep or transmit to the host) until the tag is deactivated.



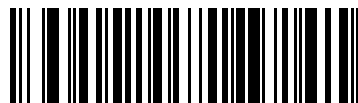
NOTE: A barcode decode does not occur if a hard tag is detected until the tag is removed from the detection field.



Barcode Hold Off Mode (4)

Sensormatic Scan Enable Interlock Mode

If the host (POS application) sends a **Scan Enable** message to the scanner, the deactivated tag is enabled. If the host sends a Scan Disable message, the deactivated tag is disabled.



Sensormatic Scan Enable Interlock Mode (5)

Checkpoint Barcode Interlock Mode

This mode enables Checkpoint tag deactivation for 3 seconds after a barcode is decoded. The Checkpoint device controls all audible and visual feedback (the scanner does not produce audio and visual feedback for tag detection or tag deactivation).

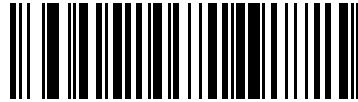
The Checkpoint installer can also set this in the Checkpoint device.



Checkpoint Barcode Interlock Mode (6)

Checkpoint Scan Enable Interlock Mode

If the host (POS application) sends a **Scan Enable** message to the scanner, tag deactivation is active. If the host sends a Scan Disable message, tag deactivation is inactive. Tag deactivation is enabled on power on.



Checkpoint Scan Enable Interlock Mode (7)

EAS LED On Mode

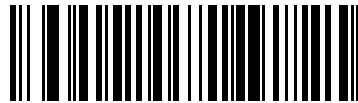
This mode turns on the EAS LED. If there is EAS equipment, it controls EAS tag detection and deactivation.



EAS LED On Mode (9)

EAS Disable Mode

Select this mode if the scanner does not have a connected EAS device. If an EAS device is accidentally connected to the scanner, the scanner does not apply any actions to the EAS device.



*EAS Disable Mode (8)

Sensormatic Deactivation Timeout

Parameter # 982

This parameter determines the time that EAS tag deactivation is allowed after a barcode decode.

This option only applies to [Sensormatic Barcode Interlock Mode](#).



NOTE: When a tag is deactivated, additional deactivations can occur if the deactivation period is still active.

To set the EAS deactivation time from 1 to 29 seconds, scan Sensormatic Deactivation Timeout, and then scan two numeric barcodes from [Numeric Barcodes](#). Enter a leading zero for single-digit numbers. The default is 10.

For example, to set the deactivation time period to 8 seconds, scan Sensormatic Deactivation Timeout, and then scan the 0 and 8 barcodes. To correct an error or change the selection, scan [Cancel](#).



Sensormatic Deactivation Timeout

Sensormatic EAS Deactivation

Parameter # 979

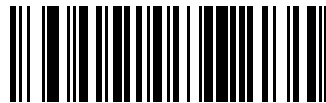
This parameter enables deactivating of soft tags.

Choose one of the following:

- Enabled - EAS soft tags are deactivated.
- Disabled - EAS soft tags are not deactivated.



*Sensormatic Enable EAS Deactivation (1)



Sensormatic Disable EAS Deactivation (0)

Sensormatic EAS Beeps

The following parameters set an audible alert upon Sensormatic EAS tag detection and/or deactivation. These modes have no affect if using Checkpoint equipment.

The following table lists the programmable tag-related beeps, as well as the non-programmable EAS communication beeps.

Table 18 Sensormatic Beep Types

Beep Type	Description
Sensormatic EAS Tag-related Beeps	
Sensormatic EAS Soft Tag Beeps	A soft tag is deactivated.
Sensormatic EAS Hard Tag Beeps	The scanner conclusively detected a hard tag.
Sensormatic Tag Detected Any Time Beep	A soft or hard tag is in the detected field.
Sensormatic EAS Deactivation Fail Beep	A tag is not deactivated, is considered live, and the type of tag (soft or hard) cannot be determined.
Sensormatic EAS Communication Beeps	
Sensormatic EAS Communication Disconnect Beep (high-low)	The scanner disconnected from the Sensormatic control box.
Sensormatic EAS Communication Reconnect Beep (low-high)	The scanner reconnected to the Sensormatic control box.

Sensormatic EAS Soft Tag Beeps

Parameter # 984

This parameter enables soft tag beeps upon deactivation.

Choose one of the following:

- Sensormatic EAS Soft Tag Beep 1 - sound a short low beep when an EAS soft tag is deactivated.
- Sensormatic EAS Soft Tag Beep 2 - sound a medium duration low beep when an EAS soft tag is deactivated.
- Disable EAS Soft Tag Beep - sound no beep when an EAS soft tag is deactivated.



*Sensormatic EAS Soft Tag Beep 1 (1)



Sensormatic EAS Soft Tag Beep 2 (2)



Disable EAS Soft Tag Beep (0)

Sensormatic EAS Hard Tag Beeps

Parameter # 985

This parameter enables hard tag beeps upon detection.

Choose one of the following:

- Sensormatic EAS Hard Tag Beep 1 - sound a short high beep when an EAS hard tag is detected.
- Sensormatic EAS Hard Tag Beep 2 - sound a medium duration high beep when an EAS hard tag is detected.
- Sensormatic EAS Hard Tag Double Beep 3 - sound two short high beeps when an EAS hard tag is detected.
- Disable EAS Hard Tag Beep - sound no beep when an EAS hard tag is detected.



*Sensormatic EAS Hard Tag Beep 1 (1)



Sensormatic EAS Hard Tag Beep 2 (2)



Disable EAS Hard Tag Beep (0)

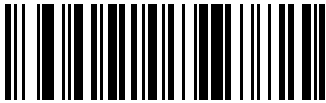
Sensormatic EAS Tag Detected Any Time Beep

Parameter # 980

This parameter enables the scanner to beep when a soft or hard tag is detected.

Choose one of the following:

- Enabled - scanner detects soft or hard tags and beeping is activated.
- Disabled - scanner detects soft or hard tags and beeping is not activated.



*Enable Detected Any Time Beep (1)



Disable Detected Any Time Beep (0)

Sensormatic EAS Deactivation Fail Beep

Parameter # 1213

This parameter enables the scanner to sound a deactivation fail beep if a tag is not deactivated, is considered live, and the type of tag (soft or hard) cannot be determined.

Choose one of the following:

- Enabled - sounds a deactivation fail beep.
- Disabled - does not sound a deactivation fail beep.



Enable Deactivation Fail Beep (1)



*Disable Deactivation Fail Beep (0)

Sensormatic Request Messages

The following parameters enable the three EAS message types.

- Request Communication/Connection Message
- Request Voltage Message
- Request Scan Time Message

Enabling a message type periodically sends messages between the scanner and the control box, approximately every 2 seconds. Error messages display on the 7-segment display. Refer to the Scanner Integrator Guide , p/n 72E-172632-xx, for error messages.

Sensormatic Request Communication/Connection Message

Parameter # 978

This parameter enables communication with the control box.

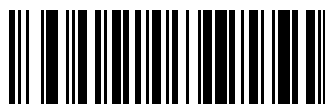
Choose one of the following:

- Enabled - facilitates communication.
- Disabled - does not enable communication.

Enable this to allow communication with the control box.



*Enable Communication/Connection Message (1)



Disable Communication/Connection Message (0)

Sensormatic Request Voltage Message

Parameter # 1130

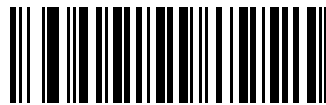
This parameter enables messages to be sent about dangerous voltage levels.

Choose one of the following:

- Enabled - messages can be sent regarding dangerous voltage levels.
- Disabled - messages cannot be sent regarding dangerous voltage levels.



*Enable Voltage Message (1)



Disable Voltage Message (0)

Sensormatic Request Scan Time Message

Parameter # 1136

This parameter enables sending messages to validate that scan time is synchronized between the scanner and the control box.



NOTE: This parameter applies if [Sensormatic Barcode Auto Interlock Mode](#) is enabled.

Choose one of the following:

- Enabled - messages can be sent to validate that scan time is synchronized between the scanner and the control box.
- Disabled - messages cannot be sent to validate that scan time is synchronized between the scanner and the control box.



*Enable Scan Time Message (1)



Disable Scan Time Message (0)

Checkpoint Interlock Polarity

Parameter # 983

This parameter determines the interlock pulse polarity required to deactivate a tag.



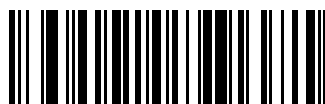
NOTE: The polarity must match the setting in the EAS control box.

Choose one of the following options:

- Active Low - An active low pulse initiates tag deactivation.
- Active High - An active high pulse initiates tag deactivation.



Active Low (0)



*Active High (1)

Deactivation Override Button

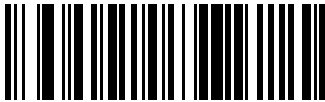
Parameter # 981

This parameter determines if pressing the EAS button on the scanner deactivates soft tags on items without decoding the barcode on the item.

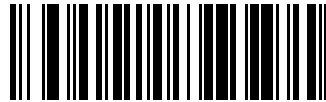
If you select Enable EAS Deactivation Override Button, the operator can press the EAS button on the scanner to override EAS settings. After pressing the button, the operator has 3 seconds to present a soft tag for deactivation. During this period barcodes are not decoded. The scanner exits override mode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

Enabling this override is useful in the following situations:

- In Interlock mode, if a barcode cannot be scanned, the operator must manually enter the barcode data. After entering the data and pressing the EAS button, the operator has 3 seconds to present a soft tag to deactivate.
- If a barcode is scanned but the tag was not deactivated, the operator cannot pass the item through the deactivation area a second time to deactivate the tag. This would decode the barcode a second time, charging the item twice. Instead, after pressing the EAS button, the operator can present a soft tag for deactivation within the next 3 seconds without re-decoding the barcode.



*Enable Deactivation Override Button (1)



Disable Deactivation Override Button (0)

EAS Checkpoint Pulse

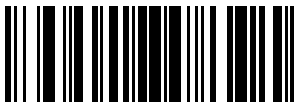
Parameter # 2102

This parameter sets the EAS Checkpoint Pulse.

To set a value, scan EAS Checkpoint Pulse, and then scan three barcodes from [Numeric Barcodes](#). Enter a leading zero for single-digit numbers. The default value is 0.



NOTE: To correct an error or change a selection, scan [Cancel](#).



EAS Checkpoint Pulse

Auxiliary Scanner Barcodes

The parameter barcodes in this section configure the scanner/scale for connection to an auxiliary scanner. The auxiliary scanner requires its own configuration, and should be programmed with matching settings found in the auxiliary scanner's Product Reference Guide.

In addition to these settings the auxiliary scanner must be independently configured as a standalone scanner, as though it were connected directly to a host. An auxiliary scanner connected to a the scanner/scale does not assume its configuration.



NOTE: For additional information about auxiliary port configuration, see [RS-232 Device Port Configuration](#) and the settings for Aux 1/Aux 2 Bauds, Stop Bits, Data Bits, and Parity.

For detailed technical information about the scanner/scale including installation, setting up interfaces, calibrating the scale, and operation refer to the integration guide.



NOTE: Auxiliary RS-232 scanners should only be attached/detached when the scanner/scale is powered off.

Auxiliary Scanner Defaults

The following table provides auxiliary scanner connection parameter defaults.

Table 19 Auxiliary Scanner Defaults

Parameter	Parameter Number ¹	SSI Number ²	Default
Auxiliary Scanner Decode with Unknown Type	1124	F8h 04h 64h	Send Unknown as Code 39
Host Type	N/A	N/A	Zebra Scanner Auto Switch
Baud Rate ³	N/A	N/A	9600
Data Bits ³	N/A	N/A	8 Data Bits
Stop Bits ³	N/A	N/A	One Stop
Parity ³	N/A	N/A	No Parity
Host RTS State	N/A	N/A	Low RTS
USB Auxiliary Ports	1822	F8h 07h 1Eh	Enable

Table 19 Auxiliary Scanner Defaults (Continued)

Parameter	Parameter Number ¹	SSI Number ²	Default
Aux 1 Baud ⁴	1328	F8h 05h 30h	16/Inherit ⁶
Aux 1 Data Bits ⁴	1331	F8h 05h 33h	3/Inherit ⁶
Aux 1 Stop Bits ⁴	1329	F8h 05h 31h	2/Inherit ⁶
Aux 1 Parity ⁴	1330	F8h 05h 32h	6/Inherit ⁶
Aux 2 Baud Rate ⁵	1332	F8h 05h 34h	16/Inherit ⁶
Aux 2 Data Bits ⁵	1335	F8h 05h 37h	3/Inherit ⁶
Aux 2 Stop Bits ⁵	1333	F8h 05h 35h	2/Inherit ⁶
Aux 2 Parity ⁵	1334	F8h 05h 36h	6/Inherit ⁶
Beep On Aux Decode	1695	F8h 06h 9Fh	Disable
1. Parameter number decimal values are used for programming via RSM commands. 2. SSI number hex values are used for programming via SSI commands. 3. Applies to an attached scanner regardless of whether or not it is connected to the auxiliary 1 port or the auxiliary 2 port. See RS-232 Device Port Configuration. 4. Setting applies specifically to the Aux 1 port. 5. Setting applies specifically to the Aux 2 port. 6. Inherit means the default is based on the device assigned to the auxiliary port (see RS-232 Device Port Configuration).			

Auxiliary Scanner Decode with Unknown Type

Parameter # 1124 (SSI # F8h 04h 64h)

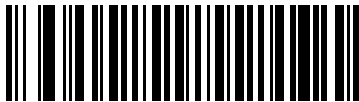
If an auxiliary scanner is connected via SSI over RS-232 for Zebra scanners, HID Keyboard for non-Zebra scanners, or standard RS-232, and the Send Raw Decode Data option is enabled, the host scanner transmits decode data with the code type set by this parameter. The default is value 1 (Send Unknown as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



NOTE: If the device is set to any IBM host type, Auxiliary Scanner Decode with Unknown Type is not applicable.



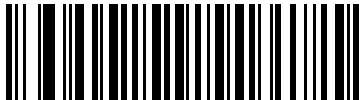
*Send Unknown as Code 39 (1)



Send Unknown as Code 128 (3)



Send Unknown as PDF417 (11)



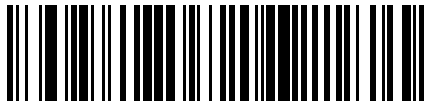
Send Unknown as Data Matrix (1B)

Host Type

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



NOTE: Disconnect the auxiliary scanner from the scanner prior to changing the auxiliary scanner host type. If the auxiliary scanner is not disconnected from the scanner, reboot the scanner after changing the host type.



Standard RS-232

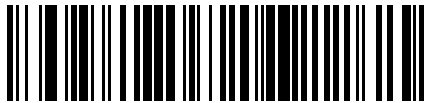


Wincor-Nixdorf RS-232 Mode B

Zebra Scanner Auto Switch Mode

In this mode the scanner decides which protocol a scanner uses based on the primary host.

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



*Zebra Scanner Auto Switch

Baud Rate

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



NOTE: The scanner does not support baud rates below 9600.



*Baud Rate 9600



Baud Rate 19200



Baud Rate 38400



Baud Rate 115200

Baud Rate (continued)



Baud Rate 230400



Baud Rate 460800



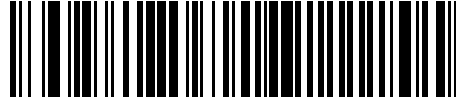
Baud Rate 921600

Data Bits

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



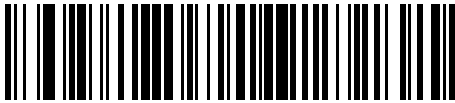
7 Data Bits



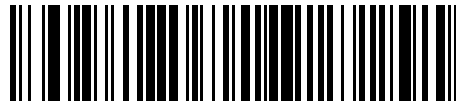
*8 Data Bits

Stop Bits

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



*One Stop Bits

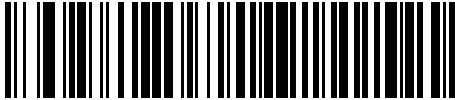


Two Stop Bits

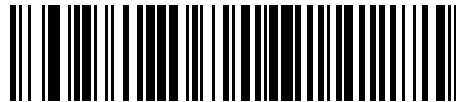
Parity

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

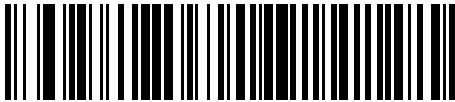
- Select **Odd Parity** and the parity bit has a value 0 or 1, based on data, to ensure that an odd number of 1 bits is contained in the coded character.
- Select **Even Parity** and the parity bit has a value 0 or 1, based on data, to ensure that an even number of 1 bits is contained in the coded character.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



*No Parity



Even Parity



Odd Parity

Host RTS State

This parameter sets the idle state of the auxiliary serial host RTS line. Select **Low RTS** or **High RTS** line state.



*Low RTS

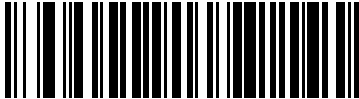


High RTS

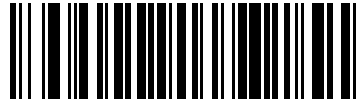
USB Auxiliary Ports

Parameter # 1822 (SSI # F8h 07h 1Eh)

This parameter enables or disables all three USB auxiliary ports.



*Enable All USB Auxiliary Ports



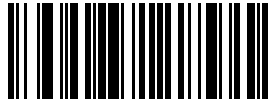
Disable All USB Auxiliary Ports

Aux 1 Baud Rate

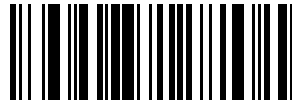
Parameter # 1328 (SSI # F8h 05h 30h)

Set the Aux 1 Baud Rate to match the device connected to the auxiliary 1 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

- *16/0x0Fh = Inherit
- 4/0x04 = Baud Rate 2400
- 5/0x05 = Baud Rate 4800
- 6/0x06 = Baud Rate 9600
- 7/x07 = Baud Rate 19200
- 8/0x08 = Baud Rate 38400
- 11/0x0B = Baud Rate 115200



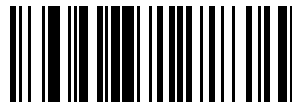
*Aux 1 Baud Rate Inherit



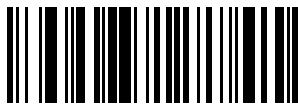
Aux 1 Baud Rate 2400



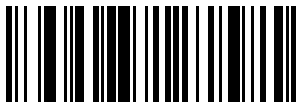
Aux 1 Baud Rate 4800



Aux 1 Baud Rate 9600



Aux 1 Baud Rate 19200



Aux 1 Baud Rate 38400



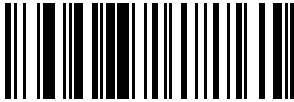
Aux 1 Baud Rate 115200

Aux 1 Data Bits

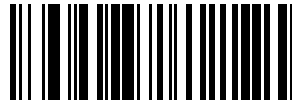
Parameter # 1331 (SSI # F8h 05h 33h)

Set Aux 1 Data Bits to match the device connected to the auxiliary 1 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

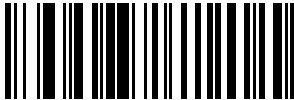
- *3/0x03 = Inherit
- 0/0x00 = 7 Data Bits
- 1/0x01 = 8 Data Bits



*Aux 1 Data Bits Inherit



Aux 1 Data Bits 7



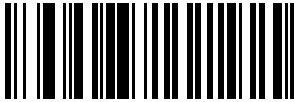
Aux 1 Data Bits 8

Aux 1 Stop Bits

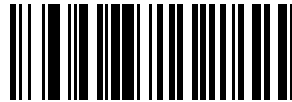
Parameter # 1329 (SSI # F8h 05h 31h)

Set Aux 1 Stop Bits to match the device connected to the auxiliary 1 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

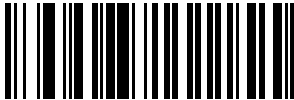
- *2/0x02 = Inherit
- 0/0x00 = 1 Stop Bit
- 1/0x01 = 2 Stop Bits



*Aux 1 Stop Bits Inherit



Aux 1 Stop Bits 1



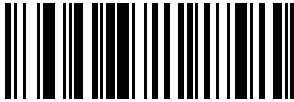
Aux 1 Stop Bits 2

Aux 1 Parity

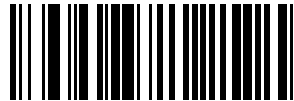
Parameter # 1330 (SSI # F8h 05h 32h)

Set Aux 1 Parity to match the device connected to the auxiliary 1 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

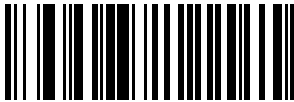
- *6/0x06h = Inherit
- 0/0x00 = Odd
- 1/0x01 = Even
- 2/0x02 = Mark
- 3/0x03 = Space
- 4/0x04 = None



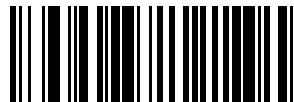
*Aux 1 Parity Inherit



Aux 1 Parity Odd



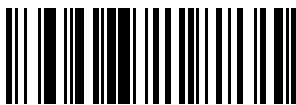
Aux 1 Parity Even



Aux 1 Parity Mark



Aux 1 Parity Space



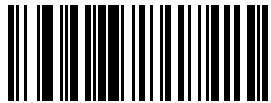
Aux 1 Parity None

Aux 2 Baud Rate

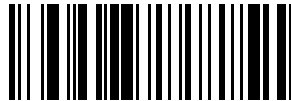
Parameter # 1332 (SSI # F8h 05h 34h)

Set Aux 2 Baud Rate to match the device connected to the auxiliary 2 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

- *16/0x0Fh = Inherit
- 4/0x04 = Baud Rate 2400
- 5/0x05 = Baud Rate 4800
- 6/0x06 = Baud Rate 9600
- 7/x07 = Baud Rate 19200
- 8/0x08 = Baud Rate 38400
- 11/0x0B = Baud Rate 115200



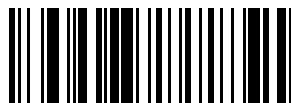
*Aux 2 Baud Rate Inherit



Aux 2 Baud Rate 2400



Aux 2 Baud Rate 4800



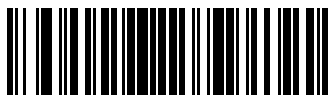
Aux 2 Baud Rate 9600



Aux 2 Baud Rate 19200



Aux 2 Baud Rate 38400



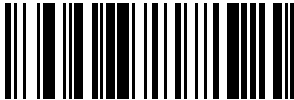
Aux 2 Baud Rate 115200

Aux 2 Data Bits

Parameter # 1335 (SSI # F8h 05h 37h)

Set Aux 2 Data Bits to match the device connected to the auxiliary 2 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

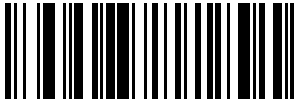
- *3/0x03 = Inherit
- 0/0x00 = 7 Data Bits
- 1/0x01 = 8 Data Bits



*Aux 2 Data Bits Inherit



Aux 2 Data Bits 7



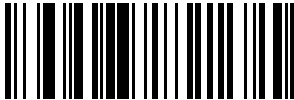
Aux 2 Data Bits 8

Aux 2 Stop Bits

Parameter # 1333 (SSI # F8h 05h 35h)

Set Aux 2 Stop Bits to match the device connected to the auxiliary 2 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

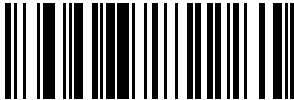
- *2/0x02 = Inherit
- 0/0x00 = 1 Stop Bit
- 1/0x01 = 2 Stop Bits



*Aux 2 Stop Bits Inherit



Aux 2 Stop Bits 1



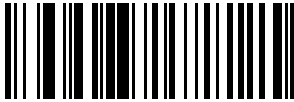
Aux 2 Stop Bits 2

Aux 2 Parity

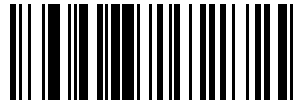
Parameter # 1334 (SSI # F8h 05h 36h)

Set Aux 2 Parity to match the device connected to the auxiliary 2 port. The default value is based on the information in [Device Specific Default Values \(Inherited Defaults\)](#) , and in many cases matches the connected device.

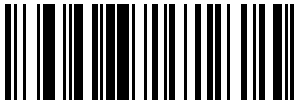
- *6/0x06h = Inherit
- 0/0x00 = Odd
- 1/0x01 = Even
- 2/0x02 = Mark
- 3/0x03 = Space
- 4/0x04 = None



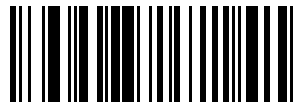
*Aux 2 Parity Inherit



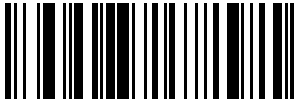
Aux 2 Parity Odd



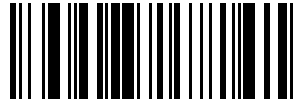
Aux 2 Parity Even



Aux 2 Parity Mark



Aux 2 Parity Space

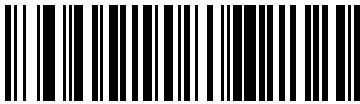


Aux 2 Parity None

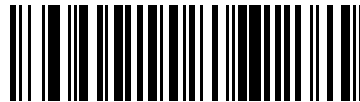
Beep on Aux Decode

Parameter # 1695 (SSI # F8h 06h 9Fh)

Use this parameter to set whether the scanner issues a beep when it receives a decode from an attached auxiliary scanner.



*Do Not Beep On Aux Decode



Beep On Aux Decode

SSI Interface

This section describes the system requirements of the Simple Serial Interface (SSI), which provides a communications link between Zebra decoders (e.g., scan engines, slot scanners, hand-held scanners, two-dimensional scanners, hands-free scanners, and RF base stations) and a serial host. It provides the means for the host to control the decoder or scanner.

Communication

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

The host and the scanner exchange messages in packets. A packet is a collection of bytes framed by the proper SSI protocol formatting bytes. The maximum number of bytes per packet that the SSI protocol allows for any transaction is 257 (255 bytes + 2 byte checksum).

Depending on the configuration, the scanner can send decode data as ASCII data (unpacked), or as part of a larger message (packed).

SSI performs the following functions for the host device:

- Maintains a bi-directional interface with the scanner
- Allows the host to send commands that control the scanner
- Passes data from the scanner to a host device in SSI packet format or straight decode message.

The SSI environment consists of a scanner, a serial cable which attaches to the host device, and if required, a power supply.

SSI transmits all decode data including special formatting (for example, AIM ID). Parameter settings can control the format of the transmitted data.

The scanner can also send parameter information, product identification information, or event codes to the host.

All commands sent between the scanner and host must use the format described in the SSI Message Formats section. [SSI Transactions](#) describes the required sequence of messages in specific cases.

SSI Commands

The following table lists all the SSI opcodes the scanner supports. The host transmits opcodes designated type H. The scanner (decoder) transmits type D opcodes and transmits Host/Decoder (H/D) types.

Table 20 SSI Commands

Name	Type	Opcode	Description
AIM_OFF	H	0xC4	Deactivate aiming pattern.
AIM_ON	H	0xC5	Activate aiming pattern.
BEEP	H	0xE6	Sound the beeper.
CAPABILITIES_REPLY	D	0xD4	Reply to CAPABILITIES_REQUEST; contains a list of the capabilities and commands the decoder supports.
CAPABILITIES_REQUEST	H	0xD3	Request capabilities report from the decoder.
CMD_ACK	H/D	0xD0	Positive acknowledgment of received packet.
CMD_NAK	H/D	0xD1	Negative acknowledgment of received packet.
DECODE_DATA	D	0xF3	Decode data in SSI packet format.
EVENT	D	0xF6	Event indicated by associated event code.
LED_OFF	H	0xE8	De-activate LED output.
LED_ON	H	0xE7	Activate LED output.
PARAM_DEFAULTS	H	0xC8	Set parameter default values.
PARAM_REQUEST	H	0xC7	Request values of certain parameters.
PARAM_SEND	H/D	0xC6	Send parameter values.
REPLY_REVISION	D	0xA4	Reply to REQUEST_REVISION, contains the decoder's software/hardware configuration.
REQUEST_REVISION	H	0xA3	Request the decoder's configuration.
SCAN_DISABLE	H	0xEA	Prevent the operator from scanning barcodes.
SCAN_ENABLE	H	0xE9	Permit barcode scanning.
START_DECODE	H	0xE4	Tell the decoder to attempt to decode a barcode.
STOP_DECODE	H	0xE5	Tell the decoder to abort a decode attempt.

For details of the SSI protocol, refer to the Simple Serial Interface Programmer's Guide.

SSI Transactions

General Data Transactions

This section describes general data transactions between the scanner and a host.

ACK/NAK Handshaking

If you enable ACK/NAK handshaking (the default), all packeted messages must have a CMD_ACK or CMD_NAK response, unless the command description states otherwise. Zebra recommends leaving this handshaking enabled to provide feedback to the host. Raw decode data and WAKEUP do not use ACK/NAK handshaking since they are not packeted data.

Following is an example of a problem which can occur if you disable ACK/NAK handshaking:

- The host sends a PARAM_SEND message to the scanner to change the baud rate from 9600 to 19200.
- The scanner cannot interpret the message.
- The scanner does not implement the change the host requested.
- The host assumes that the parameter change occurred and acts accordingly.
- Communication is lost because the change did not occur on both sides.

If you enable ACK/NAK handshaking, the following occurs:

- The host sends a PARAM_SEND message.
- The scanner cannot interpret the message.
- The scanner CMD_NAKs the message.
- The host resends the message.
- The scanner receives the message successfully, responds with CMD_ACK, and implements parameter changes.

Decoded Data Transmission

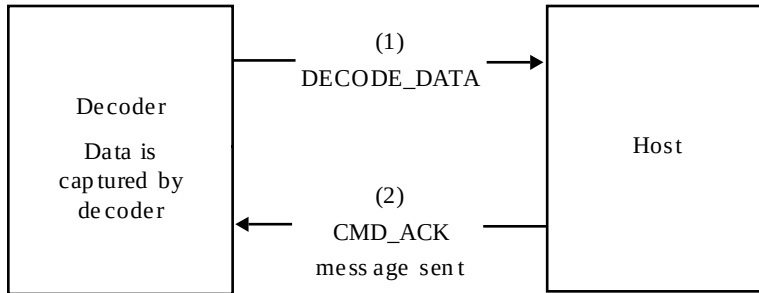
The [Decode Data Packet Format](#) parameter controls how decode data is sent to the host. Set this parameter to send the data in a DECODE_DATA packet. Clear this parameter to transmit the data as raw ASCII data.



NOTE: When transmitting decode data as raw ASCII data, ACK/NAK handshaking does not apply regardless of the state of the ACK/NAK handshaking parameter.

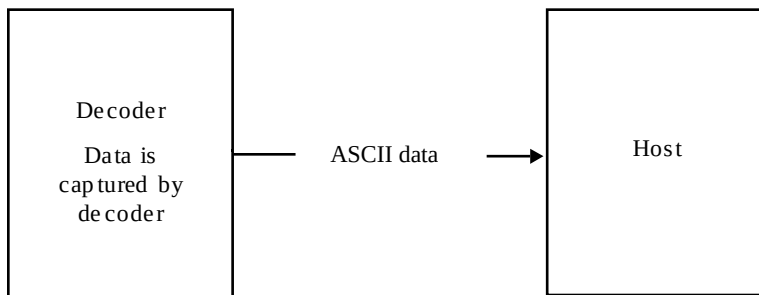
ACK/NAK Enabled and Packeted Data

The scanner sends a DECODE_DATA message after a successful decode. The scanner waits for a programmable timeout for a CMD_ACK response. If it does not receive the response, the scanner tries to send two more times before issuing a host transmission error. If the scanner receives a CMD_NAK from the host, it may attempt a retry depending on the cause field of the CMD_NAK message.



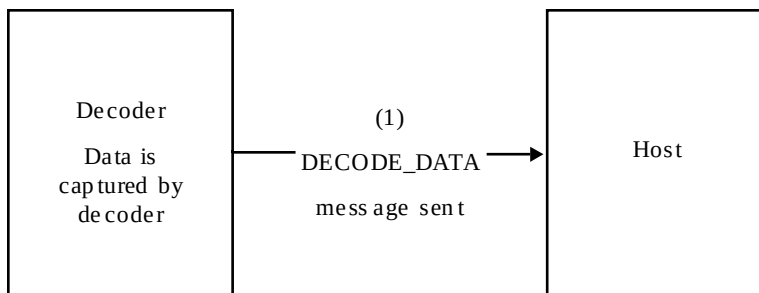
ACK/NAK Enabled and Unpacketed ASCII Data

Even if ACK/NAK handshaking is enabled, no handshaking occurs because handshaking applies only to packeted data. In this example the packeted_decode parameter is disabled.



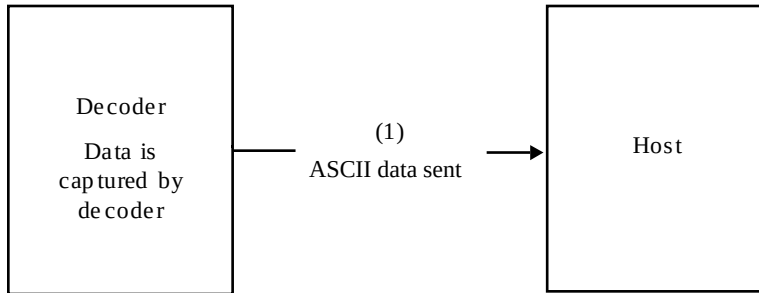
ACK/NAK Disabled and Packeted DECODE_DATA

In this example ACK/NAK does not occur even though packeted_decode is enabled because the ACK/NAK handshaking parameter is disabled.



ACK/NAK Disabled and Unpacketed ASCII Data

The decoder sends captured data to the host.



Communication Summary

RTS/CTS Lines

All communication must use RTS/CTS handshaking as described in the Simple Serial Interface Programmer's Guide, p/n 72E-40451-xx. If bypassing hardware handshaking, the host must send the WAKEUP command before all other communication or the first byte of a message can be lost during the scanner wakeup sequence. Zebra recommends not bypassing RTS/CTS hardware handshaking.

ACK/NAK Option

ACK/NAK handshaking is enabled by default and Zebra recommends leaving it enabled. Disabling this can cause communication problems, as handshaking is the only acknowledgment that a message was received correctly. ACK/NAK is not used with unpackaged decode data regardless of whether it is enabled.

Number of Data Bits

All communication with the scanner must use 8-bit data.

Serial Response Timeout

The [Host Serial Response Timeout](#) parameter determines how long to wait for a handshaking response before trying again or aborting further attempts. Set the same value for both the host and scanner.



NOTE: You can temporarily change the [Host Serial Response Timeout](#) when the host takes longer to process an ACK or longer data string. Zebra does not recommend frequent permanent changes due to limited write cycles of non-volatile memory.

Retries

The host resends data twice after the initial send if the scanner does not respond with an ACK or NAK (if ACK/NAK handshaking is enabled), or response data (for example, PARAM_SEND, REPLY_REVISION). If the scanner replies with a NAK RESEND, the host resends the data. All resent messages must have the resend bit set in the Status byte.

The scanner resends data two times after the initial send if the host fails to reply with an ACK or NAK (if ACK/NAK handshaking is enabled).

Baud Rate, Stop Bits, Parity, Response Timeout, ACK/NAK Handshaking

If you use PARAM_SEND to change these serial parameters, the ACK response to the PARAM_SEND uses the previous values for these parameters. The new values then take effect for the next transaction.

Errors

The scanner issues a communication error when:

- The CTS line is asserted when the scanner tries to transmit, and is still asserted on each of two successive retries
- The scanner does not receive an ACK or NAK after initial transmit and two resends.

SSI Communication Notes

- When not using hardware handshaking, space messages sufficiently apart. The host must not communicate with the scanner if the scanner is transmitting.
- When using hardware handshaking, frame each message properly with handshaking signals. Do not try to send two commands within the same handshaking frame.
- There is a permanent/temporary bit in the PARAM_SEND message. Removing power from the scanner discards temporary changes. Permanent changes are written to non-volatile memory. Frequent changes shorten the life of the non-volatile memory.

Encapsulation of RSM Commands/Responses over SSI

The SSI protocol allows the host to send a command that is variable in length up to 255 bytes. Although there is a provision in the protocol to multi-packet commands from the host, the scanner does not support this. The host must fragment packets using the provisions in the RSM protocol.

Command Structure

Byte	7	6	5	4	3	2	1	0
0	Length (not including the checksum)							
1	SSI_MGMT_COMMAND (0x80)							
2	Message Source (4 - Host)							
3	Reserved (0)			Reserved (0)		Reserved (0)	Cont'd packet	Retransmit
4	Payload data (see the following example)							
...								
Length -1								
Length	2's complement checksum (MSB)							
Length +1	2's complement checksum (LSB)							

The expected positive response is SSI_MGMT_COMMAND which can be a multi-packet response. Devices that do not support this command respond with the standard SSI_NAK.

Response Structure

Byte	7	6	5	4	3	2	1	0
0	Length (not including the checksum)							
1	SSI_MGMT_COMMAND (0x80)							
2	Message Source (0 - Decoder)							
3	Reserved (0)			Reserved (0)		Reserved (0)	Cont'd packet	Retransmit
4	Payload data (see the following example)							
...								
Length -1								
Length	2's complement checksum (MSB)							
Length +1	2's complement checksum (LSB)							

Example Transaction

The following example illustrates how to retrieve diagnostic information (Diagnostic Testing and Reporting - Attribute #10061- decimal) from the scanner using encapsulation of RSM commands over SSI. Before sending an RSM command, the host must send the RSM Get Packet Size command to query the packet size supported by the device.

Command from Host to Query Packet Size Supported by Device

```
0A 80 04 00 00 06 20 00 FF FF FD 4E
```

Where:

- 0A 80 04 00 is encapsulation of RSM commands over SSI command header
- 00 06 20 00 FF FF is RSM Get Packet Size command
- FD 4E is SSI command checksum

Response from Device with Packet Size Information

```
0C 80 00 00 00 08 20 00 00 F0 00 F0 FD 6C
```

Where:

- 0C 80 00 00 is encapsulation of RSM command over SSI command header
- 00 08 20 00 00 F0 00 F0 is RSM Get Packet Size response
- FD 6C is SSI response checksum

Command from Host to Retrieve Diagnostic Information

```
0C 80 04 00 00 08 02 00 27 4D 42 00 FE B0
```

Where:

- 0C 80 04 00 is encapsulation of RSM commands over SSI command header
- 00 08 02 00 27 4D 42 00 is attribute Get command requesting attribute 10061 decimal
- FE B0 is SSI command checksum

Response from Device with Diagnostic Information

```
21 80 00 00 00 1D 02 00 27 4D 41 01 42 00 0E 00 00 00 00 01 03 02 03 03 03 04  
03 05 03 06 03 FF FF FC 15
```

Where:

- 21 80 00 00 00 1D 02 00 27 4D 41 01 42 00 0E 00 00 is encapsulation of RSM responses over SSI command header
- 00 00 01 03 02 03 03 03 04 03 05 03 06 03 is attribute Get response which includes diagnostic report value
- FF FF is attribute Get response, packet termination
- FC 15 is SSI response checksum

Setting SSI Parameters

You can set up a scanner with an SSI host. When using SSI, program the scanner via barcode menu or SSI hosts commands

The scanner ships with the settings shown in [SSI Interface Defaults](#) (also see for all defaults). If the default values suit requirements, programming is not necessary.

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

To return all features to default values, scan [Set Factory Defaults](#). Throughout the programming barcode menus, asterisks (*) indicate default values.

SSI Scanning Sequence Examples

In most cases scanning one barcode sets the parameter value. For example, to set the baud rate to 19,200, scan the **Baud Rate 19,200** barcode under [Baud Rate](#). The scanner issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

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

SSI Errors While Scanning

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

Simple Serial Interface Parameter Defaults

The following table lists defaults for SSI host parameters.

You can change these values in one of two ways:

- Scan the appropriate barcodes in this section. The new value replaces the standard default value in memory. To recall default parameter values, see [Default Parameters](#).
- Download data through the device's serial port using SSI. Hexadecimal parameter numbers appear in this chapter below the parameter title, and option values appear in parenthesis beneath the accompanying barcodes. Refer to the Simple Serial Interface (SSI) Programmer's Guide for detailed instructions for changing parameters using this method.

Table 21 SSI Interface Default Table

Parameter	Parameter Number	SSI Number	Default
SSI Host Parameters			
Select SSI Host	N/A	N/A	N/A
Baud Rate	156	9Ch	9600
Parity	158	9Eh	None
Check Parity	151	97h	Disable
Stop Bits	157	9Dh	1
Software Handshaking	159	9Fh	ACK/NAK
Host RTS Line State	154	9Ah	Low
Decode Data Packet Format	238	EEh	Send Raw Decode Data
Host Serial Response Timeout	155	9Bh	2 Seconds
Host Character Timeout	239	EFh	200 msec
Multipacket Option	334	F0h 4Eh	Multipacket Option 1
Interpacket Delay	335	F0h 4Fh	0 msec
Event Reporting			
Decode Event	256	F0h 00h	Disable
Boot Up Event	258	F0h 02h	Disable
Parameter Event	259	F0h 03h	Disable



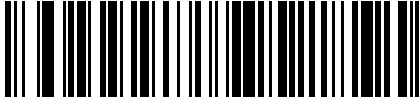
NOTE: SSI interprets Prefix, Suffix1, and Suffix2 values listed in [ASCII Character Sets](#) differently than other interfaces. SSI does not recognize key categories, only the 3-digit decimal value. The default value of 7013 is interpreted as CR only.

SSI Host Parameters

Scan barcodes to set SSI host parameters

Select SSI Host

Use this parameter to select SSI as the host interface.



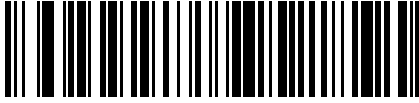
SSI Host

SSI Baud Rate

Parameter # 156 (SSI # 9Ch)

Baud rate is the number of bits of data transmitted per second.

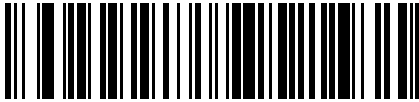
Select an option to set the scanner's baud rate to match the baud rate setting of the host device. Otherwise, data may not reach the host device or may reach it in distorted form.



*Baud Rate 9600 (0)



Baud Rate 19,200 (7)



Baud Rate 38,400 (8)



Baud Rate 57,600 (9)



Baud Rate 115,200 (10)



Baud Rate 230,400 (11)



Baud Rate 460,800 (12)



Baud Rate 921,600 (13)

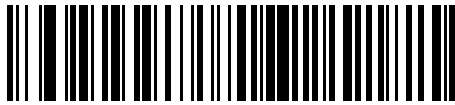
SSI Parity

Parameter # 158 (SSI # 9Eh)

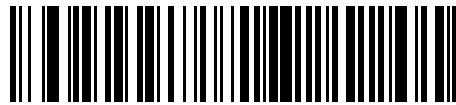
Choose whether code characters contain an odd or even number of 1 bits, or choose that no parity bit is required.

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

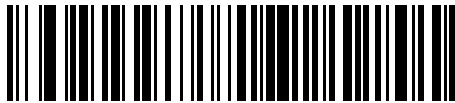
- Odd - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an odd number of 1 bits.
- Even - This sets the parity bit value to 0 or 1, based on data, to ensure that the coded character contains an even number of 1 bits.
- None - No parity bit is required.



Odd (2)



Even (1)



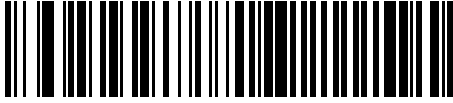
*None (0)

Check Parity

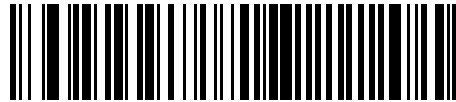
Parameter # 151 (SSI # 97h)

Choose whether to check the parity of received characters.

Use this parameter to select whether to check the parity of received characters. See [SSI Parity](#) to select the type of parity.



*Do Not Check Parity (0)



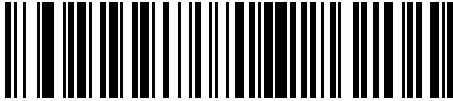
Check Parity (1)

SSI Stop Bits

Parameter # 157 (SSI # 9Dh)

The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream.

Select an option to set the number of stop bits (one or two) based on the number the receiving host can accommodate.



*1 Stop Bit (1)



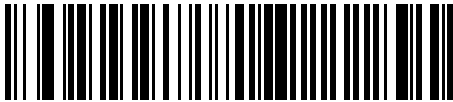
2 Stop Bits (2)

Software Handshaking

Parameter # 159 (SSI # 9Fh)

This parameter offers control of data transmission in addition to the control hardware handshaking offers. Hardware handshaking is always enabled; you cannot disable it.

- Disable ACK/NAK Handshaking - The scanner neither generates nor expects ACK/NAK handshaking packets.
- Enable ACK/NAK Handshaking - After transmitting data, the scanner expects either an ACK or NAK response from the host. The scanner also ACKs or NAKs messages from the host. The scanner waits up to the programmable [Host Serial Response Timeout](#) to receive an ACK or NAK. If the scanner does not get a response in this time, it resends its data up to two times before discarding the data and declaring a transmission error.



Disable ACK/NAK (0)



*Enable ACK/NAK (1)

Host RTS Line State

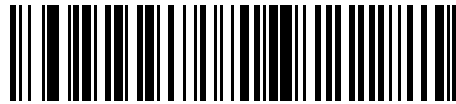
Parameter # 154 (SSI # 9Ah)

This parameter sets the expected idle state of the Serial Host RTS line.

The SSI interface is used with host applications that also implement the SSI protocol. However, you can use the scanner in a "scan-and-transmit" mode to communicate with any standard serial communication software on a host PC (see [Decode Data Packet Format](#)). If transmission errors occur in this mode, the host PC may be asserting hardware handshaking lines that interfere with the SSI protocol. Scan the High barcode to address this problem.



*Low (0)



High (1)

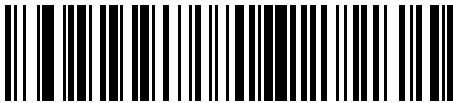
Decode Data Packet Format

Parameter # 238 (SSI # EEh)

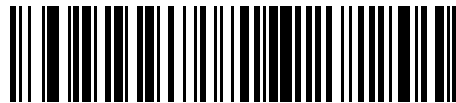
Use this parameter to select whether to transmit decoded data in raw format (unpacked), or with the packet format defined by the serial protocol.



NOTE: Selecting the raw format disables ACK/NAK handshaking for decode data.



*Send Raw Decode Data (0)



Send Packeted Decode Data (1)

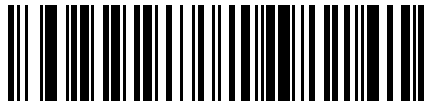
Host Serial Response Timeout (SSI)

Parameter # 155 (SSI # 9Bh)

This parameter specifies how long a scanner waits for an ACK or NAK before resending.
If the scanner wants to send, and the host has already been granted permission to send, the scanner waits for the designated timeout before declaring an error.



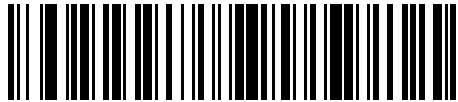
NOTE: Other values are available via SSI command.



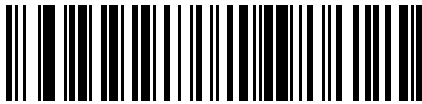
*Low - 2 Seconds (20)



Medium - 5 Seconds (50)



High - 7.5 Seconds (75)



Maximum - 9.9 Seconds (99)

Host Character Timeout

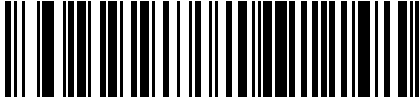
Parameter # 239 (SSI # EFh)

This parameter specifies the maximum time a scanner waits between characters transmitted by the host before discarding the received data and declaring an error.

Select an option to specify the maximum time the scanner waits from Low to High.



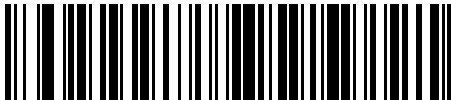
NOTE: Other values are available via SSI command.



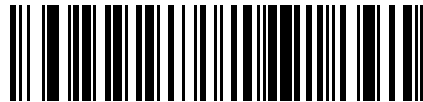
*Low - 200 msec (20)



Medium - 500 msec (50)



High - 750 msec (75)



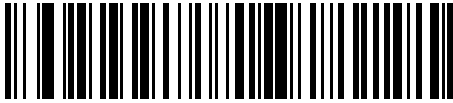
Maximum - 990 msec (99)

Multipacket Option

Parameter # 334 (SSI # F0h 4Eh)

This parameter controls ACK/NAK handshaking for multi-packet transmissions.

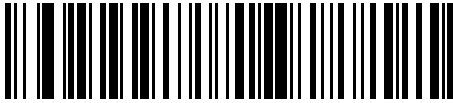
- Multi-Packet Option 1 - The host sends an ACK/NAK for each data packet during a multi-packet transmission.
- Multi-Packet Option 2 - The scanner sends data packets continuously, with no ACK/NAK handshaking to pace the transmission. The host, if overrun, can use hardware handshaking to temporarily delay scanner transmissions. At the end of transmission, the scanner waits for a CMD_ACK or CMD_NAK.
- Multi-Packet Option 3 - This is the same as option 2 with the addition of a programmable interpacket delay. See [Interpacket Delay](#) to set this delay.



*Multipacket Option 1 (0)



Multipacket Option 2 (1)



Multipacket Option 3 (2)

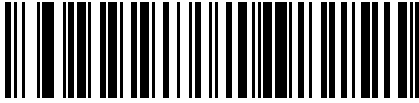
Interpacket Delay

Parameter # 335 (SSI # F0h 4Fh)

This parameter specifies the interpacket delay if you selected Multipacket Option 3.



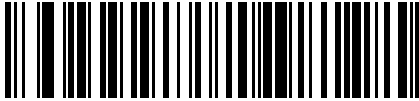
NOTE: Other values are available via SSI command.



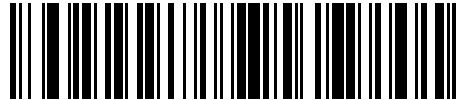
*Minimum - 0 msec (0)



Low - 25 msec (25)



Medium - 50 msec (50)



High - 75 msec (75)



Maximum - 99 msec (99)

Event Reporting

The host can request the scanner to provide certain information (events) relative to scanner behavior. Scan the following barcodes to enable or disable events.

Table 22 Event Codes

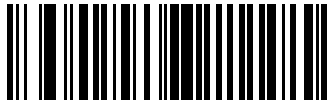
Event Class	Event	Code Reported
Decode Event	Non-parameter decode	0x01
Boot Up Event	System power-up	0x03
Parameter Event	Parameter entry error	0x07
	Parameter stored	0x08
	Defaults set (and parameter event is enabled by default)	0x0A
	Number expected	0x0F

Decode Event

Parameter # 256 (SSI # F0h 00h)

Use this parameter to enable or disable a non-parameter decode event.

- Enable Decode Event - scanner generates a message to the host upon a successful barcode decode.
- Disable Decode Event - no notification is sent.



Enable Decode Event (1)



*Disable Decode Event (0)

Boot Up Event

Parameter # 258 (SSI # F0h 02h)

Use this parameter to enable or disable a system power-up event.

- Enable Boot Up Event - scanner generates a message to the host whenever power is applied.
- Disable Boot Up Event - no notification is sent.



Enable Boot Up Event (1)



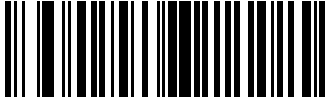
*Disable Boot Up Event (0)

Parameter Event

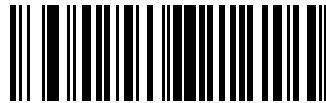
Parameter # 259 (SSI # F0h 03h)

Use this parameter to enable or disable parameter events.

- Enable Parameter Event - scanner generates a message to the host when one of the events specified in [Event Reporting](#) occurs.
- Disable Parameter Event - no notification is sent.



Enable Parameter Event (1)



*Disable Parameter Event (0)

SNAPI Interface

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

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

Symbologies

You can program the scanner to perform various functions or activate different features.

This section describes symbology features and provides programming barcodes for selecting these features.

The scanner ships with the settings shown in the [Symbology Parameter Defaults](#). If the default values suit requirements, programming is not necessary.

Symbology Parameter Defaults

Symbology Parameter Defaults lists the defaults for all symbology parameters.

Change these values in one of two ways:

- Choose the appropriate parameter in this section. The new value replaces the standard default value in memory. To recall the default parameter values, see [Default Parameters](#).
- Configure the scanner using the 123Scan configuration program. See [123Scan and Software Tools](#).

Table 23 Symbology Parameter Defaults

Parameter	Parameter Number ^a	SSI Number ^b	Default
Enable/Disable All Code Types			
1D Symbologies			
UPC/EAN/JAN			
UPC-A	1	01h	Enable
UPC-E	2	02h	Enable
UPC-E1	12	0Ch	Disable
EAN-8/JAN 8	4	04h	Enable
EAN-13/JAN 13	3	03h	Enable
Bookland EAN	83	53h	Disable
Bookland ISBN Format	576	F1h 40h	ISBN-10
ISSN EAN	617	F1h 69h	Disable
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	16	10h	Ignore

Table 23 Symbology Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
User-Programmable Supplementals			
Supplemental 1	579	F4h F1h 43h	000
Supplemental 2	580	F4h F1h 44h	000
UPC/EAN/JAN Supplemental Redundancy	80	50h	10
UPC/EAN/JAN Supplemental AIM ID	672	F1h A0h	Combined
Transmit UPC-A Check Digit	40	28h	Enable
Transmit UPC-E Check Digit	41	29h	Enable
Transmit UPC-E1 Check Digit	42	2Ah	Enable
Transmit EAN-8 Check Digit	1881	F8h 07h 59h	Enable
Transmit EAN-13 Check Digit	1882	F8h 07h 5Ah	Enable
UPC-A Preamble	34	22h	System Character
UPC-E Preamble	35	23h	System Character
UPC-E1 Preamble	36	24h	System Character
Convert UPC-E to UPC-A	37	25h	Disable
Convert UPC-E1 to UPC-A	38	26h	Disable
EAN/JAN Zero Extend	39	27h	Disable
UPC Reduced Quiet Zone	1289	F8h 05h 09h	Disable
Digimarc Digital Watermark	1687	F8h 06h 97h	Disable
Linear UPC/EAN	68	44h	Enable
UPC/EAN Block Life Span	1291	F8h 05h 08h	10
Decode UPC-A/EAN with Voids	1901	F8h 07h 6Dh	Disable
Decode UPC-A/EAN with Voids Redundancy	1902	F8h 07h 6Eh	Off
Code 128			
Code 128	8	08h	Enable
Set Length(s) for Code 128	209, 210	D1h, D2h	Any Length
GS1-128 (formerly UCC/EAN-128)	14	0Eh	Enable
Code 128 <FNC4>	1254	F8h 04h E6h	Honor
Code 128 Stitching	72	72 48h	Disable
Code 128 Stitching Security Level	1205	F8h 04h B5h	Level 0
Code 128 Security Level	751	F1h EFh	Security Level 1
Code 128 Reduced Quiet Zone	1208	F8h 04h B8h	Disable
Code 39			
Code 39	0	00h	Disable

Table 23 Symbology Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
Trioptic Code 39	13	0Dh	Disable
Convert Code 39 to Code 32 (Italian Pharmacy Code)	86	56h	Disable
Code 32 Prefix	231	E7h	Disable
Set Length(s) for Code 39	18, 19	12h, 13h	1 to 55
Code 39 Check Digit Verification	48	30h	Disable
Transmit Code 39 Check Digit	43	2Bh	Disable
Code 39 Full ASCII Conversion	17	11h	Disable
Code 39 Security Level	750	F1h EEh	Security Level 1
Code 39 Stitching	70	46h	Disable
Code 39 Stitching Security Level	1206	F8h 04h B6h	Security Level 1
Code 39 Reduced Quiet Zone	1209	F8h 04h B9h	Disable
Transmit Code 39 Start/Stop Characters	1900	F8 07 6Ch	Disable
Code 93			
Code 93	9	09h	Disable
Set Length(s) for Code 93	26, 27	1Ah, 1Bh	1 to 55
Code 93 Stitching	1224	F8 0h C8h	Disable
Code 93 Reduced Quiet Zone	1223	F8h 0h C7h	Disable
Interleaved 2 of 5 (ITF)			
Interleaved 2 of 5 (ITF)	6	06h	Disable
Set Lengths for I 2 of 5	22, 23	16h, 17h	One Length: 14
I 2 of 5 Check Digit Verification	49	31h	Disable
Transmit I 2 of 5 Check Digit	44	2Ch	Disable
Convert I 2 of 5 to EAN 13	82	52h	Disable
I 2 of 5 Security Level	1121	F8h 04h 61h	Security Level 1
Interleaved 2 of 5 Stitching	1204	F8h 04h B4h	Disable
I 2 of 5 Reduced Quiet Zone	1210	F8h 04h BAh	Disable
Discrete 2 of 5 (DTF)			
Discrete 2 of 5	5	05h	Disable
Set Length(s) for D 2 of 5	20, 21	14h 15h	One Length: 12
Codabar (NW - 7)			
Codabar	7	07h	Disable
Set Lengths for Codabar	24, 25	18h, 19h	4 to 55

Table 23 Symbology Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
CLSI Editing	54	36h	Disable
NOTIS Editing	55	37h	Disable
Codabar Security Level	1776	F8h 06h F0h	Security Level 1
Codabar Upper or Lower Case Start/ Stop Characters Detection	855	F2h 57h	Lower Case
Codabar Mod 16 Check Digit Verification	1784	F8 06h F8h	None
Transmit Codabar Check Digit	704	F1h C0h	None
MSI			
MSI	11	0Bh	Disable
Set Length(s) for MSI	30, 31	1Eh, 1Fh	4 to 55
MSI Check Digits	50	32h	One
Transmit MSI Check Digit	46	2Eh	Disable
MSI Check Digit Algorithm	51	33h	Mod 10/Mod 10
MSI Reduced Quiet Zone	1392	F8h 05h 70h	Disable
Chinese 2 of 5			
Chinese 2 of 5	408	F0h 98h	Disable
Inverse 1D	586	F1h 4Ah	Regular
GS1 DataBar			
GS1 DataBar Omnidirectional	338	F0h 52h	Disable
GS1 DataBar Limited	339	F0h 53h	Disable
GS1 DataBar Expanded	340	F0h 54h	Disable
Convert GS1 DataBar to UPC/EAN/JAN	397	F0h 8Dh	Disable
GS1 DataBar Security Level	1706	F8h 06h AAh	Level 1
GS1 DataBar Limited Margin Check	728	F1h D8h	Level 3
GS1 Databar Enhanced Demote	1774	F8h 06h Eeh	Disable
GS1 Digital Link	2373	F8h 09h 45h	Disable
GS1 Digital Link			
GS1 Digital Link Mode	2374	F8h 09h 46h	Mode 1 (GTIN only)
GS1 Digital Link Prioritization Timeout	2491	F8h 06h BBh	N/A
Symbology-Specific Security Features			
Redundancy Level	78	4Eh	1
Security Level	77	4Dh	1
1D Quiet Zone Level	1288	F8h 05h 08h	1

Table 23 Symbology Parameter Defaults (Continued)

Parameter	Parameter Number ^a	SSI Number ^b	Default
Intercharacter Gap Size	381	F0h 7Dh	Normal
Random Weight Check Digits			
Random Weight Check Digits: UPC-A Starting with '2'	1867	F8 07 4Bh	Disable
Random Weight Check Digits: UPC-A Starting with '2'	1868	F8 07 4Ch	Disable
Random Weight Check Digits: EAN-13 Starting with '21'	1869	F8 07 4Dh	Disable
Random Weight Check Digits: EAN-13 Starting with '22'	1870	F8 07 4Eh	Disable
Random Weight Check Digits: EAN-13 Starting with '23'	1871	F8 07 4Fh	Disable
Random Weight Check Digits: EAN-13 Starting with '24'	1872	F8 07 50h	Disable
Random Weight Check Digits: EAN-13 Starting with '25'	1873	F8 07 51h	Disable
Random Weight Check Digits: EAN-13 Starting with '26'	1874	F8 07 52h	Disable
Random Weight Check Digits: EAN-13 Starting with '27'	1875	F8 07 53h	Disable
Random Weight Check Digits: EAN-13 Starting with '28'	1876	F8 07 54h	Disable
Random Weight Check Digits: EAN-13 Starting with '29'	1877	F8 07 55h	Disable
2D Symbologies			
PDF417	15	0Fh	Disable
MicroPDF417	227	E3h	Disable
Code 128 Emulation	123	7Bh	Disable
Data Matrix	292	F0h 24h	Disable
GS1 Data Matrix	1336	F8h 05h 38h	Disable
Data Matrix Inverse	588	F1h 4Ch	Regular Only
QR Code	293	F0h 25h	Disable
Weblink QR	1947	F8 07 9Bh	Do Not Decode
GS1 QR	1343	F8h 05h 3Fh	Disable
MicroQR	573	F1h 3Dh	Disable
Linked QR Mode	1847	737h	Linked QR Only
Aztec	574	F1h 3Eh	Disable
Aztec Inverse	589	F1h 4Dh	Inverse Autodetect

Table 23 Symbology Parameter Defaults (Continued)

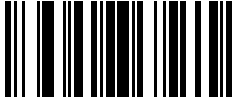
Parameter	Parameter Number ^a	SSI Number ^b	Default
Han Xin	1167	F8h 04h 8Fh	Disable
Han Xin Inverse	1168	F8h 04h 90h	Regular
Grid Matrix	1718	F8h 06h B6h	Disable
Grid Matrix Inverse	1719	F8h 06h B7h	Regular
Grid Matrix Mirrored	1736	F8h 06h C8h	Mirror Autodetect
DotCode	1906	F8 07 72h	Disable
DotCode Prioritize	1937	F8 07 91h	Enable
DotCode Inverse	1907	F8 07 73h	Autodetect
DotCode Mirrored	1908	F8 07 74h	Autodetect
Macro PDF			
Flush Macro PDF Buffer	N/A	N/A	N/A
Abort Macro PDF Entry	N/A	N/A	N/A

^a Parameter number decimal values are used for programming via RSM commands.

^b SSI number hex values are used for programming via SSI commands.

Enable/Disable All Code Types

- Disable All Code Types - Disable all symbologies. This is useful when enabling only a few code types.
- Enable All Code Types - 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

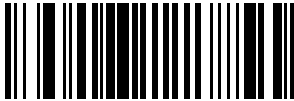
You can choose one of these parameters to enable UPC, EAN, or JAN settings.

UPC-A

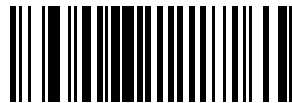
Parameter # 1 (SSI #01h)

This parameter enables or disables UPC-A.

- *Enabled - enables UPC-A.
- Disabled - disables UPC-A.



*Enable UPC-A (1)



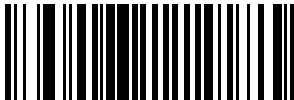
Disable UPC-A (0)

UPC-E

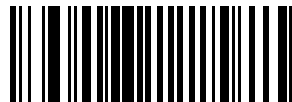
Parameter # 2 (SSI # 02h)

This parameter enables UPC-E.

- *Enabled - this sets UPC-E to use.
- Disabled - UPC-E is no longer in use.



*Enable UPC-E (1)



Disable UPC-E (0)

UPC-E1

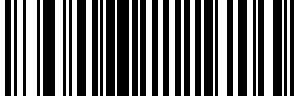
Parameter # 12 (SSI # 0Ch)

This parameter enables UPC-E1.

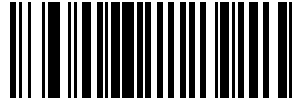
- Enabled - This sets UPC-E1 to use.
- Disabled - UPC-E1 is no longer in use.



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



Enable UPC-E1 (1)



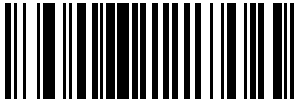
*Disable UPC-E1 (0)

EAN-8/JAN-8

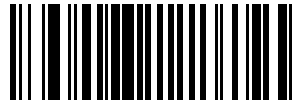
Parameter # 4 (SSI # 04h)

This parameter enables EAN-8/JAN-8.

- Enabled - Sets EAN-8/JAN-8 for use.
- Disabled - EAN-8/JAN-8 is no longer in use.



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



Disable EAN-8/JAN-8 (0)

EAN-13/JAN-13

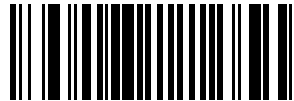
Parameter # 3 (SSI # 03h)

This parameter enables EAN-13/JAN-13.

- Enabled - Sets EAN-13/JAN-13 for use.
- Disabled - EAN-13/JAN-13 is no longer in use.



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



Disable EAN-13/JAN-13 (0)

Bookland EAN

Parameter # 83 (SSI # 53h)

This parameter enables Bookland EAN.

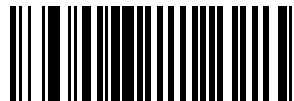
- Enabled - This sets Bookland EAN for use.
- Disabled - Bookland EAN is no longer in use.



NOTE: If you enable Bookland EAN, select a [Bookland ISBN Format](#). Also set [Decode UPC/EAN/JAN Supplementals](#) to either Decode UPC/EAN/JAN with Supplementals Only, Autodiscriminate UPC/EAN/JAN With Supplementals, or Enable 978/979 Supplemental Mode.



Enable Bookland EAN (1)



*Disable Bookland EAN (0)

Bookland ISBN Format

Parameter # 576 (SSI # F1h 40h)

If Bookland EAN is enabled, this parameter allows you to choose a format for Bookland data.

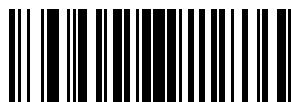
- *Bookland ISBN-10 - The scanner reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode.
- Bookland ISBN-13 - The scanner reports Bookland data (starting with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



NOTE: For Bookland EAN to function properly, first enable [Bookland EAN](#) and then set [Decode UPC/EAN/JAN Supplementals](#) to either Decode UPC/EAN/JAN with Supplementals Only, Autodiscriminate UPC/EAN/JAN With Supplementals, or Enable 978/979 Supplemental Mode.



*Bookland ISBN-10 (0)



Bookland ISBN-13 (1)

ISSN EAN

Parameter # 617 (SSI # F1h 69h)

This parameter enables ISSN EAN.

- Enabled - Sets ISSN EAN for use.
- *Disabled - ISSN EAN is no longer in use.



Enable ISSN EAN (1)



*Disable ISSN EAN (0)

Decode UPC/EAN/JAN Supplementals

Parameter # 16 (SSI # 10h)

This parameter decodes supplementals, which are barcodes appended according to specific format conventions (for example, UPC A+2, UPC E+2, EAN 13+2). .

- Decode UPC/EAN/JAN with Supplementals Only - The scanner only decodes UPC/EAN/JAN symbols with supplemental characters, and ignores symbols without supplementals.
- Ignore UPC/EAN/JAN Supplementals - When presented with a UPC/EAN/JAN plus supplemental symbol, the scanner decodes UPC/EAN/JAN and ignores the supplemental characters.
- Autodiscriminate UPC/EAN/JAN with Supplementals - The scanner decodes UPC/EAN/JAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the scanner must decode the barcode the number of times set via [UPC/EAN/JAN Supplemental Redundancy](#) before transmitting its data to confirm that there is no supplemental.

Select one of the following Supplemental Mode options to immediately transmit EAN-13 barcodes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the scanner must decode the barcode the number of times set via [UPC/EAN/JAN Supplemental Redundancy](#) before transmitting the data to confirm that there is no supplemental. The scanner transmits UPC/EAN/JAN barcodes that do not have that prefix immediately.

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



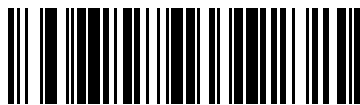
NOTE: If you select 978/979 Supplemental Mode and are scanning Bookland EAN barcodes, see [Bookland EAN](#), and select a format using [Bookland ISBN Format](#).

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

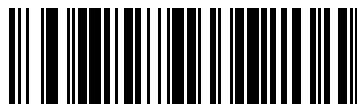


NOTE: To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.

Decode UPC/EAN/JAN Supplementals (continued)



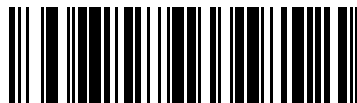
Decode UPC/EAN/JAN With Supplementals Only
(1)



*Ignore UPC/EAN/JAN Supplementals (0)



Autodiscriminate UPC/EAN/JAN with
Supplementals (2)



Enable 378/379 Supplemental Mode (4)

Decode UPC/EAN/JAN Supplementals (continued)



Enable 978/979 Supplemental Mode (5)



Enable 977 Supplemental Mode (7)



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



Enable 491 Supplemental Mode (8)

Decode UPC/EAN/JAN Supplementals (continued)



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

Parameter # 579 (SSI # F4h F1h 43h)

Parameter # 580 (SSI # F4h F1h 44h)

If you selected a Supplemental User-Programmable option, this parameter allows you to set two 3-digit prefixes.

- User-Programmable Supplemental 1 - Sets the first 3-digit prefix. See [Numeric Barcodes](#).
- User-Programmable Supplemental 2 - Sets a 2nd 3-digit prefix, if necessary. See [Numeric Barcodes](#).



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. You can enable audio feedback during a reconnect attempt.

The range is from 2-30. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals.

To set a redundancy value, scan the following barcode, and then scan two barcodes from [Numeric Barcodes](#). Enter a leading zero for single digit numbers. To correct an error or change a selection, scan [Cancel](#).



UPC/EAN/JAN Supplemental Redundancy

UPC/EAN/JAN Supplemental AIM ID Format

Parameter # 672 (SSI # F1h A0h)

If Transmit Code ID Character is set to **AIM Code ID Character**, select an output format when reporting UPC/EAN/JAN barcodes with supplementals.

- Separate - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs but one transmission, for example,

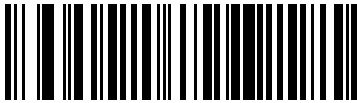
```
]E<0 or 4><data>]E<1 or 2>[supplemental data]
```

- Combined - Transmit UPC/EAN/JAN with supplementals with one AIM ID and one transmission. For example, see below.

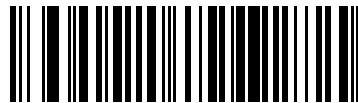
```
]E3<data+supplemental data>
```

- Separate Transmissions - Transmit UPC/EAN/JAN with supplementals with separate AIM IDs and separate transmissions, for example,

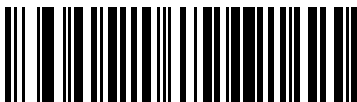
```
]E<0 or 4><data>  
]E<1 or 2>[supplemental data]
```



Separate (0)



*Combined (1)



Separate Transmissions (2)

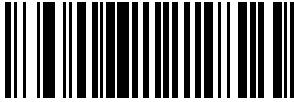
Transmit UPC-A Check Digit

Parameter # 40 (SSI # 28h)

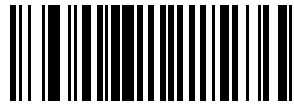
This parameters transmits data with or without the UPC-A check digit.

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

- *Transmit UPC-A Check Digit - Transmits the data with the UPC-A check digit.
- Do Not Transmit UPC-A Check Digit - Transmits the data without the UPC-A check digit.



*Transmit UPC-A Check Digit (1)



Do Not Transmit UPC-A Check Digit (0)

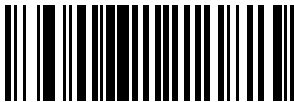
Transmit UPC-E Check Digit

Parameter # 41 (SSI # 29h)

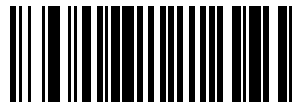
This parameters transmits data with or without the UPC-E check digit.

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

- *Transmit UPC-E Check Digit - transmits the data with the UPC-E check digit.
- Do Not Transmit UPC-E Check Digit - transmits the data without the UPC-E check digit.



*Transmit UPC-E Check Digit (1)



Do Not Transmit UPC-E Check Digit (0)

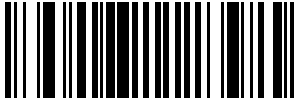
Transmit UPC-E1 Check Digit

Parameter # 42 (SSI #2Ah)

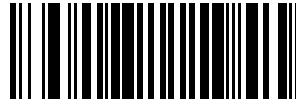
This parameters transmits data with or without the UPC-E1 check digit.

The check digit is the last character of the symbol used to verify the integrity of the data. It is always verified to guarantee the integrity of the data.

- *Transmit UPC-E1 Check Digit - Transmits the data with the UPC-E1 check digit.
- Do Not Transmit UPC-E1 Check Digit - Transmits the data without the UPC-E1 check digit.



*Transmit UPC-E1 Check Digit (1)



Do Not Transmit UPC-E1 Check Digit (0)

Transmit EAN-8 Check Digit

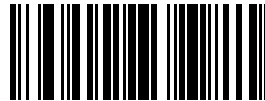
Parameter #1881(SSI # F8 07 59h)

This parameter transmits data with or without the EAN-8 check digit.

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the EAN-8 check digit. It is always verified to guarantee the integrity of the data.



*Transmit EAN-8 Check Digit (1)



Do Not Transmit EAN-8 Check Digit (0)

Transmit EAN-13 Check Digit

Parameter #1882 (SSI # F8h 07 5Ah)

This parameter transmits data with or without the EAN-13 check digit.

The check digit is the last character of the symbol used to verify the integrity of the data. Scan one of the following barcodes to transmit the barcode data with or without the EAN-13 check digit. It is always verified to guarantee the integrity of the data.



*Transmit EAN-13 Check Digit (1)



Do Not Transmit EAN-13 Check Digit (0)

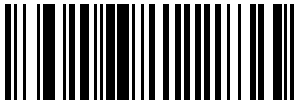
UPC-A Preamble

Parameter # 34 (SSI # 22h)

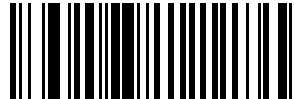
Preamble characters are part of the UPC symbol, and include Country Code and System Character.

Select the appropriate option for transmitting a UPC-A preamble to match the host system:

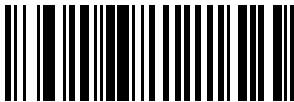
- Transmit System Character only
- Transmit System Character and Country Code ("0" for USA)
- Transmit no preamble.



No Preamble (<DATA>) (0)



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



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

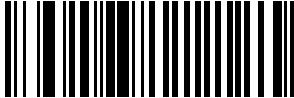
UPC-E Preamble

Parameter # 35 (SSI # 23h)

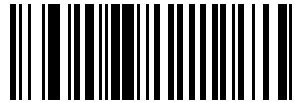
Preamble characters are part of the UPC symbol, and include Country Code and System Character.

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)

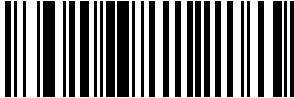
UPC-E1 Preamble

Parameter # 36 (SSI # 24h)

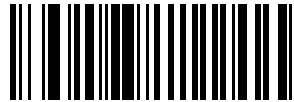
Preamble characters are part of the UPC symbol, and include Country Code and System Character.

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)

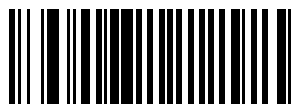
This parameter converts UPC-E (zero suppressed) decoded data to UPC-A format before transmission.

After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (such as, Preamble, Check Digit).

- *Enabled - Converts UPC-E decoded data to UPC-A format.
- Disabled - Transmits UPC-E decoded data without conversion to UPC-A.



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)

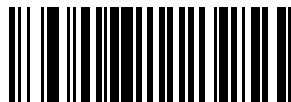
This parameter converts UPC-E1 (zero suppressed) decoded data to UPC-A format before transmission.

After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (for example, Preamble, Check Digit).

- *Enabled - converts UPC-E1 decoded data to UPC-A format.
- Disabled - transmits UPC-E1 decoded data without conversion to UPC-A.



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



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

EAN/JAN Zero Extend

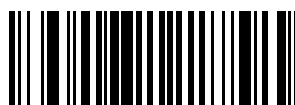
Parameter # 39 (SSI # 27h)

This parameter enables or disables decoded EAN-8 symbols to be compatible in length with EAN-13 symbols.

- Enabled - Adds five leading zeros to decoded EAN-8 symbols to make them compatible in length to EAN-13 symbols
- Disabled - Transmits EAN-8 symbols as-is, without adding zeroes.



Enable EAN/JAN Zero Extend (1)



*Disable EAN/JAN Zero Extend (0)

UPC Reduced Quiet Zone

Parameter # 1289 (SSI # F8h 05h 09h)

This parameter enables or disables decoding UPC barcodes with reduced quiet zones (the margins on either side of the barcode).

- Enabled - Enables decoding UPC barcodes with reduced quiet zones.
- *Disabled - Disables decoding UPC barcodes with reduced quiet zones.



NOTE: If you select Enable, select a [1D Quiet Zone Level](#).



Enable UPC Reduced Quiet Zone (1)



*Disable UPC Reduced Quiet Zone (0)

Digimarc Digital Watermarks

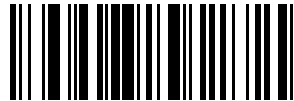
Parameter # 1687 (SSI # F8h 0h 97h)

This parameter enables or disables the Digimarc Digital Watermarks.

- Enabled - Enables the Digimarc Digital Watermarks.
- *Disabled - Disables the Digimarc Digital Watermarks.



Enable Digimarc Digital Watermarks/DW (1)



*Disable Digimarc Digital Watermarks/DW (0)

Linear UPC/EAN

Parameter # 68 (SSI # 44h)

When enabled, a UPC/EAN barcode is only decoded and transmitted when both the left and right blocks are successfully decoded within one image.

When disabled, the left and right blocks can be decoded in different images and transmitted together.

This parameter applies to code types containing two adjacent blocks (such as UPC-A, EAN-8, and EAN-13).

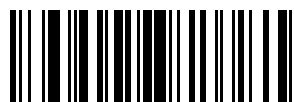
- Enabled - Requires both the left and right blocks to be decoded successfully in one image.
- Disabled - The left and right blocks can be decoded in different images.



NOTE: This is recommended when barcodes are in proximity to each other.



*Enable Linear UPC/EAN (1)



Disable Linear UPC/EAN (0)

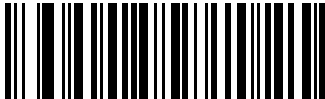
UPC/EAN Block Life Span

Parameter # 1291 (SSI # F8h 05h 08h)

This parameter determines the maximum time difference (msec) of two UPC/EAN blocks that form a barcode.

Each UPC/EAN block is tagged with the time of decode. If the time difference is larger than this threshold, the two blocks are not used to construct a barcode. This threshold is the value of this parameter multiplied by 10. The default is 10.

can **UPC/EAN Block Life Span** and then scan two barcodes from [Numeric Barcodes](#) in the range of 0 - 50. Enter a leading zero for single digit numbers. To correct an error or change a selection, [Cancel](#).



Set UPC/EAN Block Life Span

Decode UPC-A/EAN-13 with Voids

Parameter # 1901 (SSI # F8h 07h 6Dh)

This parameter enables or disables the decoding of UPC-A and EAN-13 bar codes that are incorrectly printed where entire columns of dark color can be missing.

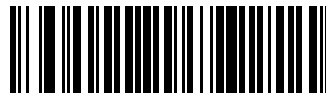
- Enabled - enables the decoding of UPC-A and EAN-13 bar codes that are incorrectly printed.
- *Disabled - disables the decoding of UPC-A and EAN-13 bar codes that are incorrectly printed.



NOTE: Subject to enabling/disabling and redundancy settings, see [Decode UPC-A/EAN-13 with Voids Redundancy](#).



*Disable (0)



Enable (1)

Decode UPC-A/EAN-13 with Voids Redundancy

Parameter # 1902 (SSI # F8h 07h 6Eh)

This parameter increases the redundancy setting when mis-decodes are detected.

Choose the following options:

- *Redundancy Off
- Redundancy 2 (Minimum)
- Redundancy 3
- Redundancy 4
- Redundancy 5
- Redundancy 6 (Maximum)



NOTE: Used in conjunction with [Decode UPC-A/EAN-13 with Voids](#).



*Redundancy Off



Redundancy 2 (Minimum)

Decode UPC-A/EAN-13 with Voids Redundancy (continued)



Redundancy 3



Redundancy 4



Redundancy 5



Redundancy 6 (Maximum)

Code 128

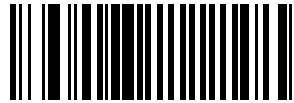
Parameter # 8 (SSI #08h)

You can enable or disable Code 128.

- *Enabled - Enables Code 128.
- Disabled - Disables Code 128.



*Enable Code 128 (1)



Disable Code 128 (0)

Set Lengths for Code 128

Parameter # 209 (SSI #D1h)

Parameter # 210 (SSI #D2h)

This parameter sets lengths for Code 128 to any length, one or two discrete lengths, or lengths within a specific range.

The length of a code refers to the number of characters (for example, human-readable characters), including check digit(s) the code contains. The default is Any Length.



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

- One Discrete Length - Decode only Code 128 symbols containing a selected length.
- Two Discrete Lengths - Decode only Code 128 symbols containing either of two lengths.
- Length Within Range - Decode Code 128 symbols with a specific length range.
- *Any Length - Decode Code 128 symbols containing any number of characters within the scanner's capability.

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

For example:

- To decode only Code 128 symbols with 14 characters, scan Code 128 - One Discrete Length, and then scan 1, 4.
- 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 decode Code 128 symbols containing between 4 and 12 characters, scan Code 128 - Length Within Range, and then scan 0, 4, 1, 2.



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)

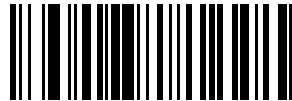
Parameter # 14 (SSI #0Eh)

You can enable or disable GS1-128.

- *Enabled - Enables GS1-128.
- Disabled - Disables GS1-128.



*Enable GS1-128 (1)



Disable GS1-128 (0)

Code 128 <FNC4>

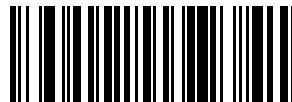
Parameter # 1254 (SSI #F8h 04h E6h)

This parameter processes the Code 128 <FNC4> character, and either ignores (removes) the character or honors (does not remove) the character.

- *Honor Code 128 <FNC4> - The <FNC4> character is processed normally, per Code 128 standard.
- Ignore Code 128 <FNC4> - Strips the <FNC4> character from the decode data. The remaining characters are sent to the host unchanged.



*Honor Code 128 <FNC4> (0)



Ignore Code 128 <FNC4> (1)

Code 128 Stitching

Parameter # 72 (SSI #72 48h)

Enable or disable Code 128 stitching.

- Enabled - enables Code 128 stitching to help decode longer codes.
- *Disabled - disables Code 128 stitching.



Enable Code 128 Stitching (1)



*Disable Code 128 Stitching (0)

Code 128 Stitching Security Level

Parameter # 1205 (SSI #F8h 04h B5h)

This parameter sets the security level for Code 128.

Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security, and device aggressiveness, so choose only that level of security necessary for any given application.

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



NOTE: Selecting Security Level 3 is an extreme measure against mis-decoding severely out of spec barcodes. Selecting this level of security significantly impairs the decoding ability of the device. If you need this level of security, try to improve the quality of the barcodes.



*Level 0 (0)



Level 1 (1)



Level 2 (2)



Level 3 (3)

Code 128 Security Level

Parameter # 751 (SSI #F1h EFh)

This parameter enables four levels of decode security for Code 128.

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

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



NOTE: Selecting Code 128 Security Level 3 is an extreme measure against mis-decoding severely out-of-spec barcodes, and significantly impairs the decoding ability of the device. If this level of security is required, try to improve the quality of the barcodes.



Code 128 Security 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)

This parameter enables or disables decoding Code 128 with reduced quiet zones (the margins on either side of the barcode).

If you select Enable, select a [1D Quiet Zone Level](#).

- Enabled - enables Code 128 with reduced Quiet Zones.
- *Disabled - disables Code 128 with reduced Quiet Zones.



Enable Code 128 Reduced Quiet Zone (1)



*Disable Code 128 Reduced Quiet Zone (0)

Code 39

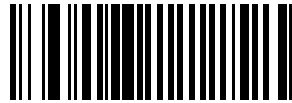
Parameter # 0 (SSI #00h)

This parameter enables or disables Code 39.

- Enabled - Enables Code 39.
- *Disabled - Disables Code 39.



Enable Code 39 (1)



*Disable Code 39 (0)

Trioptic Code 39

Parameter # 13 (SSI #0Dh)

This parameter enables or disables Trioptic Code 39.

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.

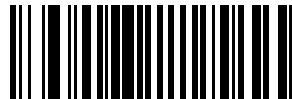
- Enabled - enables Trioptic Code 39.
- *Disabled - disables Trioptic Code 39.



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



Enable Trioptic Code 39 (1)



*Disable Trioptic Code 39 (0)

Convert Code 39 to Code 32

Parameter # 86 (SSI #5h)

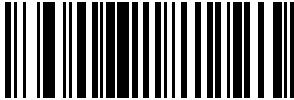
This parameter enables or disables converting Code 39 to Code 32.

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry.

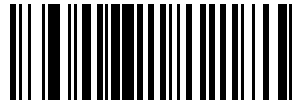


NOTE: Code 39 must be enabled for this parameter to function.

- Enabled - enables Convert Code 39 to Code 32.
- *Disabled - disables Convert Code 39 to Code 32.



Enable Convert Code 39 to Code 32 (1)



*Disable Convert Code 39 to Code 32 (0)

Code 32 Prefix

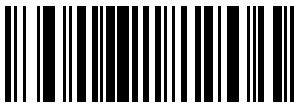
Parameter # 231 (SSI #E7h)

This parameter enables or disables adding the prefix character “A” to all Code 32 barcodes.

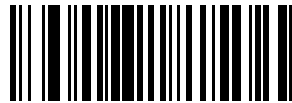
- Enabled - enables Code 32 Prefix.
- *Disabled - disables Code 32 Prefix.



NOTE: [Convert Code 39 to Code 32](#) on page 253 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)

This parameter sets lengths for Code 39.

The length of a code refers to the number of characters (for example, human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, Length Within Range or Any Length are the preferred options. The default is Length Within Range (1-55). Length ranges: L1 is 0-80; L2 is 0-80.



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

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

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

For example:

- To decode only Code 39 symbols with 14 characters, scan Code 39 - One Discrete Length, and then scan 1, 4.
- 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 decode Code 39 symbols containing between 4 and 12 characters, scan Code 39 - Length Within Range, and then scan 0, 4, 1, 2.



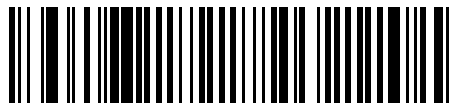
Code 39 - One Discrete Length



Code 39 - Two Discrete Lengths



*Code 39 - Length Within Range (Default: Length Within Range (1-55))



Code 39 - Any Length

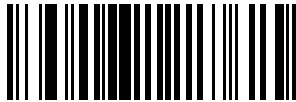
Code 39 Check Digit Verification

Parameter # 48 (SSI #30h)

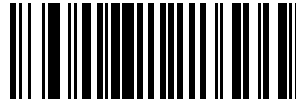
This parameter checks the integrity of all Code 39 symbols to verify that the data complies with specified check digit algorithm.

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.

- Enabled - enables Code 39 Check Digit.
- *Disabled - disables Code 39 Check Digit.



Enable Code 39 Check Digit (1)



*Disable Code 39 Check Digit (0)

Transmit Code 39 Check Digit

Parameter # 43 (SSI #2Bh)

This parameter transmits Code 39 data with or without the check digit.

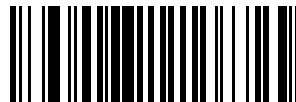
- Enabled - enables Transmit Code 39 Check Digit.
- *Disabled - disables Transmit Code 39 Check Digit.



NOTE: [Code 39 Check Digit Verification](#) must be enabled for this parameter to function.



Transmit Code 39 Check Digit (Enable) (1)



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

Code 39 Full ASCII Conversion

Parameter # 17 (SSI #11h)

This parameter enables or disables Code 39 Full ASCII.

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set.

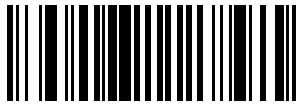
- Enabled - enables Code 39 Full ASCII.
- *Disabled - disables Code 39 Full ASCII.



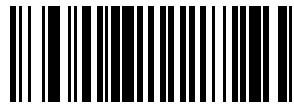
NOTE: You cannot enable Trioptic Code 39 and Code 39 Full ASCII simultaneously.



NOTE: 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 [ASCII Character Sets](#).



Enable Code 39 Full ASCII (1)



*Disable Code 39 Full ASCII (0)

Code 39 Security Level

Parameter # 750 (SSI #F1h EEh)

This parameter sets the security level for Code 39.

Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security, and device aggressiveness, so choose only that level of security necessary for any given application.

- Code 39 Security Level 0 - Allows the device to operate in its most aggressive state, while providing sufficient security in decoding most "in-spec" barcodes.
- *Code 39 Security Level 1 - This setting eliminates most mis-decodes
- Code 39 Security Level 2 - Select this option if Security Level 1 fails to eliminate mis-decodes.
- Code 39 Security Level 3 - If you selected Security Level 2 and mis-decodes still occur, select this security level.



NOTE: Selecting Security Level 3 is an extreme measure against mis-decoding severely out of spec barcodes. Selecting this level of security significantly impairs the decoding ability of the device. If you need this level of security, try to improve the quality of the barcodes.



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 Stitching

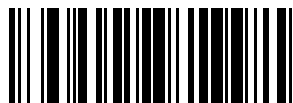
Parameter # 70 (SSI #46h)

You can enable or disable Code 39 stitching.

- *Enabled - enables Code 39 stitching to help decode longer codes.
- Disabled - disables Code 39 stitching.



Enable Code 39 Stitching (1)



*Disable Code 39 Stitching (0)

Code 39 Stitching Security Level

Parameter # 1206 (SSI #F8h 04h B6h)

This parameter sets the stitching security level for Code 39.

Select increasing levels of security for decreasing levels of barcode quality. There is an inverse relationship between security, and device aggressiveness, so choose only that level of security necessary for any given application.

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



NOTE: Selecting Security Level 3 is an extreme measure against mis-decoding severely out of spec barcodes. Selecting this level of security significantly impairs the decoding ability of the device. If you need this level of security, try to improve the quality of the barcodes.



Level 0 (0)



*Level 1 (1)



Level 2 (2)



Level 3 (3)

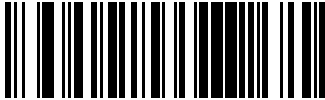
Code 39 Reduced Quiet Zone

Parameter # 1209 (SSI #F8h 04h B9h)

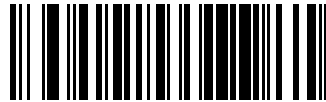
This parameter enables or disables decoding Code 39 with reduced quiet zones (the margins on either side of the barcode).

If you select Enable, select a [1D Quiet Zone Level](#).

- Enabled - enables Code 39 with reduced Quiet Zones.
- *Disabled - disables Code 39 with reduced Quiet Zones.



Enable Code 39 Reduced Quiet Zone (1)

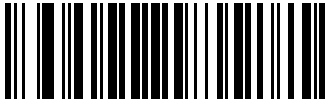


*Disable Code 39 Reduced Quiet Zone (0)

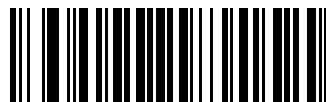
Transmit Code 39 Start/Stop Characters

Parameter # 1900 (SSI # F8 07 6Ch)

This parameter selects whether to transmit Code 39 start/stop characters.



*Disable Transmit Code 39 Start/Stop Characters
(0)



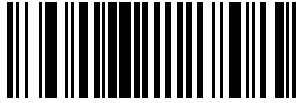
Enable Transmit Code 39 Start/Stop Characters (1)

Code 93

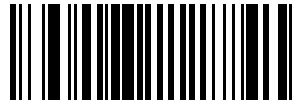
Parameter # 9 (SSI #09h)

This parameter enables or disables Code 93.

- Enabled - enables Code 93.
- *Disabled - disables Code 93.



Enable Code 93 (1)



*Disable Code 93 (0)

Set Lengths for Code 93

Parameter # 26 (SSI #1Ah)

Parameter # 27 (SSI #1Bh)

This parameter sets the lengths for Code 93 to any length, one or two discrete lengths, or lengths within a specific range.

The length of a code refers to the number of characters (for example, human-readable characters), including check digit(s) the code contains. The default is Length Within Range (1-55). Length ranges: L1 is 0-80; L2 is 0-80.



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

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

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

For example:

- To decode only Code 93 symbols with 14 characters, scan Code 93 - One Discrete Length, and then scan 1, 4.
- 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 decode Code 93 symbols containing between 4 and 12 characters, scan Code 93 - Length Within Range, and then scan 0, 4, 1, 2.



Code 93 - One Discrete Length



Code 93 - Two Discrete Lengths



*Code 93 - Length Within Range (Default: 1-55)



Code 93 - Any Length

Code 93 Stitching

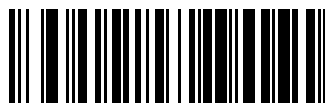
Parameter # 1224 (SSI #F8h 04h C8h)

You can enable or disable Code 93 stitching.

- *Enabled - enables Code 93 stitching to help decode longer codes.
- Disabled - disables Code 93 stitching.



Enable Code 93 Stitching (1)



*Disable Code 93 Stitching (0)

Code 93 Reduced Quiet Zone

Parameter # 1223 (SSI #F8h 04h C7h)

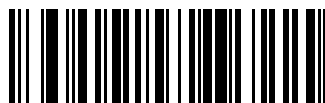
This parameter enables or disables decoding Code 93 with reduced quiet zones (the margins on either side of the barcode).

If you select **Enable**, select a [1D Quiet Zone Level](#).

- Enabled - enables Code 93 with reduced Quiet Zones.
- *Disabled - disables Code 93 with reduced Quiet Zones.



Enable Code 93 Reduced Quiet Zone (1)



*Disable Code 93 Reduced Quiet Zone (0)

Interleaved 2 of 5 (I 2 of 5)

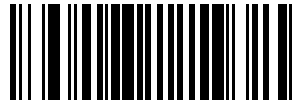
Parameter # 6 (SSI #06h)

This parameter enables or disables I 2 of 5.

- Enabled - enables I 2 of 5.
- *Disabled - disables I 2 of 5.



Enable Interleaved 2 of 5 (1)



*Disable Interleaved 2 of 5 (0)

Set Lengths for Interleaved 2 of 5 (I 2 of 5)

L1 Parameter # 22 (SSI #16h)

L2 Parameter # 23 (SSI #17h)

This parameter sets lengths for I 2 of 5.

The length of a code refers to the number of characters (for example, 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). Length ranges: L1 is 0-55; L2 is 0-55.



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

- One Discrete Length - Decode only I 2 of 5 symbols containing a selected length.
- Two Discrete Lengths - Decode only I 2 of 5 symbols containing either of two lengths.
- Length Within Range - Decode I 2 of 5 symbols with a specific length range.
- Any Length - Decode I 2 of 5 symbols containing any number of characters within the scanner's capability.



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

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

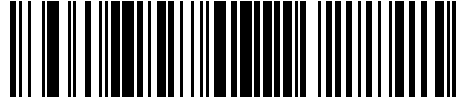
For example:

- To decode only I 2 of 5 symbols with 14 characters, scan I 2 of 5 - One Discrete Length, and then scan 1, 4.

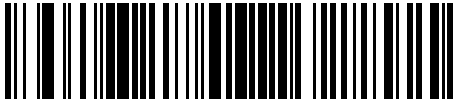
- To decode only I 2 of 5 symbols containing either 2 or 14 characters, scan I 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4.
- To decode I 2 of 5 symbols containing between 4 and 12 characters, scan I 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2.



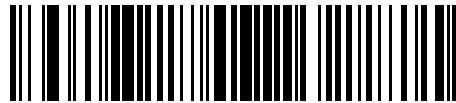
*I 2 of 5 - One Discrete Length (14)



I 2 of 5 - Two Discrete Lengths



I 2 of 5 - Length Within Range



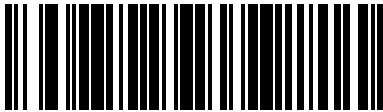
I 2 of 5 - Any Length

Interleaved 2 of 5 (I 2 of 5) Check Digit Verification

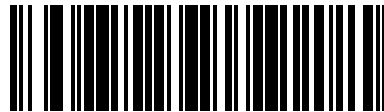
Parameter # 49 (SSI #31h)

This parameter enables or disables checking 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 - disables checking the integrity of all I 2 of 5 symbols to verify the data complies.
- USS Check Digit - enables checking the integrity of USS.
- OPCC Check Digit - enables checking the integrity of OPCC.



*Disable (0)



USS Check Digit (1)



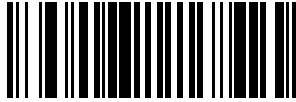
OPCC Check Digit (2)

Transmit I 2 of 5 Check Digit

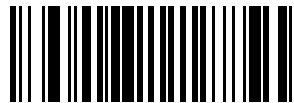
Parameter # 44 (SSI #2Ch)

This parameter enables or disables transmission of I 2 of 5 data with or without the check digit.

- Enabled - enables transmission of check digit.
- *Disabled - disables transmission of check digit.



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



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

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

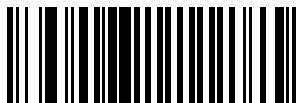
Parameter # 82 (SSI #52h)

This parameter enables or disables converting 14-character I 2 of 5 codes to EAN-13, and then transmitting to the host as EAN-13.

- Enabled - enables converting 14-character I 2 of 5 codes to EAN-13.
- *Disabled - disables converting 14-character I 2 of 5 codes to EAN-13.



NOTE: 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)

Interleaved 2 of 5 (I 2 of 5) Security Level

Parameter # 1121 (SSI #F8h 04h 61h)

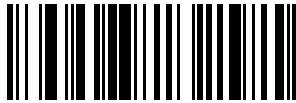
This parameter sets the security level for I 2 of 5.

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

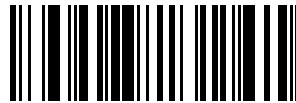
- I 2 of 5 Security Level 0: The scanner operates in its most aggressive state, while providing sufficient security in decoding most in-spec barcodes.
- I 2 of 5 Security Level 1: A barcode must be successfully read twice, and satisfy certain safety requirements before being decoded. This default setting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



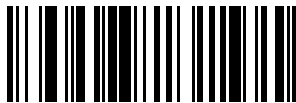
NOTE: Selecting this option is an extreme measure against mis-decoding severely out-of-spec barcodes, and significantly impairs the decoding ability of the scanner. If this level of security is required, try to improve the quality of the barcodes.



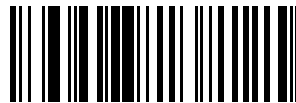
I 2 of 5 Security Level 0 (0)



*I 2 of 5 Security Level 1 (1)



I 2 of 5 Security Level 2 (2)



I 2 of 5 Security Level 3 (3)

Interleaved 2 of 5 (I 2 of 5) Stitching

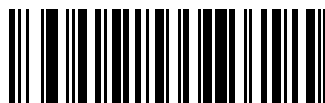
Parameter # 1204 (SSI #F8h 04h B4h)

You can enable or disable I 2 of 5 stitching.

- Enabled - enables I 2 of 5 stitching to help decode longer codes.
- *Disabled - disables I 2 of 5 stitching.



Enable Interleaved 2 of 5 Stitching (1)



*Disable Interleaved 2 of 5 Stitching (0)

Interleaved 2 of 5 (I 2 of 5) Reduced Quiet Zone

Parameter # 1210 (SSI #F8h 04h B9h)

This parameter enables or disables decoding I 2 of 5 with reduced quiet zones (the margins on either side of the barcode).

If you select Enable, select a [1D Quiet Zone Level](#).

- Enabled - enables I 2 of 5 with reduced Quiet Zones.
- *Disabled - disables I 2 of 5 with reduced Quiet Zones.



Enable I 2 of 5 Reduced Quiet Zone (1)



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

Discrete 2 of 5 (D 2 of 5)

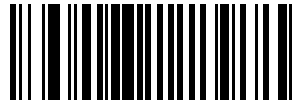
Parameter # 5 (SSI #05h)

This parameter enables or disables D 2 of 5.

- Enabled - enables D 2 of 5.
- *Disabled - disables D 2 of 5.



Enable Discrete 2 of 5 (1)



*Disable Discrete 2 of 5 (0)

Set Lengths for Discrete 2 of 5 (D 2 of 5)

L1 Parameter # 20 (SSI #14h)

L2 Parameter # 21 (SSI #15h)

This parameter sets lengths for D 2 of 5.

The length of a code refers to the number of characters (for example, 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). Length ranges: L1 is 0-55; L2 is 0-55.



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

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

- One Discrete Length - Decode only D 2 of 5 symbols containing a selected length.
- Two Discrete Lengths - Decode only D 2 of 5 symbols containing either of two lengths.
- Length Within Range - Decode D 2 of 5 symbols with a specific length range.
- Any Length - Decode D 2 of 5 symbols containing any number of characters within the scanner's capability.



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

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

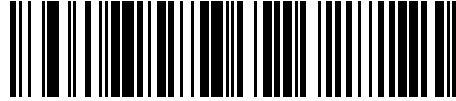
For example:

- To decode only D 2 of 5 symbols with 14 characters, scan D 2 of 5 - One Discrete Length, and then scan 1, 4.

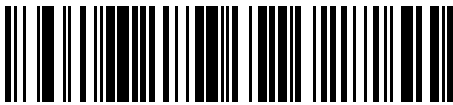
- To decode only D 2 of 5 symbols containing either 2 or 14 characters, scan D 2 of 5 - Two Discrete Lengths, and then scan 0, 2, 1, 4.
- To decode D 2 of 5 symbols containing between 4 and 12 characters, scan D 2 of 5 - Length Within Range, and then scan 0, 4, 1, 2.



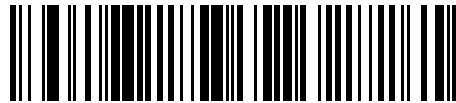
*D 2 of 5 - One Discrete Length (12)



D 2 of 5 - Two Discrete Lengths



D 2 of 5 - Length Within Range



D 2 of 5 - Any Length

Codabar (NW - 7)

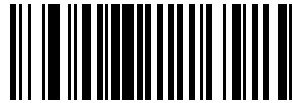
Parameter # 7 (SSI #07h)

This parameter enables or disables Codabar.

- Enabled - enables Codabar.
- *Disabled - disables Codabar.



Enable Codabar (1)



*Disable Codabar (0)

Set Lengths for Codabar

L1 Parameter # 24 (SSI #18h)

L2 Parameter # 25 (SSI #19h)

This parameter sets lengths for Codabar.

The length of a code refers to the number of characters (for example, 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 (4-55). Length ranges: L1 is 0-80; L2 is 0-80.



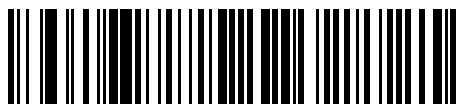
NOTE: When setting lengths, enter a leading zero for single-digit numbers.

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

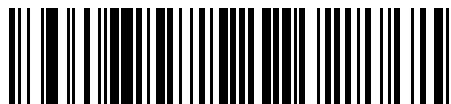
Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

For example:

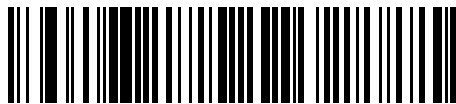
- To decode only Codabar symbols with 14 characters, scan Codabar - One Discrete Length, and then scan 1, 4.
- To decode only Codabar symbols containing either 2 or 14 characters, scan Codabar - Two Discrete Lengths, and then scan 0, 2, 1, 4.
- To decode Codabar symbols containing between 4 and 12 characters, scan Codabar - Length Within Range, and then scan 0, 4, 1, 2.



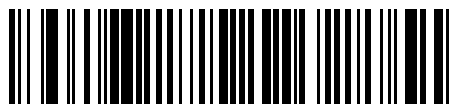
Codabar - One Discrete Length



Codabar - Two Discrete Lengths



*Codabar - Length Within Range (Default: Length Within Range (4-55))



Codabar - Any Length

CLSI Editing

Parameter # 54 (SSI #36h)

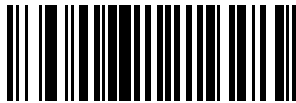
This parameter enables or disables CLSI editing.

Select 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.

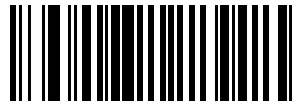
- Enabled - enables CLSI editing.
- *Disabled - disables CLSI editing.



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



Enable CLSI Editing (1)



*Disable CLSI Editing (0)

NOTIS Editing

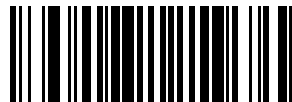
Parameter # 55 (SSI #37h)

This parameter enables or disables NOTIS editing which strips the start and stop characters from a decoded Codabar symbol if the host system requires this data format.

- Enabled - enables NOTIS editing.
- *Disabled - disables NOTIS editing.



Enable NOTIS Editing (1)



*Disable NOTIS Editing (0)

Codabar Security Level

Parameter # 1776 (SSI #F8h 06h F0h)

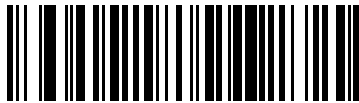
This parameter sets the security level for Codabar 39.

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

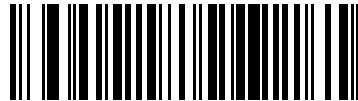
- Codabar Security Level 0: This setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding most in-spec barcodes.
- Codabar Security Level 1: This default setting eliminates most misdecodes.
- Codabar Security Level 2: Select this option with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



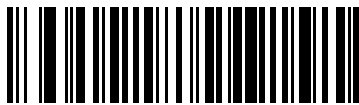
NOTE: Selecting this option is an extreme measure against mis-decoding severely out-of-spec barcodes, and significantly impairs the decoding ability of the scanner. If this level of security is required, try to improve the quality of the barcodes.



Codabar Security Level 0 (0)



*Codabar Security Level 1 (1)



Codabar Security Level 2 (2)



Codabar Security Level 3 (3)

Codabar Upper or Lower Case Start/Stop Characters

Parameter # 855 (SSI #F2h 57h)

This parameter selects whether to transmit upper case or lower case Codabar start/stop characters.

- *Lower Case (1) - enables lowercase start/stop characters.
- Upper Case (0) - enables upper case start/stop characters.



*Lower Case (1)



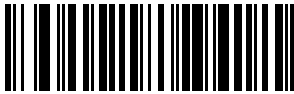
Upper Case (0)

Codabar Mod 16 Check Digit Verification

Parameter # 1784 (SSI #F8h 06h F8h)

This parameter checks the Codabar Mod 16 check digit to verify that the data complies with the specified check digit algorithm.

- Enabled - enables check digit.
- *Disabled - disables check digit.



Enable Codabar Mod 16 Check digit (1)



*Disable Codabar Mod 16 Check digit (0)

Transmit Codabar Check Digit

Parameter # 704 (SSI #F1h C0h)

This parameter selects whether or not to transmit the Codabar check digit(s).

- Enabled - enables check digit transmission.
- *Disabled - disables check digit transmission.



Enable Codabar Check Digit Transmission (1)



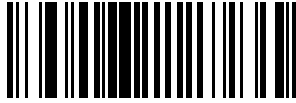
*Disable Codabar Check Digit Transmission (0)

MSI

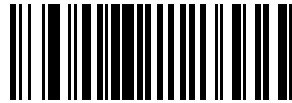
Parameter # 11 (SSI #0Bh)

This parameter enables or disables MSI.

- Enabled - enables MSI.
- *Disabled - disables MSI.



Enable MSI (1)



*Disable MSI (0)

Set Lengths for MSI

L1 Parameter # 30 (SSI #1Eh)

L2 Parameter # 31 (SSI #1Fh)

This parameter sets lengths for MSI.

The length of a code refers to the number of characters (for example, 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 (4-55). L1 is 0-80; L2 is 0-80.



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

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

- One Discrete Length - Decode only MSI symbols containing a selected length.
- Two Discrete Lengths - Decode only MSI symbols containing either of two lengths.
- Length Within Range - Decode MSI symbols with a specific length range.
- Any Length - Decode MSI symbols containing any number of characters within the scanner's capability.



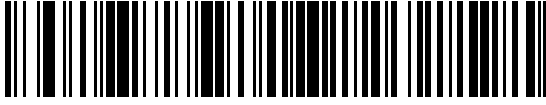
NOTE: Due to the construction of the MSI symbology, it is possible for a scan line covering only a portion of the code to transmit as a complete scan, yielding less data than is encoded in the barcode. To prevent this, select specific lengths (MSI - One Discrete Length, Two Discrete Lengths) for MSI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

Select lengths using barcodes in [Numeric Barcodes](#). To correct an error or change the selection, scan [Cancel](#).

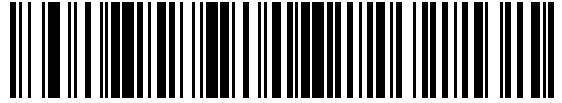
For example:

- To decode only MSI symbols with 14 characters, scan MSI - One Discrete Length, and then scan 1, 4.
- To decode only MSI symbols containing either 2 or 14 characters, scan MSI - Two Discrete Lengths, and then scan 0, 2, 1, 4.

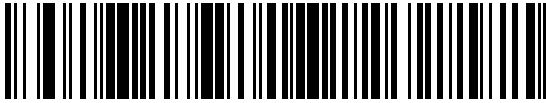
- To decode MSI symbols containing between 4 and 12 characters, scan MSI - Length Within Range, and then scan 0, 4, 1, 2.



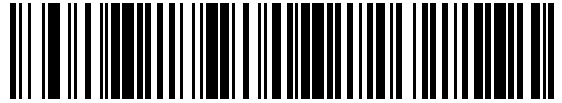
MSI - One Discrete Length



MSI - Two Discrete Lengths



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



MSI - Any Length

MSI Check Digits

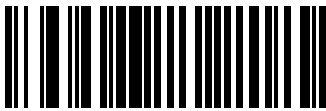
Parameter # 50 (SSI #32h)

This parameter checks the MSI check digit to verify that the data complies with the specified check digit algorithm.

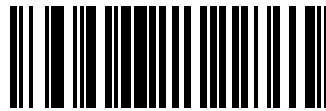
With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional. If the MSI codes include two check digits, select the Two MSI Check Digits option to enable verification of the second check digit.

- 0 - Does not check the MSI check digit; decodes MSI with no check digit.
- 1 - This is for MSI barcodes with one check digit. This is the default.
- 2 - This is for MSI barcodes with two check digits.

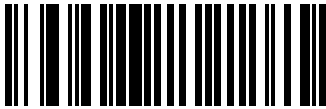
[MSI Check Digit Algorithm](#) to select second digit algorithms.



No MSI Check Digit (0)



*One MSI Check Digits (1)



Two MSI Check Digit (2)

Transmit MSI Check Digit(s)

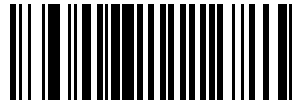
Parameter # 46 (SSI #2Eh)

This parameter transmits MSI data with or without the check digit.

- Enabled - transmits MSI data with check digit.
- *Disabled - does not transmit MSI data check digit.



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



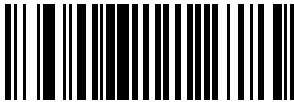
*Do Not Transmit MSI Check Digit(s) (Disable) (0)

MSI Check Digit Algorithm

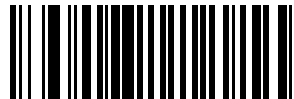
Parameter # 51 (SSI #33h)

This parameter selects the algorithm used to encode the check digit.

Two algorithms are available for verifying the second MSI check digit. Select one of the following options 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)

This parameter enables or disables decoding MSI with reduced quiet zones (the margins on either side of the barcode).

If you select Enable, select a [1D Quiet Zone Level](#).

- *Disabled - disables MSI with reduced Quiet Zones.
- Enabled - enables MSI with reduced Quiet Zones.



*Disable MSI Reduced Quiet Zone (0)



Enable MSI Reduced Quiet Zone (1)

Chinese 2 of 5

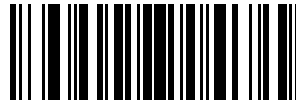
Parameter # 408 (SSI #98h)

This parameter enables or disables Chinese 2 of 5.

- Enabled - enables Chinese 2 of 5.
- *Disabled - disables Chinese 2 of 5.



Enable Chinese 2 of 5 (1)



*Disable Chinese 2 of 5 (0)

Inverse 1D

Parameter # 586 (SSI #F1h 4Ah)

This parameter sets the 1D inverse decoder setting.

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



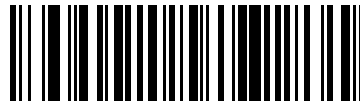
NOTE: This parameter does not apply to GS1 DataBarcode types.



NOTE: The Inverse 1D setting may impact Composite or Inverse Composite decoding.



*Regular Only (0)



Inverse Only (1)



Inverse Autodetect (2)

GS1 DataBar

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

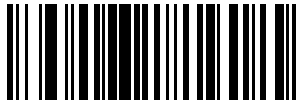
GS1 DataBar Omnidirectional (formerly GS1 DataBar-14)

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

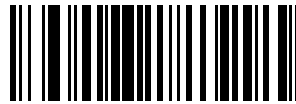
Parameter # 338 (SSI #F0h 52h)

This parameter enables or disables GS1 DataBar Omnidirectional.

- Enabled - enables GS1 DataBar Omnidirectional.
- *Disabled - disables GS1 DataBar Omnidirectional.



Enable GS1 DataBar Omnidirectional (1)



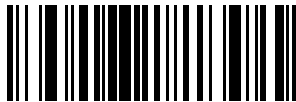
*Disable GS1 DataBar Omnidirectional (0)

GS1 DataBar Limited

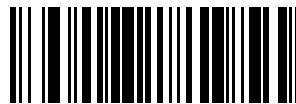
Parameter # 339 (SSI #F0h 53h)

This parameter enables or disables GS1 DataBar Limited.

- Enabled - enables GS1 DataBar Limited.
- *Disabled - disables GS1 DataBar Limited.



Enable GS1 DataBar Limited (1)



*Disable GS1 DataBar Limited (0)

GS1 DataBar Expanded

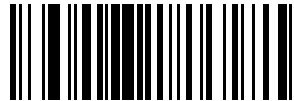
Parameter # 340 (SSI #F0h 54h)

This parameter enables or disables GS1 DataBar Expanded.

- Enabled - enables GS1 DataBar Expanded.
- *Disabled - disables GS1 DataBar Expanded.



Enable GS1 DataBar Expanded (1)



*Disable GS1 DataBar Expanded (0)

Convert GS1 DataBar to UPC/EAN/JAN

Parameter # 397 (SSI #F0h, 8Dh)

This parameter enables or disables Convert GS1 DataBar to UPC/EAN/JAN.

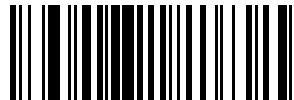
- Enabled - enables Convert GS1 DataBar to UPC/EAN/JAN.
- *Disabled - disables Convert GS1 DataBar to UPC/EAN/JAN.

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

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



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



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

GS1 DataBar Security Level

Parameter # 1706 (SSI #F8h 06h AAh)

This parameter sets the security level for GS1 DataBar.

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

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



GS1 DataBar Security Level 0 (0)



*GS1 DataBar Security Level 1 (1)



GS1 DataBar Security Level 2 (2)



GS1 DataBar Security Level 3 (3)

GS1 DataBar Limited Margin Check

Parameter # 728 (SSI #F1h D8h)

This parameter sets the margin level for GS1 DataBar.

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

- Margin Check Level 1 – No clear margin required. This complies with the original GS1 standard, yet can result in erroneous decoding of a DataBar Limited barcode when scanning some UPC symbols that start with digits 9 and 7.
- Margin Check Level 2 – Automatic risk detection. This level of margin check can result in erroneous decoding of DataBar Limited barcodes when scanning some UPC symbols. If a misdecode is detected, the scanner operates in Level 3 or Level 1.
- *Margin Check Level 3 – Margin check level reflects the newly proposed GS1 standard that requires a five times trailing clear margin.
- Margin Check Level 4 – Margin check 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)

This parameter set the expanded security level for GS1 DataBar.

The scanner offers four levels of decode security for GS1 DataBar Expanded:

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



GS1 DataBar Expanded Security Level 0 (0)



*GS1 DataBar Expanded Security Level 1 (1)



GS1 DataBar Expanded Security Level 2 (2)

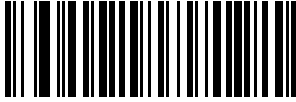


GS1 DataBar Expanded Security Level 3 (3)

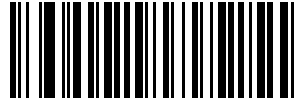
GS1 Databar Enhanced Demote

Parameter # 1774 (SSI #F8h 06h Eeh)

This parameter enables and disables GS1 Databar Enhanced Demote.



Enable GS1 Databar Enhanced Demote (1)



*Disable GS1 Databar Enhanced Demote (0)

GS1 Digital Link Parameters

GS1 Digital Link

Parameter #2373 (SSI #F8h 09h 45h)

This parameter enables or disables GS1 Digital Link.



Enable (1)



Disable (0)

GS1 Digital Link Mode

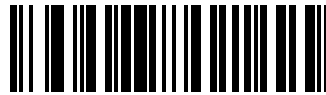
Parameter #2374 (SSI #)

This parameter selects the GS1 Digital Link Mode when the GS1 Digital Link is enabled.

- Mode 1 GTIN only: This mode sends either the 1D GTIN or 2D GTIN, whichever is decoded first.
- Mode 2 Prioritize 2D: This mode prioritizes the 2D GS1 Digital Link over 1D barcodes. If it sees the 2D within the GS1 Digital Link Prioritization Timeout, it reports the 2D barcode only. If it does not decode a 2D GS1 Digital Link barcode within the GS1 Digital Link Prioritization Timeout, it will report the 1D barcode, assuming the 1D was in the field of view and decoded.
- Mode 3 Corroborate 1D and 2D GTINs Match: The 1D barcode is reported if it is decoded before the 2D barcode. If a matching GTIN 2D barcode is seen within the GS1 Digital Link Prioritization Timeout, the 2D is also reported. The matching 1D and 2D barcodes have the same unique 8-digit prefix to indicate they have the same data. If the 2D is decoded first before the 1D, only the 2D is reported.



Mode 1: GTIN only (1)



Mode 2: Prioritize 2D (2)



Mode 3: Corroborate 1D and 2D GTINs Match (3)

GS1 Digital Link Prioritization Timeout

Parameter #2491 (SSI #F8h 09h BBh)

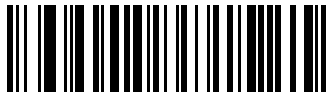
This parameter defines the maximum amount of time the scanner attempts to decode a 2D GS1 Digital Link barcode.

To set the GS1 Digital Link Prioritization Timeout, scan the barcode below. Then, scan four numeric barcodes from the [Numeric Barcodes](#) corresponding to the desired prioritization time. Enter leading zeroes for times of less than 4 values. For example, to enter 250 msec, scan **0 2 5 0**. To correct an error or change the selection, scan [Cancel](#).

- When the Digital Link Mode is set to Mode 2, this is the amount of time the scanner looks for the 2D GS1 Digital Link barcode. If the timer expires before finding the 2D GS1 barcode, the 1D barcode is sent.
- When the Digital Link Mode is set to Mode 3, if the 1D barcode is decoded first, this is the amount of time the scanner continues to look for the 2D barcode.



NOTE: This parameter is set in 1 msec increments.



Symbology-Specific Security Features

These security features are unique to the Symbology section.

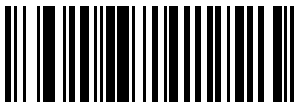
Redundancy Level

Parameter # 78 (SSI #4Eh)

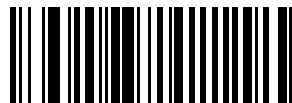
This parameter selects the redundancy level appropriate for the barcode quality.

Select higher redundancy levels for decreasing levels of barcode quality. As redundancy levels increase, the scanner's aggressiveness decreases.

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



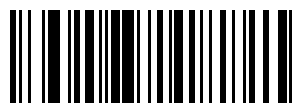
*Redundancy Level 1 (1)



Redundancy Level 2 (2)



Redundancy Level 3 (3)



Redundancy Level 4 (4)

Security Level

Parameter # 77 (SSI #4Dh)

This parameter sets the security level.

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

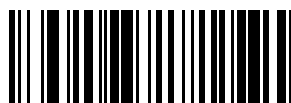
- Security Level 0 - The scanner operates in its most aggressive state, while providing sufficient security decoding most in-spec barcodes.
- Security Level 1 - This default setting eliminates most mis-decodes.
- Security Level 2 - Select this option if Security Level 1 fails to eliminate mis-decodes.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



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



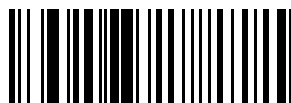
Security Level 0 (0)



*Security Level 1 (1)



Security Level 2 (2)



Security Level 3 (3)

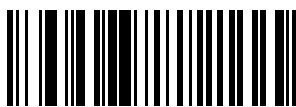
1D Quiet Zone Level

Parameter # 1288 (SSI #F8h 05h 08h)

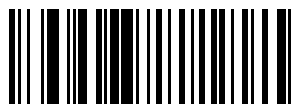
This parameter sets the level of aggressiveness when setting a reduced quiet zone (the margin on either side of a barcode), and applies to symbologies enabled by a Reduced Quiet Zone parameter.

Because higher levels increase the decoding time and risk of mis-decodes, Zebra strongly recommends enabling only the symbologies which require higher quiet zone levels, and leaving Reduced Quiet Zone disabled for all other symbologies. Options are:

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



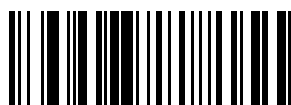
1D Quiet Zone Level 0 (0)



*1D Quiet Zone Level 1 (1)



1D Quiet Zone Level 2 (2)



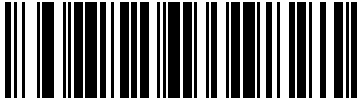
1D Quiet Zone Level 3 (3)

Intercharacter Gap Size

Parameter # 381 (SSI #F0h 7Dh)

This parameter enables a device to tolerate large intercharacter gap sizes.

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



*Normal Intercharacter Gaps (6)



Large Intercharacter Gaps (10)

Random Weight Check Digits

The following sections allow you to select an appropriate random weight check option.

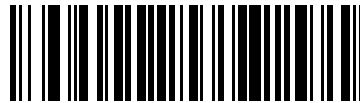
UPC-A Starting with '2'

Parameter # 1867 (SSI # F8 07 4Bh)

Select the appropriate random weight check option to the UPC-A format starting with '2'.



*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

EAN-13 Starting with '20'

Parameter # 1868 (SSI # F8 07 4Ch)

Select the appropriate random weight check option on the EAN-13 format starting with '20'.



*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

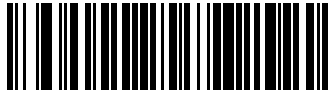


Not Random Weight Barcode (3)

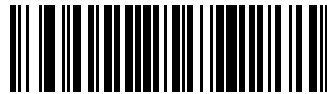
EAN-13 Starting with '21'

Parameter # 1869 (SSI # F8 07 4Dh)

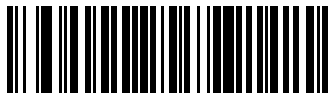
Select the appropriate random weight check option on the EAN-13 format starting with '21'.



*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)



Not Random Weight Barcode (3)

EAN-13 Starting with '22'

Parameter # 1870 (SSI # F8 07 4Eh)

Select the appropriate random weight check option on the EAN-13 format starting with '22'.



*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

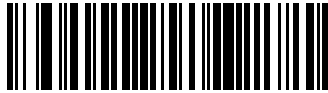


Not Random Weight Barcode (3)

EAN-13 Starting with '23'

Parameter # 1871 (SSI # F8 07 4Fh)

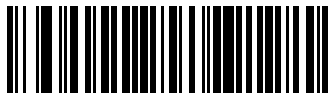
Select the appropriate random weight check option on the EAN-13 format starting with '23'.



*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

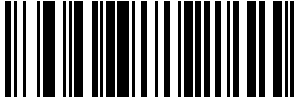


Not Random Weight Barcode (3)

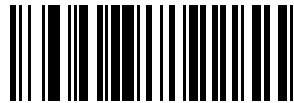
EAN-13 Starting with '24'

Parameter # 1872 (SSI # F8 07 50h)

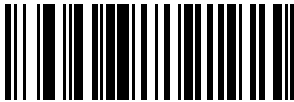
Select the appropriate random weight check option on the EAN-13 format starting with '24'.



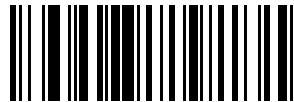
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)



Not Random Weight Barcode (3)

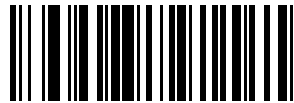
EAN-13 Starting with '25'

Parameter # 1873 (SSI # F8 07 51h)

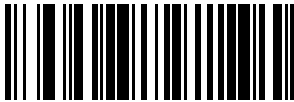
Select the appropriate random weight check option on the EAN-13 format starting with '25'.



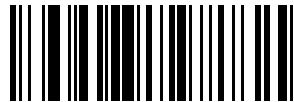
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

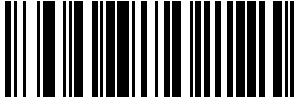


Not Random Weight Barcode (3)

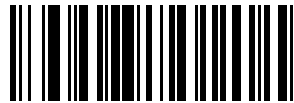
EAN-13 Starting with '26'

Parameter # 1874 (SSI # F8 07 52h)

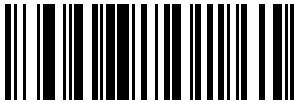
Select the appropriate random weight check option on the EAN-13 format starting with '26'.



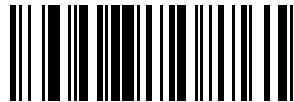
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

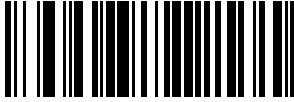


Not Random Weight Barcode (3)

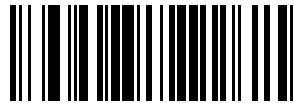
EAN-13 Starting with '27'

Parameter # 1875 (SSI # F8 07 53h)

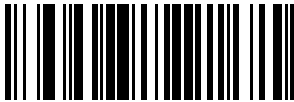
Select the appropriate random weight check option on the EAN-13 format starting with '27'.



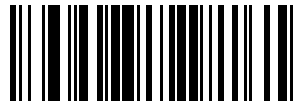
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

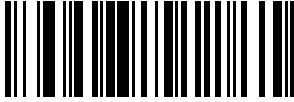


Not Random Weight Barcode (3)

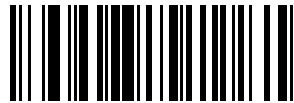
EAN-13 Starting with '28'

Parameter # 1876 (SSI # F8 07 54h)

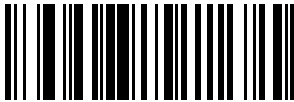
Select the appropriate random weight check option on the EAN-13 format starting with '28'.



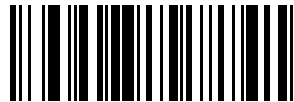
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)

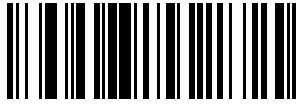


Not Random Weight Barcode (3)

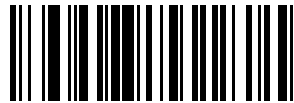
EAN-13 Starting with '29'

Parameter # 1877 (SSI # F8 07 55h)

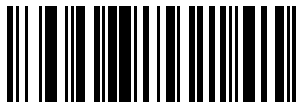
Select the appropriate random weight check option on the EAN-13 format starting with '29'.



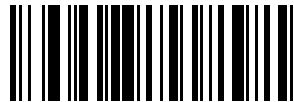
*No Check Digits (0)



4 Price Check Digits (1)



5 Price Check Digits (2)



Not Random Weight Barcode (3)

2D Symbologies

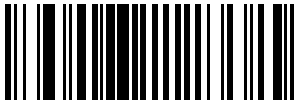
The following parameters are specific to 2D Symbologies.

PDF417

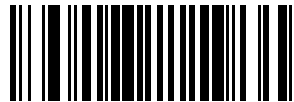
Parameter # 15 (SSI 0Fh)

This parameter enables or disables PDF417.

- Enabled - enables PDF417.
- *Disabled - disables PDF417.



Enable PDF417 (1)



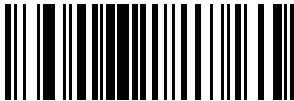
*Disable PDF417 (0)

MicroPDF417

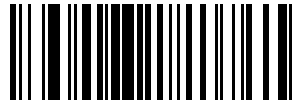
Parameter # 227 (SSI #E3h)

This parameter enables or disables MicroPDF417

- Enabled - enables MicroPDF417.
- *Disabled - disables MicroPDF417.



Enable MicroPDF417 (1)



*Disable MicroPDF417 (0)

Code 128 Emulation

Parameter # 123 (SSI #7Bh)

This parameter transmits data from certain MicroPDF417 symbols as Code 128.

You must enable [AIM Code Characters](#) 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:

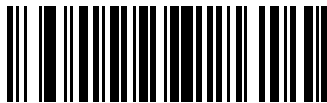
]L3 if the first codeword is 903-905

]L4 if the first codeword is 908 or 909

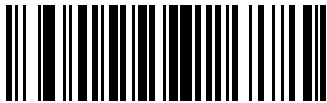
]L5 if the first codeword is 910 or 911



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)

This parameter enables or disables Data Matrix.

- Enabled - enables Data Matrix.
- *Disabled - disables Data Matrix.



Enable Data Matrix (1)



*Disable Data Matrix (0)

GS1 Data Matrix

Parameter # 1336 (SSI #F8h 05h 38h)

This parameter enables or disables GS1 Data Matrix.

- Enabled - enables GS1 Data Matrix.
- *Disabled - disables GS1 Data Matrix.



Enable GS1 Data Matrix (1)



*Disable GS1 Data Matrix (0)

Data Matrix Inverse

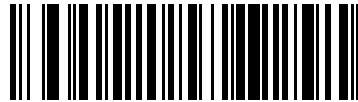
Parameter # 588 (SSI #F1h 4Ch)

This parameter selects the Data Matrix inverse decoder setting.

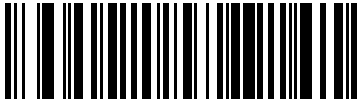
- Regular Only - The scanner decodes regular Data Matrix barcodes only.
- Inverse Only - The scanner decodes inverse Data Matrix barcodes only.
- Inverse Autodetect - The scanner decodes both regular and inverse Data Matrix barcodes.



*Regular Only (0)



Inverse Only (1)



Inverse Autodetect (2)

QR Code

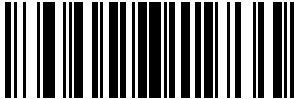
Parameter # 293 (SSI #F0h 25h)

This parameter enables or disables QR Code.

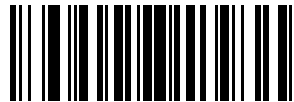
- Enabled - enables QR Code.
- *Disabled - disables QR Code.



NOTE: Enabling this also enables QR Mirrored and Linked QR.



Enable QR Code (1)



*Disable QR Code (0)

Weblink QR

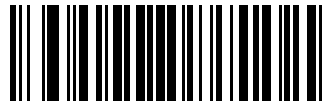
Parameter # 1947 (SSI #F8 07 9Bh)

This parameter enables you to decode or not decode Weblink QR codes.

- Do Not Decode Weblink QR Codes - disables you from decoding Weblink QR codes.
- Decode Weblink QR Codes - enables you to decode Weblink QR codes.



Disable Weblink QR (0)



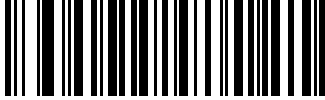
Enable Weblink QR (1)

GS1 QR

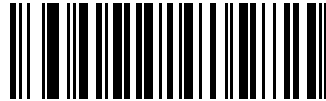
Parameter # 1343 (SSI #F8h 05h 3Fh)

This parameter enables or disables GS1 QR.

- Enabled - enables GS1 QR
- *Disabled - disables GS1 QR.



Enable GS1 QR (1)



*Disable GS1 QR (0)

MicroQR

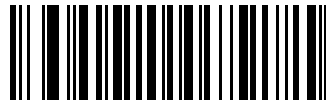
Parameter # 573 (SSI #F1h 3Dh)

This parameter enables or disables MicroQR.

- Enabled - enables MicroQR.
- *Disabled - disables MicroQR.



Enable MicroQR (1)



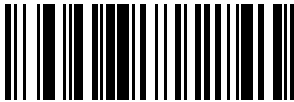
*Disable MicroQR (0)

Linked QR Mode

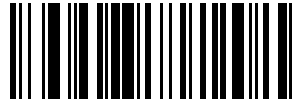
Parameter # 1847 (SSI #737h)

This parameter selects a linked QR mode.

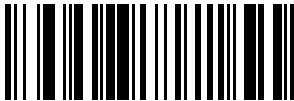
- *Linked QR Only - The scanner does not decode individual QR symbols from a set of linked QR codes.
- Individual QR With Headers - The scanner decodes individual QR symbols from a set of linked QR codes and retains the header information and data.
- Individual QR No Headers - The scanner decodes individual QR symbols from a set of linked QR codes and transmits the data without header information.



*Linked QR Only (0)



Individual QR With Headers (1)



Individual QR No Headers (2)

Aztec

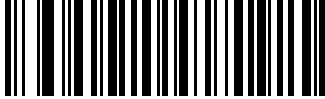
Parameter # 574 (SSI #F1h 3Eh)

This parameter enables or disables Aztec.

- Enabled - enables Aztec.
- *Disabled - disables Aztec.



NOTE: Enabling this also enables Linked Aztec.



Enable Aztec (1)



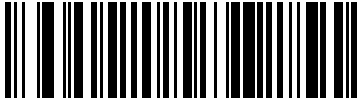
*Disable Aztec (0)

Aztec Inverse

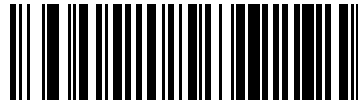
Parameter # 589 (SSI #F1h 4Dh)

This parameter selects the Aztec inverse decoder setting.

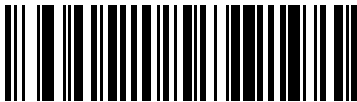
- Regular Only - The scanner decodes regular Aztec barcodes only.
- Inverse Only - The scanner decodes inverse Aztec barcodes only.
- *Inverse Autodetect - The scanner decodes both regular and inverse Aztec barcodes.



Regular Only (0)



Inverse Only (1)



*Inverse Autodetect (2)

Han Xin

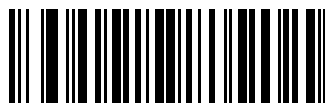
Parameter # 1167 (SSI #F8h 04h 8Fh)

This parameter enables or disables Han Xin.

- Enabled - enables Han Xin.
- *Disabled - disables Han Xin.



Enable Han Xin (1)



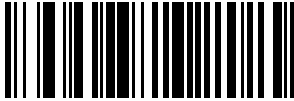
*Disable Han Xin (0)

Han Xin Inverse

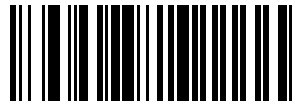
Parameter # 1168 (SSI #F8h 04h 90h)

This parameter selects a Han Xin inverse decoder setting.

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



*Regular Only (0)



Inverse Only (1)



Inverse Autodetect (2)

Grid Matrix

Parameter # 1718 (SSI #F8 06h B6h)

This parameter enables or disables Grid Matrix.

- Enabled - enables Grid Matrix.
- *Disabled - disables Grid Matrix.



Enable Grid Matrix (1)



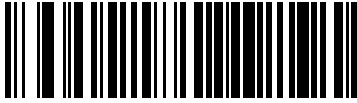
*Disable Grid Matrix (0)

Grid Matrix Inverse

Parameter # 1719 (SSI #F8h 06h B7h)

This parameter selects a Grid Matrix inverse decoder setting.

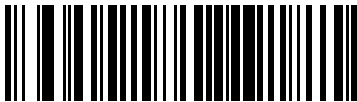
- *Regular Only - the imager decodes Grid Matrix barcodes with normal reflectance only.
- Inverse Only - the imager decodes Grid Matrix barcodes with inverse reflectance only.
- Inverse Autodetect - the imager decodes both regular and inverse Grid Matrix barcodes.



*Regular (0)



Inverse Only (1)



Inverse Autodetect (2)

Grid Matrix Mirrored

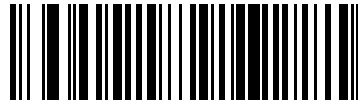
Parameter # 1736 (SSI #F8h 06h C8h)

This parameter selects a mirror image Grid Matrix setting.

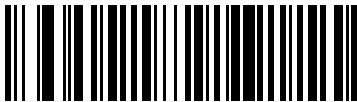
- *Non-Mirrored Only - the imager decodes non-mirrored Grid Matrix barcodes only.
- Mirrored Only - the imager decodes mirrored Grid Matrix barcodes only.
- Autodetect - the imager decodes both mirrored and non-mirrored Grid Matrix barcodes.



*Non-Mirrored Only (0)



Mirrored Only (1)



Mirrored Autodetect (2)

DotCode

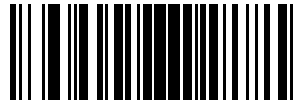
Parameter # 1906 (SSI #F8 07 72h)

You can enable or disable DotCode.

- Enabled - enables DotCode.
- *Disabled - disables DotCode.



*Disable DotCode (0)



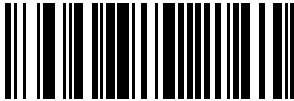
Enable Dotcode (1)

DotCode Prioritize

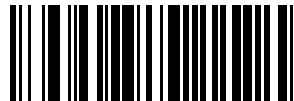
Parameter # 1937 (SSI #F8 07 91h)

This parameter enables or disables giving priority to DotCode decoding versus other symbologies.

- Disabled - disables DotCode as a priority.
- *Enabled - enables DotCode as a priority.



Disable DotCode Prioritize (0)



*Enable DotCode Prioritize (1)

DotCode Inverse

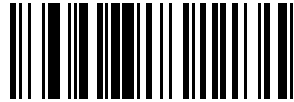
Parameter # 1907 (SSI #F8 07 73h)

This parameter selects the DotCode Inverse decoder setting.

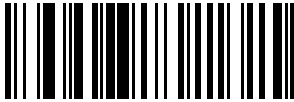
- Regular Only - the device decodes DotCode Inverse codes with normal reflectance only.
- Inverse Only - the device decodes DotCode Inverse codes with inverse reflectance only.
- Inverse Autodetect - the device decodes DotCode Inverse codes with both normal and inverse reflectance.



Regular (0)



Inverse Only (1)



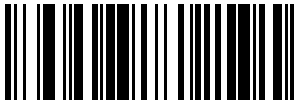
*Autodetect (2)

DotCode Mirrored

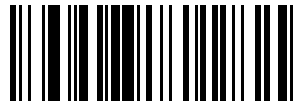
Parameter # 1908 (SSI #F8 07 74h)

This parameter sets a DotCode Mirror decoder setting.

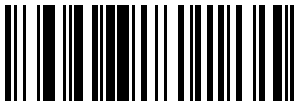
- Never - decodes non-mirrored DotCode codes only.
- Always - decodes mirrored DotCode codes only.
- *Autodetect - decodes both mirrored and non-mirrored DotCode codes.



Never (0)



Always (1)



*Autodetect

Macro PDF Features

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

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

Macro PDF User Indications

In this mode the scanner provides the following feedback.



NOTE: The beep only sounds if the *BEEPER_ON signal is connected.

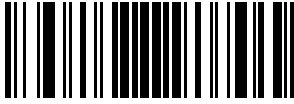


NOTE: The T columns indicate whether the symbol transmitted to the host (N = No transmission).

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

Flush Macro PDF Buffer

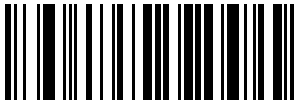
This parameter flushes the buffer of all decoded Macro PDF data stored to that point, transmits it to the host device, and aborts from Macro PDF mode.



Flush Macro PDF Buffer

Abort Macro PDF Entry

This parameter clears all currently-stored Macro PDF data in the buffer without transmission and aborts from Macro PDF mode.



Abort Macro PDF Entry

Digimarc

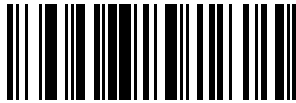
Digimarc Digital Watermark is a machine-readable code that is invisible to people.

Digimarc Digital Watermarks

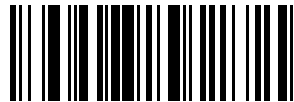
Parameter # 1687 (SSI # F8h 0h 97h)

This parameter enables or disables the Digimarc Digital Watermarks.

- Enabled - Enables the Digimarc Digital Watermarks.
- *Disabled - Disables the Digimarc Digital Watermarks.



Enable Digimarc Digital Watermarks/DW (1)



*Disable Digimarc Digital Watermarks/DW (0)

Driver's License Set Up

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



NOTE: Only applies to -DL model digital scanners. North America configurations only.

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

Table 24 DL Parsing Parameter Table

Parameter	Default
DL Parsing Parameters	
Driver's License Parsing	No Driver's License Parsing
Parsing Driver's License Data Fields	N/A
Driver's License Parse Rules	N/A
AAMVA Parse Fields	N/A
Set Default Parameter	N/A
Output Gender as M or F	N/A
Date Format	CCYYMMDD
No Separator	N/A
Send Keystroke Control Characters Keyboard Characters	N/A
Parsing Rule Example	N/A
Embedded Driver's License Parsing ADF Example	N/A

Driver's License Parsing

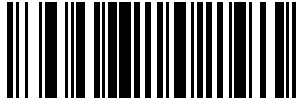
Parameter # 645 (SSI #F1 85)

This parameter enables driver's license parsing on the scanner.

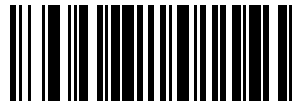


NOTE: This does not require Zebra software (.DLL).

Choose more options in the order indicating the sequence of data fields that the scanner outputs. See [Parsing Driver's License Data Fields](#) for more information.



*No Driver's License Parsing



Embedded Driver's License Parsing

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

To program a parsing rule:

1. Choose [Begin New Driver's License Parse Rule](#).
2. Choose any of the field options on the following pages, or [Send Keystroke \(Control Characters and Keyboard Characters\)](#).
3. After entering the entire rule, select [Save Driver's License Parse Rule](#) to save the rule.



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

To abort the programming sequence at any time during programming, choose [Quit Entering Driver's License Parse Rule](#). Any previously saved rule is retained.

To erase a saved rule, select [Erase Driver's License Parse Rule](#).

Embedded Driver's License Parsing Criteria - Code Type

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



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

See [Embedded Driver's License Parsing ADF Example](#) for a sample ADF rule using this code type criterion.

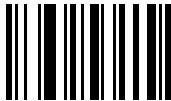
Driver’s License Parse Fields

These options are the supported parse fields for driver's license.

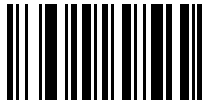
Not all IDs present data in the same format. For example, some IDs can have separate fields for first name, last name, and middle initial, while others have a single field with the entire name. Also, some IDs expire on the subject's birth date while the expiration date field only indicates the year. To present data in a consistent format, use the nine options provided in this section to return data calculated from the actual data contained in the ID barcode.



Begin New Driver’s License Parse Rule



Save Driver’s License Parse Rule



Quit Entering Driver’s License Rule

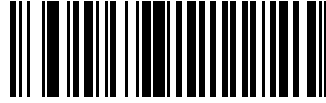


Erase Driver’s License Parse Rules

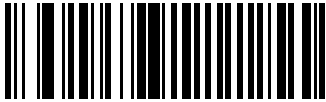
Driver's License Parse Fields (continued)



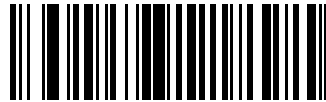
First Name



Middle Name/Initial



Last Name

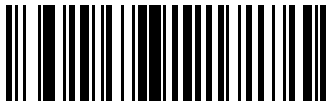


Name Suffix

Driver’s License Parse Fields (continued)



Name Prefix



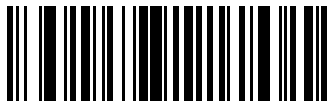
Expiration Date



Birth Date



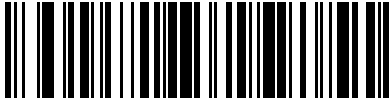
Issue Date



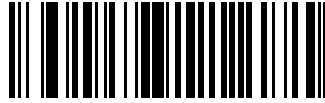
ID Number (Formatted)

AAMVA Parse Fields

The scanner uses the specified fields to parse out information from American Association of Motor Vehicle Administrators (AAMVA) compliant ID cards.



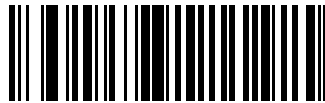
AAMVA Issuer ID



Full Name



Last Name

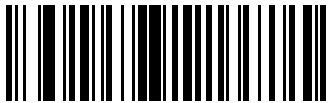


First Name

AAMVA Parse Fields (continued)



Middle Name / Initial



Name Suffix



Name Prefix



Mailing Address Line 1

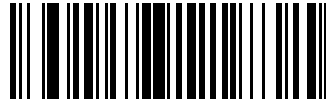
AAMVA Parse Fields (continued)



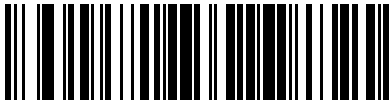
Mailing Address Line 2



Mailing Address City

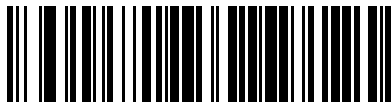


Mailing Address State

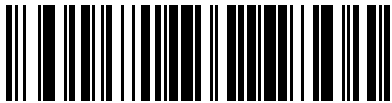


Mailing Address Postal Code

AAMVA Parse Fields (continued)



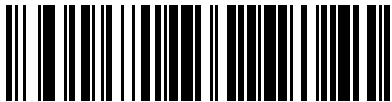
Home Address Line 1



Home Address Line 2



Home Address City

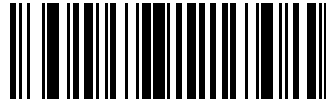


Home Address State

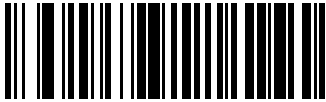
AAMVA Parse Fields (continued)



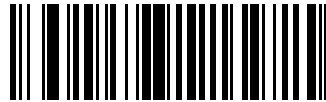
Home Address Postal Code



License ID Number



License Class

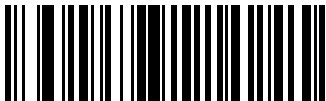


License Restrictions

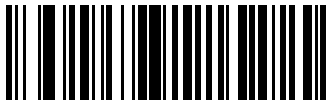
AAMVA Parse Fields (continued)



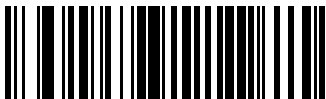
License Endorsements



Height (Feet and/or Inches)



Height (Centimeters)



Weight (Pounds)

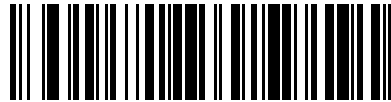
AAMVA Parse Fields (continued)



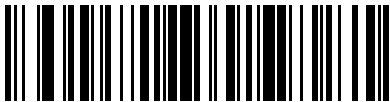
Weight (Kilograms)



Eye Color

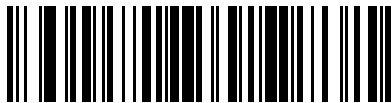


Hair Color

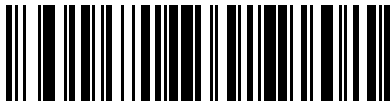


License Expiration Date

AAMVA Parse Fields (continued)



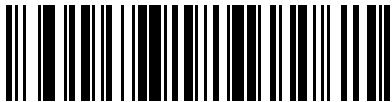
Birth Date



Gender



License Issue Date

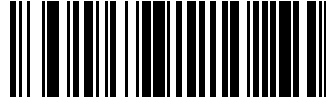


License Issue State

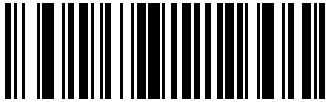
AAMVA Parse Fields (continued)



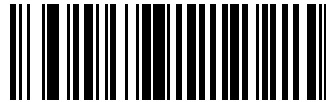
Social Security Number



Permit Class



Permit Expiration Date



Permit ID Number

AAMVA Parse Fields (continued)



Permit Issue Date



Permit Restrictions



Permit Endorsements



AKA Social Security Name

AAMVA Parse Fields (continued)



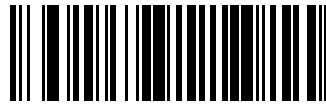
AKA Full Name



AKA Last Name



AKA First Name



AKA Middle Name / Initial

AAMVA Parse Fields (continued)



AKA Name Suffix



AKA Name Prefix



AKA Birth Date



Issue Timestamp

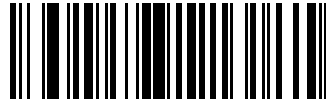
AAMVA Parse Fields (continued)



Number of Duplicates



Medical Codes



Organ Donor



Nonresident

AAMVA Parse Fields (continued)



Customer ID



Weight Range



Document Discriminator



Country

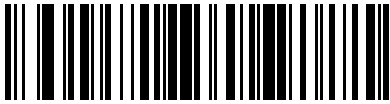
AAMVA Parse Fields (continued)



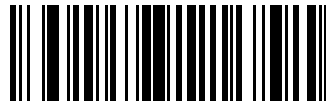
Federal Commission Codes



Place of Birth



Audit Information



Inventory Control

AAMVA Parse Fields (continued)



Race / Ethnicity



Std Vehicle Class



Std Endorsements



Std Restrictions

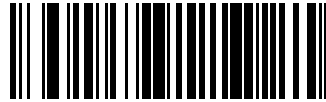
AAMVA Parse Fields (continued)



Class Description



Endorsement Description



Restrictions Description



Height in Inches

AAMVA Parse Fields (continued)



Height in Centimeters



Std Endorsements

Parser Version ID Barcode

Include this field to emit embedded parser software version identification.



Parser Version ID

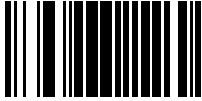
DL Parsing User Preferences

Use the following barcodes to set user preferences.

Set Default Parameter

This parameter returns all parameters to the default values.

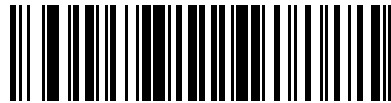
See the default value tables in each section.



*Set All Defaults

Output Gender as M or F

Select this parameter to report the gender as M or F instead of a numeric value.



Output gender as M or F

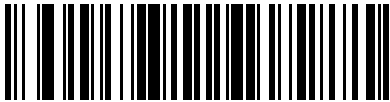
Date Format

Use this parameter to select the date format to display.

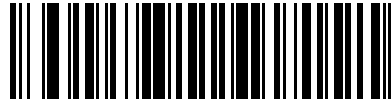
Date fields include the following:

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

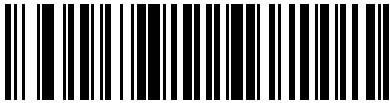
To specify a date separator, for example, a character separating each field of the date, select the **Send <character>** option that corresponds to the alphanumeric character to use as the date separator immediately following the date format barcode. To select no date separator, select the **No Separator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



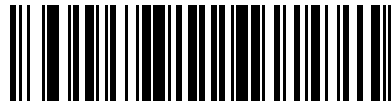
*CCYYMMDD



CCYYDDMM

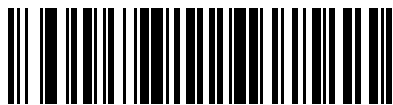


MMDDCCYY



MMCCYYDD

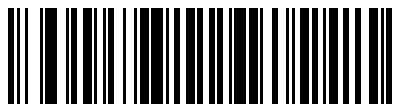
Date Format (continued)



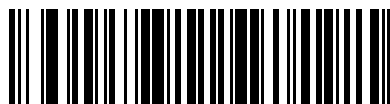
DDMMCCYY



DDCCYYMM



YYMMDD



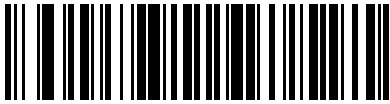
YYDDMM

Date Format (continued)

MMDDYY



MMYYDD



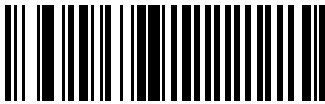
DDMMYY



DDYYMM

No Separator

This parameter immediately follows a date format barcode to use no separator character between the date fields.



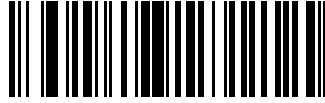
No Separator

Send Keystroke (Control Characters and Keyboard Characters)

Specify a Control Character or a Keyboard Character to send.

Control Characters

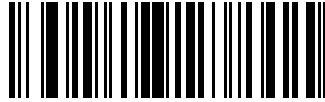
Select a Send Control parameter for the control character to send.



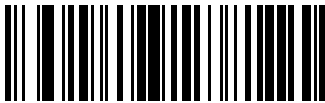
Send Control A



Send Control B



Send Control C



Send Control D

Control Characters (continued)



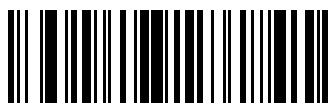
Send Control E



Send Control F



Send Control G

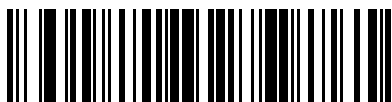


Send Control H

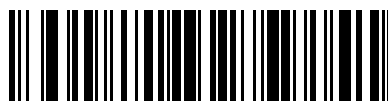
Control Characters (continued)



Send Control I



Send Control J

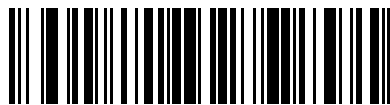


Send Control K



Send Control L

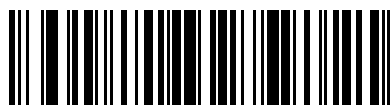
Control Characters (continued)



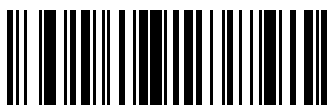
Send Control M



Send Control N

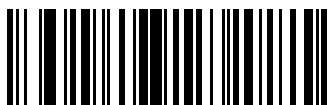


Send Control O

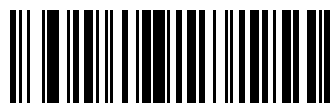


Send Control P

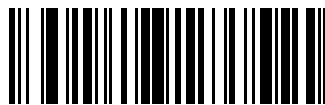
Control Characters (continued)



Send Control R



Send Control T

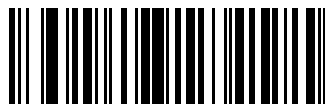


Send Control Q

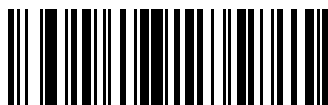


Send Control S

Control Characters (continued)



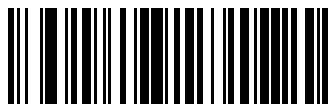
Send Control U



Send Control V

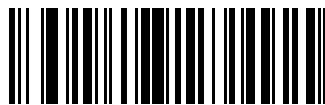


Send Control W



Send Control X

Control Characters (continued)



Send Control Y



Send Control Z



Send Control [

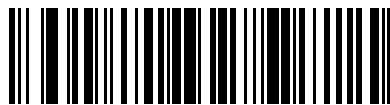


Send Control \

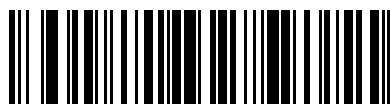
Control Characters (continued)



Send Control 6



Send Control]



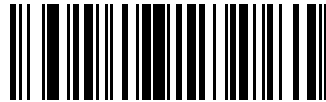
Send Control -

Keyboard Characters

Select a Send parameter for the specific keyboard characters to send.



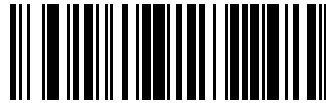
Send Space



Send !

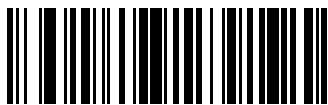


Send "



Send #

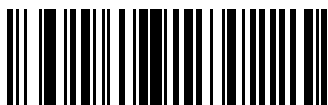
Keyboard Characters (continued)



Send \$



Send %

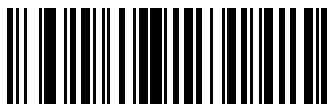


Send &



Send '

Keyboard Characters (continued)



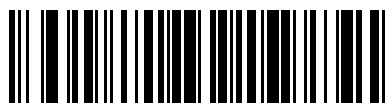
Send (



Send)



Send *

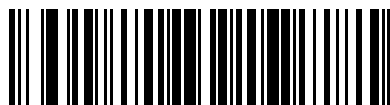


Send +

Keyboard Characters (continued)



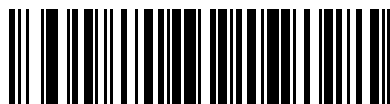
Send ,



Send -

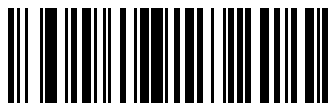


Send .



Send /

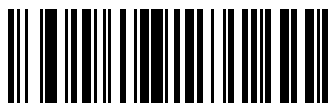
Keyboard Characters (continued)



Send 0



Send 1

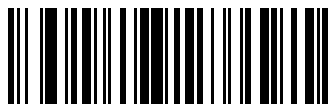


Send 2



Send 3

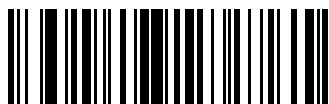
Keyboard Characters (continued)



Send 4



Send 5

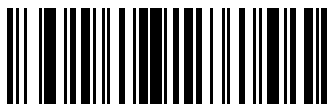


Send 6



Send 7

Keyboard Characters (continued)



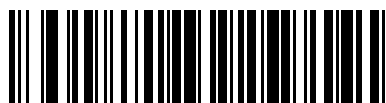
Send 8



Send 9

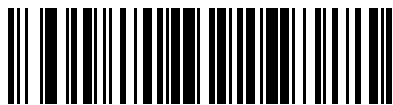


Send :

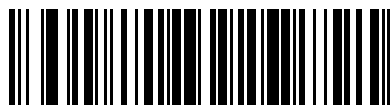


Send ;

Keyboard Characters (continued)



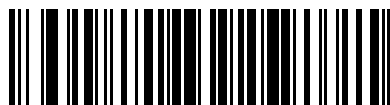
Send <



Send =

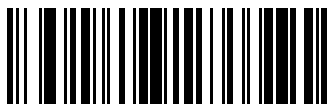


Send >



Send ?

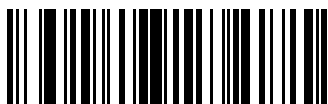
Keyboard Characters (continued)



Send @



Send A

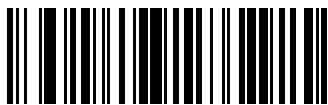


Send B



Send C

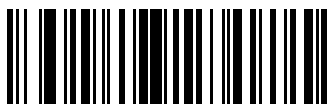
Keyboard Characters (continued)



Send D



Send E

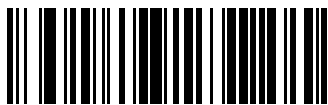


Send F



Send G

Keyboard Characters (continued)



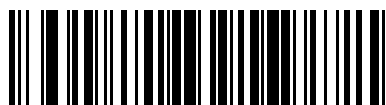
Send H



Send I

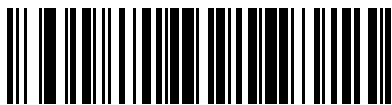


Send J

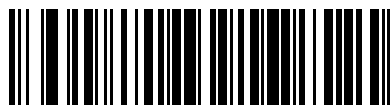


Send K

Keyboard Characters (continued)



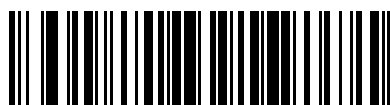
Send L



Send M

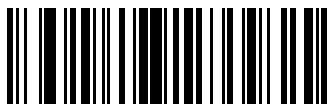


Send N



Send O

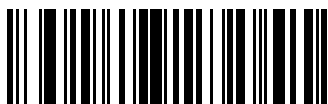
Keyboard Characters (continued)



Send P



Send Q

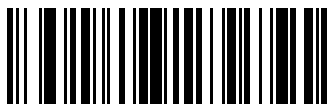


Send R



Send S

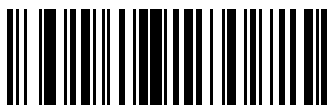
Keyboard Characters (continued)



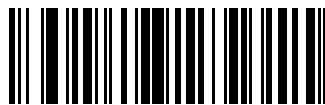
Send T



Send U

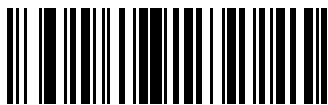


Send V



Send W

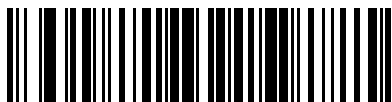
Keyboard Characters (continued)



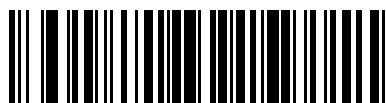
Send X



Send Y

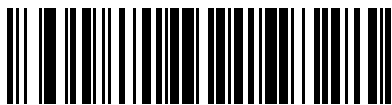


Send Z

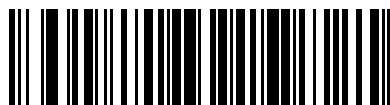


Send [

Keyboard Characters (continued)



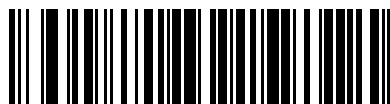
Send \



Send]

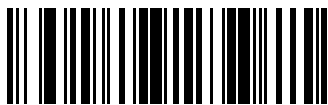


Send ^



Send _

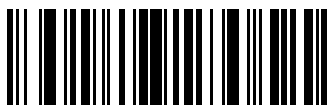
Keyboard Characters (continued)



Send `



Send a

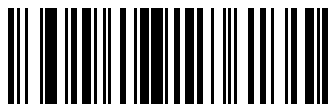


Send b



Send c

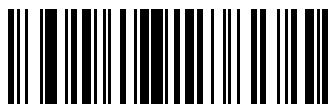
Keyboard Characters (continued)



Send d



Send e

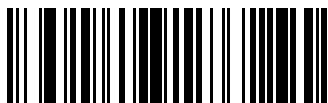


Send f



Send g

Keyboard Characters (continued)



Send h



Send i

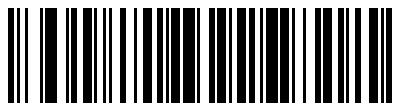


Send j

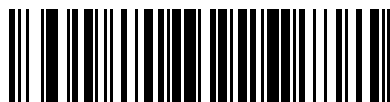


Send k

Keyboard Characters (continued)



Send l



Send m

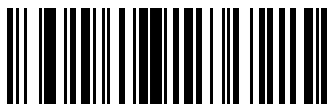


Send n



Send o

Keyboard Characters (continued)



Send p



Send q

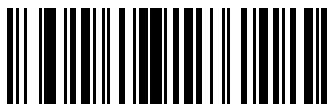


Send r



Send s

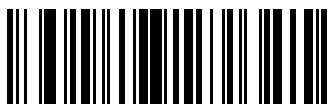
Keyboard Characters (continued)



Send t



Send u

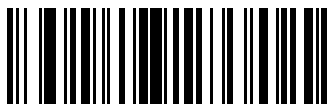


Send v



Send w

Keyboard Characters (continued)



Send x



Send y

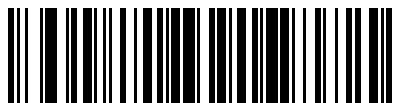


Send z

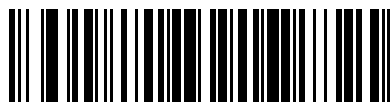


Send {

Keyboard Characters (continued)



Send I



Send }



Send ~



Send Tab Key



Send Enter Key

Parsing Rule Example

Follow the sequence to examine how a parsing rule is created.

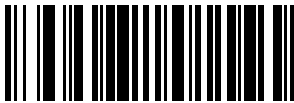
Choose the parameters in sequence to program the scanner to extract and transmit:

- first, middle, and last names
- mailing address line 1
- mailing address line 2
- mailing address city
- mailing address state
- mailing address postal code
- date of birth

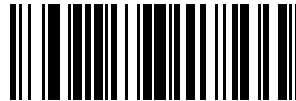
Then, scan a driver's license barcode.



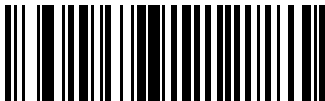
NOTE: This example applies to RS-232. To use this example with a USB interface, enable [USB Function Key Mapping](#) to send the Enter key properly.



1 - Embedded Driver's License Parsing



2 - Begin New Driver's License Parse Rule



3 - First Name



4 - Send Space

Parsing Rule Example (continued)



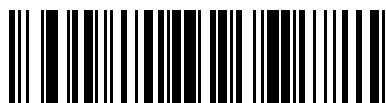
5 - Middle Name / Initial



6 - Send Space



7 - Last Name



8 - Send Enter Key

Parsing Rule Example (continued)



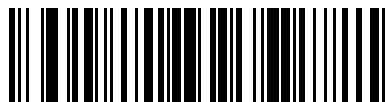
9 - Mailing Address Line 1



10 - Send Space



11 - Mailing Address Line 2



12 - Send Enter Key

Parsing Rule Example (continued)



13 - Mailing Address City



14 - Send Space



15 - Mailing Address State



16 - Send Space

Parsing Rule Example (continued)



17 - Mailing Address Postal Code



18 - Send Enter Key



19 - Birth Date



20 - Send Enter Key



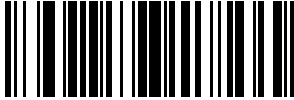
21 - Save Driver's Licence Parse Rule

Embedded Driver's License Parsing ADF Example

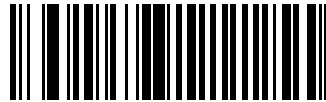
This example creates a parsing rule for parsed data.

The parsing rule configures the data in the following format:

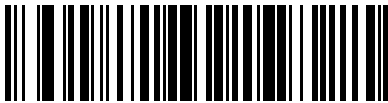
Last Name, First Name



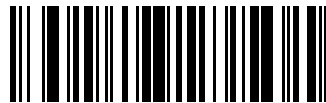
1 - Begin New Driver's License Parse Rule



2 - Last Name



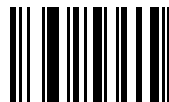
3 - Send ,



4 - Send Space



5 - First Name



6 - Save Driver's License Parse Rule

Embedded Driver's License Parsing ADF Example (continued)

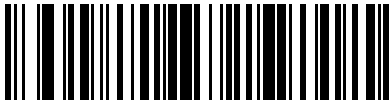
Then, in order to limit the full name to 15 characters, create the following ADF rule



1 - Begin New Rule



2 - Criterion: Parsed Driver's License



3 - Action: Send Next 15 Characters

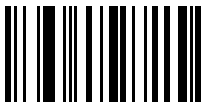


4 - Save Rule

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

Numeric Barcodes

For parameters requiring specific numeric values, scan the appropriately numbered barcodes.



0



1

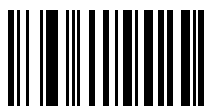


2

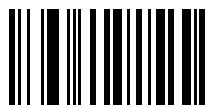


3

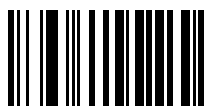
Numeric Barcodes (continued)



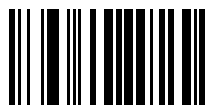
4



5

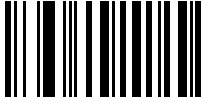


6



7

Numeric Barcodes (continued)



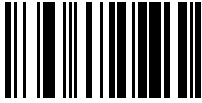
8



9

Cancel

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



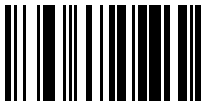
Cancel

Alphanumeric Barcodes

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

Cancel

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



Cancel

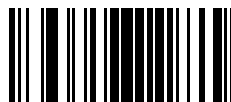
Alphanumeric Barcodes



Space



\$



#



%

Alphanumeric Barcodes (continued)



*



+



-

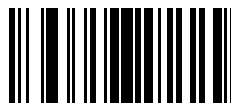


·

Alphanumeric Barcodes (continued)



/



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"

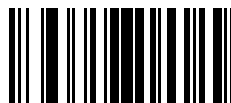


&

Alphanumeric Barcodes (continued)



e



(



)



:

Alphanumeric Barcodes (continued)



;



<



=

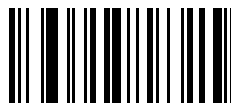


>

Alphanumeric Barcodes (continued)



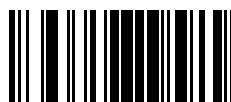
]



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\

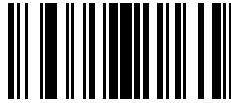
Alphanumeric Barcodes (continued)



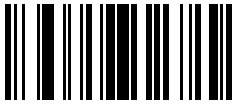
NOTE: Do not confuse the following barcodes with those on the numeric keypad.



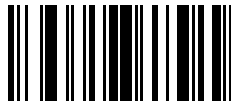
0



1



2



3

Alphanumeric Barcodes (continued)



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



4



5



6



7

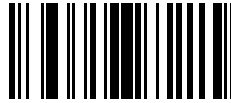
Alphanumeric Barcodes (continued)



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



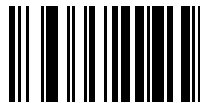
8



9



End of Message



Cancel

Alphanumeric Barcodes (continued)



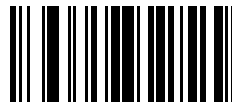
A



B



C

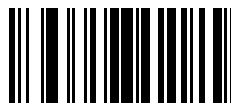


D

Alphanumeric Barcodes (continued)



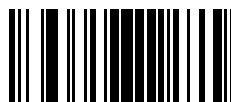
E



F



G

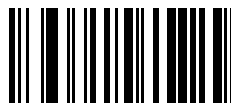


H

Alphanumeric Barcodes (continued)



I



J



K



L

Alphanumeric Barcodes (continued)



M



N



O

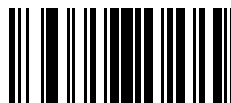


P

Alphanumeric Barcodes (continued)



Q



R



S

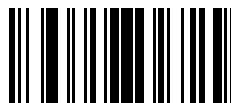


T

Alphanumeric Barcodes (continued)



U



V



W



X

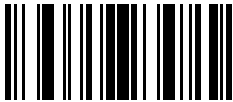
Alphanumeric Barcodes (continued)



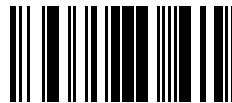
Y



Z



a



b

Alphanumeric Barcodes (continued)



c



d



e



f

Alphanumeric Barcodes (continued)



g



h



i



j

Alphanumeric Barcodes (continued)



k



l



m

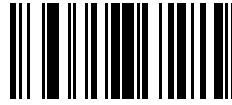


n

Alphanumeric Barcodes (continued)



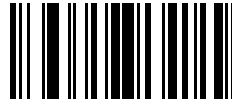
o



p



q



r

Alphanumeric Barcodes (continued)



s



t



u



v

Alphanumeric Barcodes (continued)



w



x



y

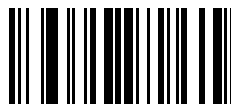


z

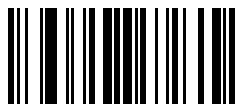
Alphanumeric Barcodes (continued)



{



|



}



~

Alphanumeric Barcodes (continued)



*



+



-



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ASCII Character Sets



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

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 ^a	BCKSPC
1009	\$I	CTRL I/ HORIZONTAL TAB ^b	HORIZ TAB
1010	\$J	CTRL J	LF/NW LN
1011	\$K	CTRL K	VT
1012	\$L	CTRL L	FF
1013	\$M	CTRL M/ ENTER ^c	CR/ENTER
1014	\$N	CTRL N	SO
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

ASCII Character Sets

ASCII Value (Prefix/ Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
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	+	+
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

ASCII Character Sets

ASCII Value (Prefix/ Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
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
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	[	[

ASCII Character Sets

ASCII Value (Prefix/ Suffix Value)	Full ASCII Code 39 Encode Char	Keystroke	ASCII Character (Applies to RS-232 Only)
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
1102	+F	f	f
1103	+G	g	g
1104	+H	h	h
1105	+I	i	i
1106	+J	j	j
1107	+K	k	k
1108	+L	l	l
1109	+M	m	m
1110	+N	n	n
1111	+O	o	o
1112	+P	p	p
1113	+Q	q	q
1114	+R	r	r
1115	+S	s	s
1116	+T	t	t
1117	+U	u	u
1118	+V	v	v
1119	+W	w	w
1120	+X	x	x
1121	+Y	y	y
1122	+Z	z	z
1123	%P	{	{
1124	%Q		
1125	%R	}	}
1126	%S	~	~

ASCII Character Sets

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

- ^a The keystroke in bold transmits only if you enabled Function Key Mapping. Otherwise, the unbold keystroke transmits.
- ^b The keystroke in bold transmits only if you enabled Function Key Mapping. Otherwise, the unbold keystroke transmits.
- ^c The keystroke in bold transmits only if you enabled Function Key Mapping. Otherwise, the unbold keystroke transmits.

Table 25 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

Table 25 ALT Key Character Set (Continued)

ALT Keys	Keystroke
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z
2091	ALT [
2092	ALT \
2093	ALT]



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 26 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

Table 26 GUI Key Character Set (Continued)

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

Table 27 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

Table 27 PF Key Character Set (Continued)

PF Keys	Keystroke
4013	PF 13
4014	PF 14
4015	PF 15
4016	PF 16

Table 28 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 29 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 30 Extended Key Character Set (Extended Keypad)

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

Table 30 Extended Key Character Set (Extended Keypad) (Continued)

Extended Keypad	Keystroke
7013	Enter
7014	Escape
7015	Up Arrow
7016	Dn Arrow
7017	Left Arrow
7018	Right Arrow

Programming Reference

This section provides symbol and AIM code identifiers.

Symbol Code Identifiers

Table 31 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
X	ISSN EAN, PDF417, Macro PDF417, Micro PDF417
z	Aztec, Aztec Rune
P00	Data Matrix
P01	QR Code, MicroQR

Table 31 Symbol Code Characters (Continued)

Code Character	Code Type
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
P0C	Mailmark
P0D	Grid Matrix
P0G	GS1 Data Matrix
P0H	Han Xin
P0Q	GS1 QR
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 below)

m = Modifier Character (see table below)

Table 32 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, GS1 Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	GS1 DataBar Family

Table 32 AIM Code Characters (Continued)

Code Character	Code Type
F	Codabar
G	Code 93
g	Grid Matrix
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, GS1 QR
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, Mailmark, Signature Capture

The modifier character is the sum of the applicable option values based on the following table.

Table 33 Modifier Characters

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII barcode with check character W, A+I+MI+DW, is transmitted as JA7AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic barcode 412356 is transmitted as JX0412356	
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.

Table 33 Modifier Characters (Continued)

Code Type	Option Value	Option
		Example: A Code (EAN) 128 barcode with Function 1 character FNC1 in the first position, AIMID is transmitted as]C1AIMID
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
		Example: An I 2 of 5 barcode without check digit, 4123, is transmitted as]I04123
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
		Example: A Codabar barcode without check digit, 4123, is transmitted as]F04123
Code 93	0	No options specified at this time. Always transmit 0.
		Example: A Code 93 barcode 012345678905 is transmitted as]G0012345678905
MSI	0	Check digits are sent.
	1	No check digit is sent.
		Example: An MSI barcode 4123, with a single check digit checked, is transmitted as]M14123
D 2 of 5	0	No options specified at this time. Always transmit 0.
		Example: A D 2 of 5 barcode 4123, is transmitted as]S04123
UPC/EAN	0	Standard data packet in full EAN format, i.e., 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two digit supplemental data only.
	2	Five digit supplemental data only.
	3	Combined data packet comprising 13 digits from EAN-13, UPC-A or UPC-E symbol and 2 or 5 digits from supplemental symbol.
	4	EAN-8 data packet.
		Example: A UPC-A barcode 012345678905 is transmitted as]E0012345678905
Bookland EAN	0	No options specified at this time. Always transmit 0.
		Example: A Bookland EAN barcode 123456789X is transmitted as]X0123456789X
ISSN EAN	0	No options specified at this time. Always transmit 0.
		Example: An ISSN EAN barcode 123456789X is transmitted as]X0123456789X
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.

Table 33 Modifier Characters (Continued)

Code Type	Option Value	Option
GS1 DataBar Family		No option specified at this time. Always transmit 0. GS1 DataBar Omnidirectional and GS1 DataBar Limited transmit with an Application Identifier "01".Note: In GS1-128 emulation mode, GS1 DataBar is transmitted using Code 128 rules (i.e.,]C1).
		Example: A GS1 DataBar Omnidirectional barcode 0110012345678902 is transmitted as]e00110012345678902.
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 emulationNote: 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 92DEC has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC are not doubled. Note: When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The barcode contains a GS1-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The barcode contains a GS1-128 symbol, and the first codeword is in the range 908-909.
	5	The barcode contains a GS1-128 symbol, and the first codeword is in the range 910-911.
		Example: A PDF417 barcode ABCD, with no transmission protocol enabled, is transmitted as]L2ABCD.
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.

Table 33 Modifier Characters (Continued)

Code Type	Option Value	Option
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
GS1 Data Matrix	2	ECC 200, FNC1 in first or fifth position.
MaxiCode	0	Symbol in Mode 4 or 5.
	1	Symbol in Mode 2 or 3.
	2	Symbol in Mode 4 or 5, ECI protocol implemented.
	3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1 symbol.
	1	Model 2 / MicroQR symbol, ECI protocol not implemented.
	2	Model 2 symbol, ECI protocol implemented.
	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.
GS1 QR	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
Aztec	0	Aztec symbol.
	C	Aztec Rune symbol.
Han Xin	0	Generic data, no special features are set. The transmitted data does not follow the AIM ECI protocol.
	1	ECI protocol enabled. There is at least one ECI mode encoded. Transmitted data must follow the AIM ECI protocol.
Mailmark	0	No option specified at this time. Always transmit 0.

Communication Protocol Functionality

This section provides the list of functionality supported via communication interfaces.

Functionality Supported via Communication (Cable) Interface

The Communication Interface Functionality table lists supported scanner functionality by the communication protocol.

Table 34 Communication Interface Functionality

Communication Interfaces	Functionality		
	Data Transmission	Remote Management	Image and Video Transmission
USB			
HID Keyboard Emulation	Supported	Not Available	Not Available
CDC COM Port Emulation	Supported	Not Available	Not Available
SSI over CDC COM Port Emulation	Supported	Supported	Supported
IBM Table-top USB	Supported	Supported	Not Available
IBM Hand-held USB	Supported	Supported	Not Available
USB OPOS Hand-held	Supported	Supported	Not Available
Symbol Native API (SNAPI) without Imaging Interface	Supported	Supported	Not Available
Symbol Native API (SNAPI) with Imaging Interface	Supported	Supported	Supported
RS-232			
Standard RS-232	Supported	Not Available	Not Available
ICL RS-232	Supported	Not Available	Not Available
Fujitsu RS-232	Supported	Not Available	Not Available
Wincor-Nixdorf RS-232 Mode A	Supported	Not Available	Not Available
Wincor-Nixdorf RS-232 Mode B	Supported	Not Available	Not Available
Olivetti ORS4500	Supported	Not Available	Not Available
Omron	Supported	Not Available	Not Available

Table 34 Communication Interface Functionality (Continued)

Communication Interfaces	Functionality		
	Data Transmission	Remote Management	Image and Video Transmission
CUTE	Supported	Not Available	Not Available
OPOS/JPOS	Supported	Not Available	Not Available
SSI	Supported	Supported	Supported
IBM 4690			
Hand-held Scanner Emulation (Port 9B)	Supported	Not Available	Not Available
Table-top Scanner Emulation (Port 17)	Supported	Supported	Not Available
Non-IBM Scanner Emulation (Port 5B)	Supported	Supported	Not Available

Country Codes

This section provides instructions for programming the keyboard to interface with a USB host.

The host powers the scanner. For host setup information, go to [USB Interface](#).

To select a code page for the country keyboard type, see [Country Code Pages](#).

Scan the barcode corresponding to the keyboard type. This setting applies only to the USB Keyboard (HID) device. If the keyboard type is not listed, see [Keypad Emulation](#).



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

For best results when using international keyboards, enable [Quick Keypad Emulation](#).



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

Use the French International barcode for Belgian French keyboards.

Country Code Barcodes



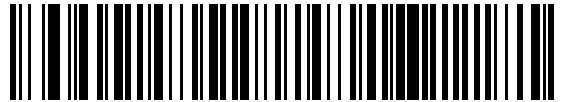
*US English (North American)



US English (Mac)

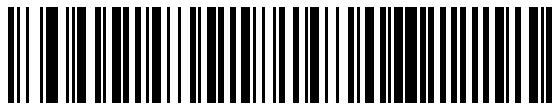


Albanian

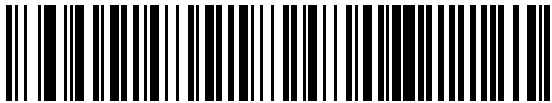


Arabic (101)

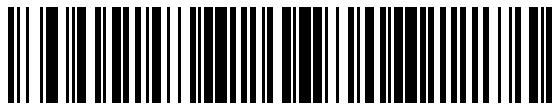
Country Code Barcodes (continued)



Arabic (102)



Arabic (102) AZERTY



Azeri (Latin)



Azeri (Cyrillic)

Country Code Barcodes (continued)



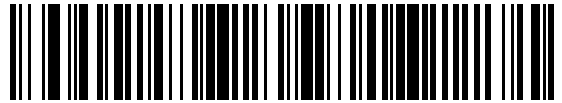
Belarusian



Bosnian (Latin)

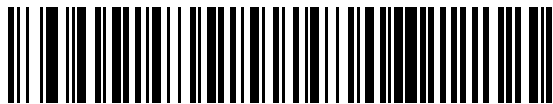


Bosnian (Cyrillic)

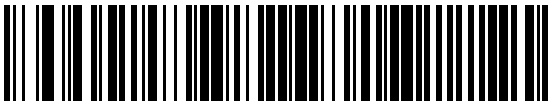


Bulgarian (Latin)

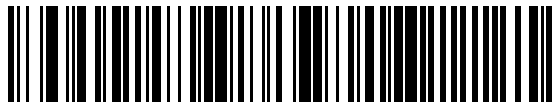
Country Code Barcodes (continued)



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



Canadian French Win7



Canadian French (Legacy)

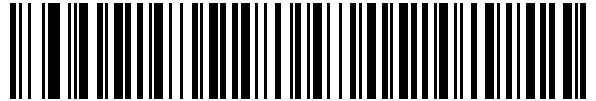


Canadian Multilingual Standard

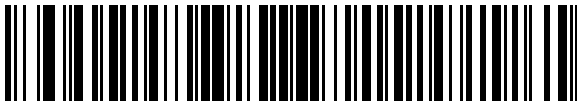
Country Code Barcodes (continued)



Chinese (ASCII)

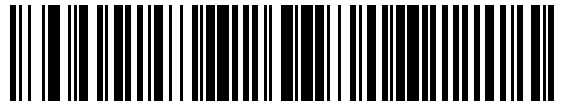


Chinese (Simplified)*



Chinese (Traditional)*

*For CJK keyboard types, see [CJK Decode Control](#).



Croatian

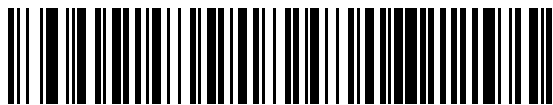
Country Code Barcodes (continued)



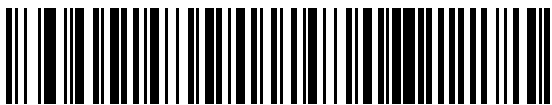
Czech



Czech (Programmer)



Czech (QWERTY)



Danish

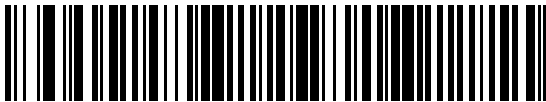
Country Code Barcodes (continued)



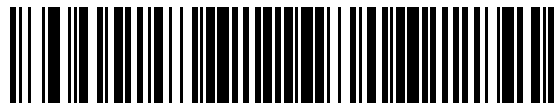
Dutch (Netherlands)



Estonian



Faeroese

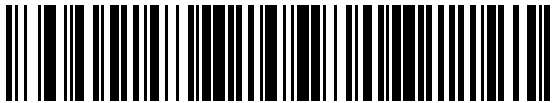


Finnish

Country Code Barcodes (continued)



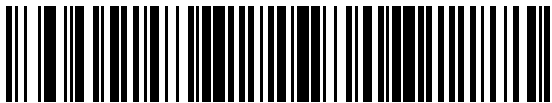
French (France)



French International (Belgian French)



French (Canada) 95/98



French (Canada) 2000/XP*

*Note that there is also a country code barcode for Canadian Multilingual Standard. Be sure to select the appropriate barcode for your host system.

Country Code Barcodes (continued)



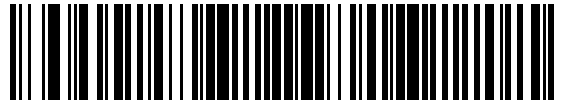
Galician



German

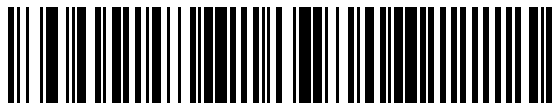


Greek Latin

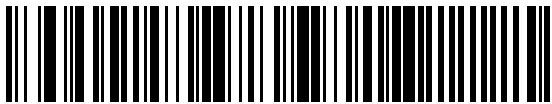


Greek (220) Latin

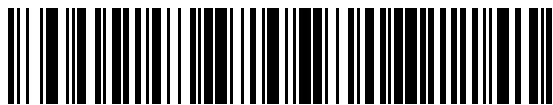
Country Code Barcodes (continued)



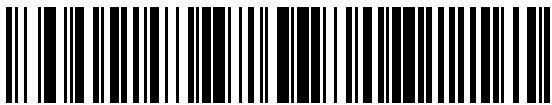
Greek (319) Latin



Greek



Greek (220)

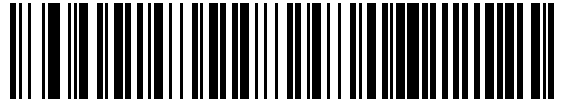


Greek (319)

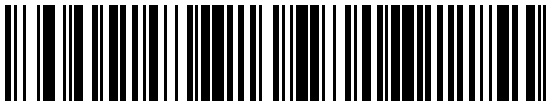
Country Code Barcodes (continued)



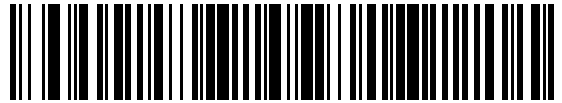
Greek Polytonic



Hebrew Israel



Hungarian



Hungarian_101KEY

Country Code Barcodes (continued)



Icelandic



Irish



Italian



Italian (142)

Country Code Barcodes (continued)

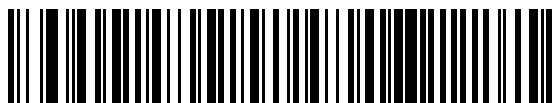


Japanese (ASCII)

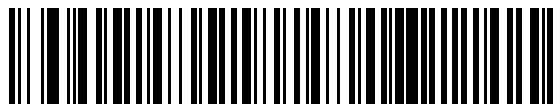


Japanese (SHIFT-JIS)*

*For CJK keyboard types, see [CJK Decode Control](#).

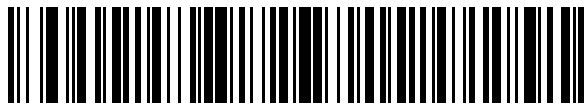


Kazakh



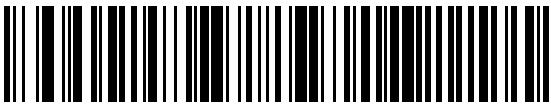
Korean (ASCII)

Country Code Barcodes (continued)



Korean (Hangul)*

*For CJK keyboard types, see [CJK Decode Control](#).



Kyrgyz



Latin American



Latvian

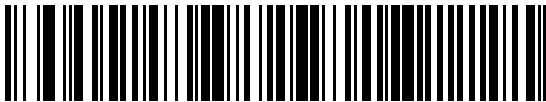
Country Code Barcodes (continued)



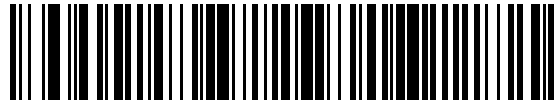
Latvian (QWERTY)



Lithuanian

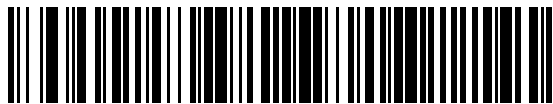


Lithuanian (IBM)

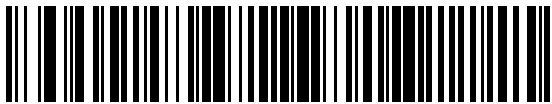


Macedonian (FYROM)

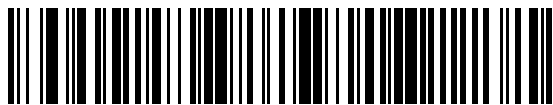
Country Code Barcodes (continued)



Maltese_47KEY



Mongolian



Norwegian

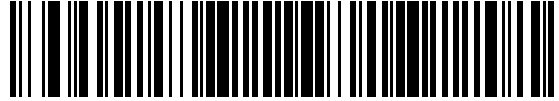


Polish (214)

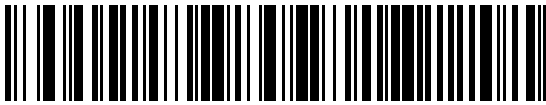
Country Code Barcodes (continued)



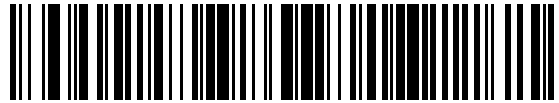
Polish (Programmer)



Portuguese (Brazil) (Windows XP)

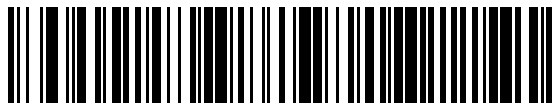


Portuguese (Brazilian ABNT)



Portuguese (Brazilian ABNT2)

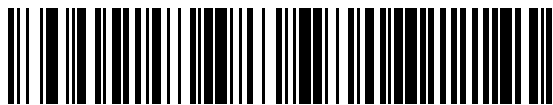
Country Code Barcodes (continued)



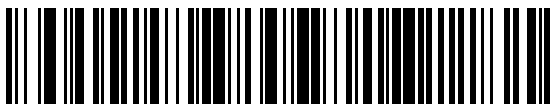
Portuguese (Portugal)



Romanian (Windows XP)



Romanian (Legacy) (Windows 7 or higher)



Romanian (Standard) (Windows 7 or higher)

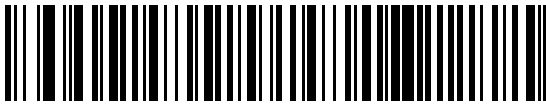
Country Code Barcodes (continued)



Romanian (Programmer) (Windows 7 or higher)



Russian

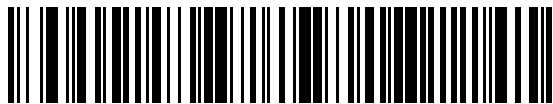


Russian (Typewriter)

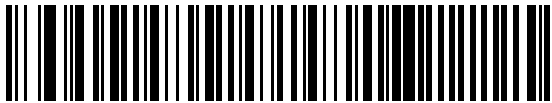


Serbian (Latin)

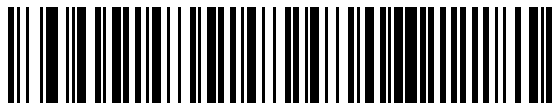
Country Code Barcodes (continued)



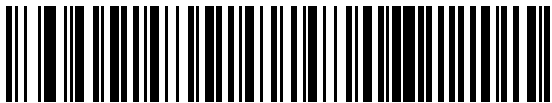
Serbian (Cyrillic)



Slovak

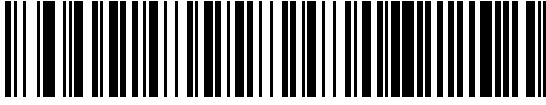


Slovak (QWERTY)



Slovenian

Country Code Barcodes (continued)



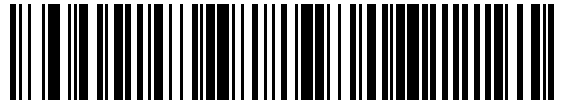
Spanish



Spanish (Variation)

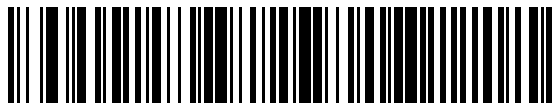


Swedish

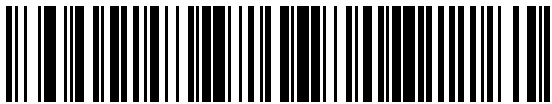


Swiss French

Country Code Barcodes (continued)



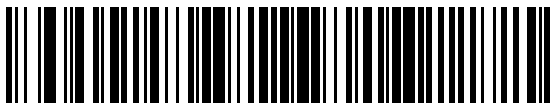
Swiss German



Tatar



Thai (Kedmanee)

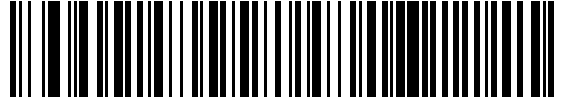


Turkish F

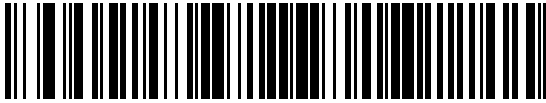
Country Code Barcodes (continued)



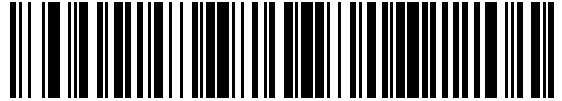
Turkish Q



UK English



Ukrainian



US Dvorak

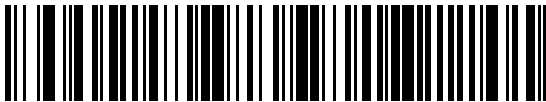
Country Code Barcodes (continued)



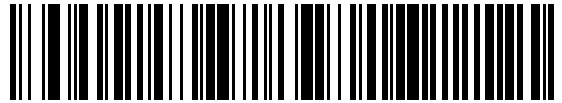
US Dvorak Left



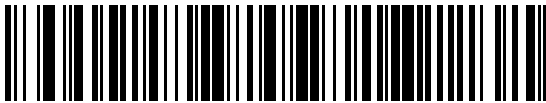
US Dvorak Right



US International



Uzbek



Vietnamese

Country Code Pages

This section provides barcodes for selecting code pages for the country keyboard type selected in Country Codes.

If the default code page in [Country Code Pages](#) is appropriate for your selected country keyboard type, you do not need to scan a country code page barcode.



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

Country Code Page Defaults

The table in this section lists the code page default for each country keyboard.

Table 35 Country Code Page Defaults

Country Keyboard	Code Page Default
US English (North American)	Windows 1252
US English (Mac)	Mac CP10000
Albanian	Windows 1250
Arabic 101	Windows 1256
Arabic 102	Windows 1256
Arabic 102 AZERTY	Windows 1256
Azeri Latin	Windows 1254
Azeri Cyrillic	Windows 1251
Belarusian	Windows 1251
Bosnian Latin	Windows 1250
Bosnian Cyrillic	Windows 1251
Bulgarian Latin	Windows 1250
Bulgarian Cyrillic	Windows 1251
Canadian French Win7	Windows 1252
Canadian French (Legacy)	Windows 1252
Canadian Multilingual	Windows 1252

Table 35 Country Code Page Defaults (Continued)

Country Keyboard	Code Page Default
Croatian	Windows 1250
Chinese ASCII	Windows 1252
Chinese (Simplified)	Windows 936, GBK
Chinese (Traditional)	Windows 950, Big5
Czech	Windows 1250
Czech Programmers	Windows 1250
Czech QWERTY	Windows 1250
Danish	Windows 1252
Dutch Netherland	Windows 1252
Estonian	Windows 1257
Faeroese	Windows 1252
Finnish	Windows 1252
French (France)	Windows 1252
French (Canada) 95/98	Windows 1252
French (Canada) 2000/XP	Windows 1252
French International (Belgian French)	Windows 1252
Galician	Windows 1252
German	Windows 1252
Greek Latin	Windows 1252
Greek220 Latin	Windows 1253
Greek319 Latin	Windows 1252
Greek	Windows 1253
Greek220	Windows 1253
Greek319	Windows 1253
Greek Polytonic	Windows 1253
Hebrew Israel	Windows 1255
Hungarian	Windows 1250
Hungarian_101KEY	Windows 1250
Icelandic	Windows 1252
Irish	Windows 1252
Italian	Windows 1252
Italian_142	Windows 1252
Japanese ASCII	Windows 1252

Table 35 Country Code Page Defaults (Continued)

Country Keyboard	Code Page Default
Japanese (Shift-JIS)	Windows 932, Shift-JIS
Kazakh	Windows 1251
Korean ASCII	Windows 1252
Korean (Hangul)	Windows 949, Hangul
Kyrgyz Cyrillic	Windows 1251
Latin America	Windows 1252
Latvian	Windows 1257
Latvian QWERTY	Windows 1257
Lithuanian	Windows 1257
Lithuanian_IBM	Windows 1257
Macedonian -FYROM	Windows 1251
Maltese_47KEY	Windows 1252
Mongolian-Cyrillic	Windows 1251
Norwegian	Windows 1252
Polish_214	Windows 1250
Polish Programmer	Windows 1250
Portuguese Brazil	Windows 1252
Portuguese Brazilian ABNT	Windows 1252
Portuguese Brazilian ABNT2	Windows 1252
Portuguese Portugal	Windows 1252
Romanian	Windows 1250
Romanian Legacy	Windows 1250
Romanian Standard	Windows 1250
Romanian Programmer	Windows 1250
Russian	Windows 1251
Russian Typewriter	Windows 1251
Serbian Latin	Windows 1250
Serbian Cyrillic	Windows 1251
Slovak	Windows 1250
Slovak QWERTY	Windows 1250
Slovenian	Windows 1250
Spanish	Windows 1252
Spanish Variation	Windows 1252

Table 35 Country Code Page Defaults (Continued)

Country Keyboard	Code Page Default
Swedish	Windows 1252
Swiss French	Windows 1252
Swiss German	Windows 1252
Tatar	Windows 1251
Thai-Kedmanee	Windows 874
Turkish F	Windows 1254
Turkish Q	Windows 1254
Ukrainian	Windows 1251
United Kingdom	Windows 1252
United States	Windows 1252
US Dvorak	Windows 1252
US Dvorak Left Hand	Windows 1252
US Dvorak Right Hand	Windows 1252
US International	Windows 1252
Uzbek Cyrillic	Windows 1251
Vietnamese	Windows 1258

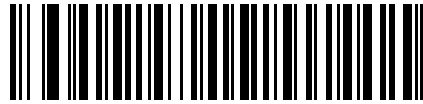
Country Code Page Barcodes

Parameter # 961

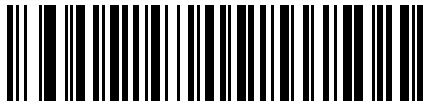
Scan the barcode corresponding to the country keyboard code page.



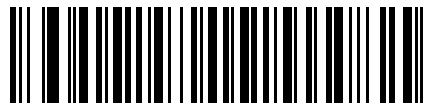
Windows 1250 Latin 2, Central European



Windows 1251 Cyrillic, Slavic



Windows 1252 Latin 1, Western European



Windows 1253 Greek

Country Code Page Barcodes (continued)



Windows 1254 Latin 5, Turkish



Windows 1255 Hebrew



Windows 1256 Arabic

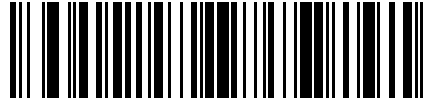


Windows 1257 Baltic

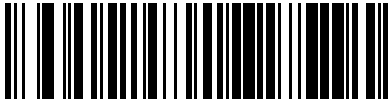
Country Code Page Barcodes (continued)



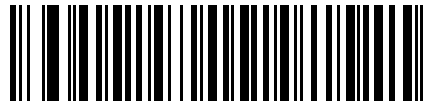
Windows 1258 Vietnamese



Windows 874 Thai

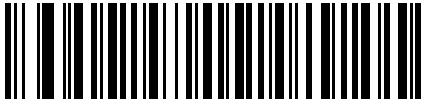


Windows 20866 Cyrillic KOI8-R



Windows 932 Japanese Shift-JIS

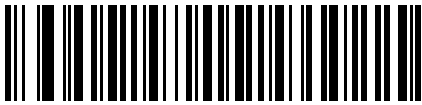
Country Code Page Barcodes (continued)



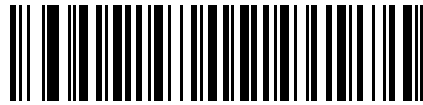
Windows 936 Simplified Chinese GBK



Windows 54936 Simplified Chinese GB18030



Windows 949 Korean Hangul



Windows 950 Traditional Chinese Big5

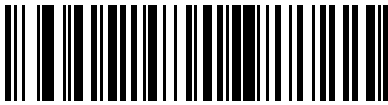
Country Code Page Barcodes (continued)



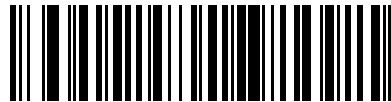
MS-DOS 437 Latin US



MS-DOS 737 Greek



MS-DOS 775 Baltic

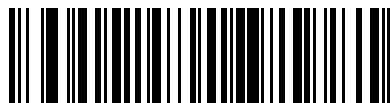


MS-DOS 850 Latin 1

Country Code Page Barcodes (continued)



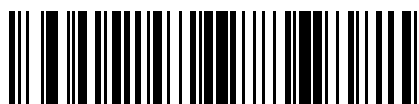
MS-DOS 852 Latin 2



MS-DOS 855 Cyrillic



MS-DOS 857 Turkish

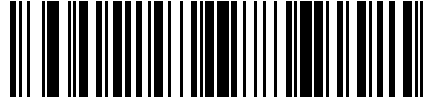


MS-DOS 860 Portuguese

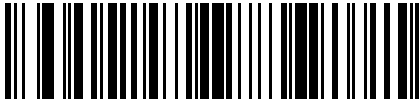
Country Code Page Barcodes (continued)



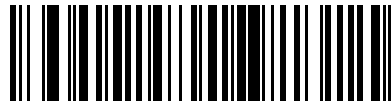
MS-DOS 861 Icelandic



MS-DOS 862 Hebrew



MS-DOS 863 French Canada

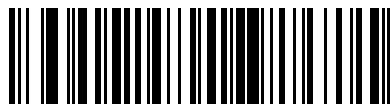


MS-DOS 865 Nordic

Country Code Page Barcodes (continued)



MS-DOS 866 Cyrillic



MS-DOS 869 Greek 2



ISO 8859-1 Latin 1, Western European



ISO 8859-2 Latin 2, Central European

Country Code Page Barcodes (continued)



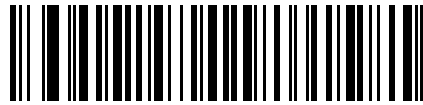
ISO 8859-3 Latin 3, South European



ISO 8859-4 Latin 4, North European



ISO 8859-5 Cyrillic

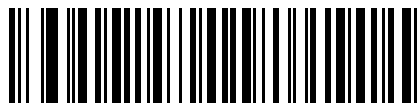


ISO 8859-6 Arabic

Country Code Page Barcodes (continued)



ISO 8859-7 Greek



ISO 8859-8 Hebrew



ISO 8859-9 Latin 5, Turkish



ISO 8859-10 Latin 6, Nordic

Country Code Page Barcodes (continued)



ISO 8859-11 Thai



ISO 8859-13 Latin 7, Baltic



ISO 8859-14 Latin 8, Celtic



ISO 8859-15 Latin 9

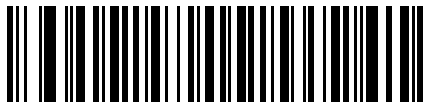
Country Code Page Barcodes (continued)



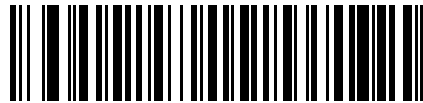
ISO 8859-16 Latin 10, South-Eastern European



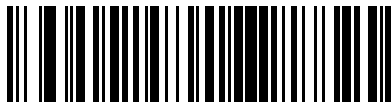
UTF-8



UTF-16LE UTF-16 Little Endian



UTF-16BE UTF-16 Big Endian



Mac CP10000 Roman

CJK Decode Control

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



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

CJK Control Parameters

Unicode Output Control

Parameter # 973 (SSI # F2h CDh)

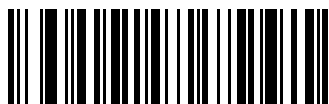
For a Unicode encoded CJK barcode, select one of the following options for Unicode output. Universal Output applies to Unicode and MBCS-expected applications, while Unicode Application Only is limited to Unicode-expected applications.

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



NOTE: To support Unicode universal output, set up the registry table for the Windows host. See [Unicode/CJD Decode Setup with Windows Host](#).

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



*Universal Output (0)



Unicode Application Only (1)

CJK Output Method to Windows Host

Parameter # 972

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

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



NOTE: To support universal CJK output, set up the registry table for the Windows host. See [Unicode/CJK Decode Setup Windows Host](#).

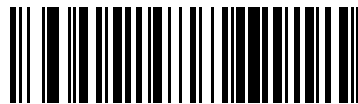
- **Other options for CJK output** - With the following methods, the scanner sends the CJK character hexadecimal internal code (Nei Ma) value to the host, or converts the CJK character to Unicode and sends the hexadecimal Unicode value to the host. When using these methods, the Windows host must select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



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



*Universal CJK Output (0)



Japanese Unicode Output (34)

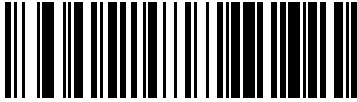
CJK Output Method to Windows Host (continued)



Chinese (Simplified) GBK Output (1)

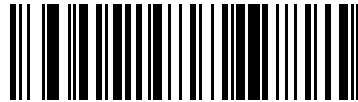


Chinese (Simplified) Unicode Output (2)



Korean Unicode Output (50)

(for Korean Unicode Output, select Simplified Chinese Unicode IME on the Windows host)



Chinese (Traditional) Big5 Output (Windows XP) (1)

CJK Output Method to Windows Host (continued)



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



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



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

Non-CJK UTF Barcode Output

Parameter # 960

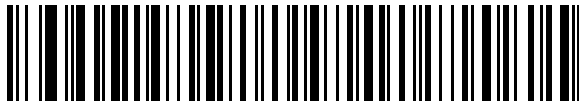
Some country keyboard type layouts contain characters that do not exist in the default code page (see below). Although the default code page can not encode these characters in a barcode, they can be encoded in the UTF-8 barcode.

Scan the following barcode to output the Unicode values by emulation mode.



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

Use US English IME on Windows. See [Unicode Output Control](#).



Non-CJK UTF-8 Emulation Output

Missing Characters for Country Keyboard Type: Tatar, Uzbek, Mongolian, Kyrgyz, Kazakh and Azeri

Default code page: CP1251

Missing characters:

ƒ	#
#	#
#	#
#	#
#	#
#	#
#	#
#	#
#	#
₣	
#	#
#	#
#	#
#	#
#	#

Missing Characters for Country Keyboard Type: Romanian (Standard)

Default code page: CP1250

Missing characters:

Ș	Ș
---	---

ť	Ṭ
---	---

Missing Characters for Country Keyboard Type: Portuguese-Brazilian (ABNT), Portuguese-Brazilian (ABNT2)

Default code page: CP1252

Missing character: #

Missing Characters for Country Keyboard Type: Azeri-Latin

Default code page: CP1254

Missing characters: ə, Ə

Unicode/CJK Decode Setup with Windows Host

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

Setting Up the Windows Registry Table for Unicode Universal Output

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

1. Select **Start > Run > regedt32** to start the registry editor.
2. Under **HKEY_CURRENT_USER\Control Panel\Input Method**, set **EnableHexNumpad** to **1** as follows:

```
[HKEY_CURRENT_USER\Control Panel\Input Method]
```

```
"EnableHexNumpad"="1"
```

If this key does not exist, add it as type **REG_SZ** (string value).

3. Reboot the computer to implement the registry change.

Adding CJK IME on Windows

To add the desired CJK input language:

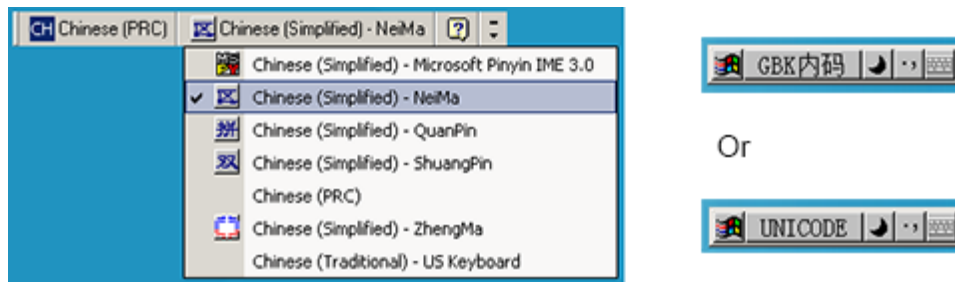
1. Click **Start > Control Panel**.
2. If the Control Panel opens in category view, select **Switch to Classic View** in the top left corner.
3. Select **Regional and Language Options**.
4. Click the **Language** tab.
5. Under **Supplemental Language Support**, select the **Install Files for East Asian Languages** check box if not already selected, and click **Apply**. This may require a Windows installation CD to install the required files. This step ensures that the East Asian Languages (CJK) are available.
6. Under **Text Services and Input Language**, click **Details**.
7. Under **Installed Services**, click **Add**.
8. In the **Add Input Language** dialog box, choose the CJK input language and keyboard layout or Input Method Editor (IME) to add.

9. Click **OK** twice. The language indicator appears in the system tray (at bottom right corner of the desktop by default). To switch between input languages (keyboard languages) select the language indicator in the system tray.
10. Select the language indicator in the system tray to select the desired country keyboard type.
11. Verify that the characters displayed on each country's keyboard appear.

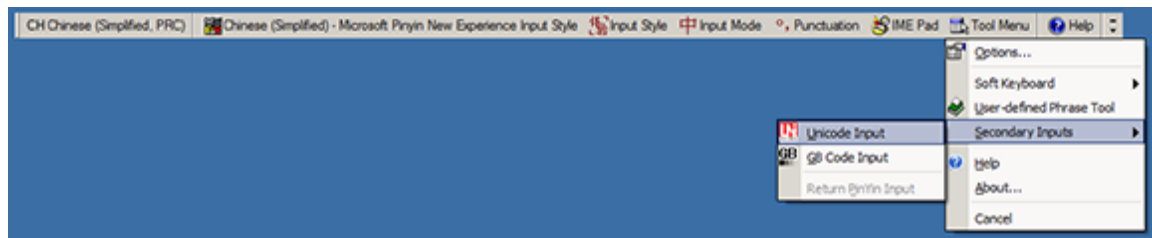
Selecting the Simplified Chinese Input Method on the Host

To select the Simplified Chinese input method:

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



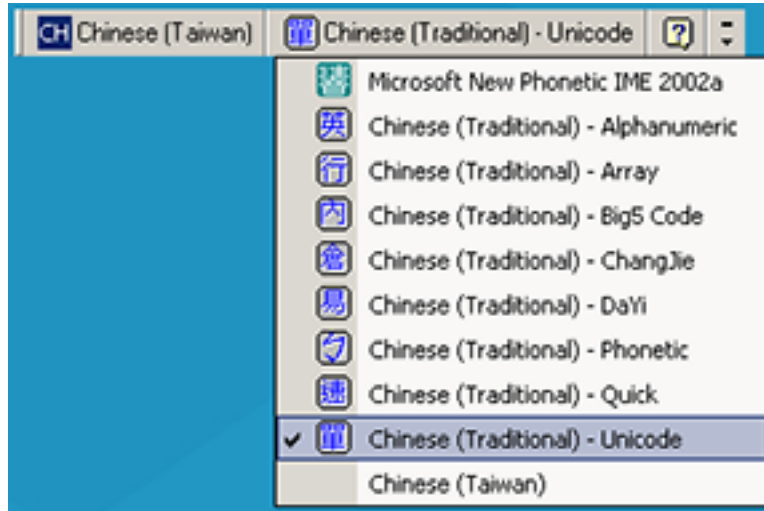
- Select Unicode/GBK input on Windows 7: **Chinese (Simplified) - Microsoft Pinyin New Experience Input Style**, then select **Tool Menu > Secondary Inputs > Unicode Input** or **GB Code Input**.



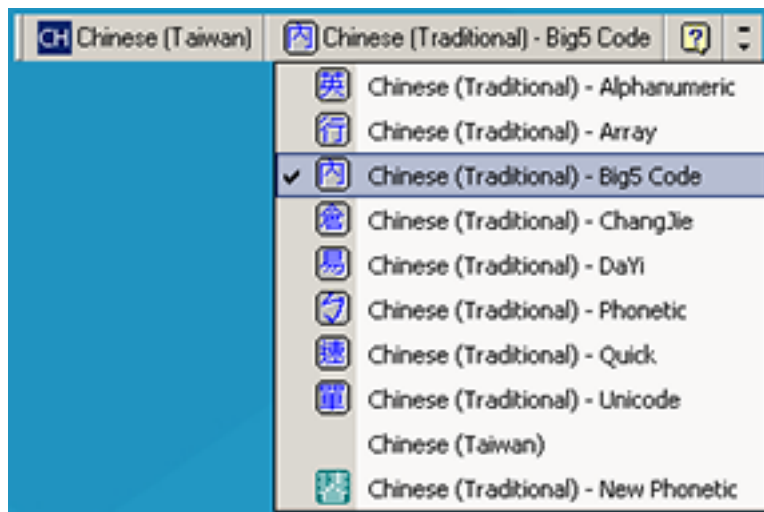
Selecting the Traditional Chinese Input Method on the Host

To select the Traditional Chinese input method:

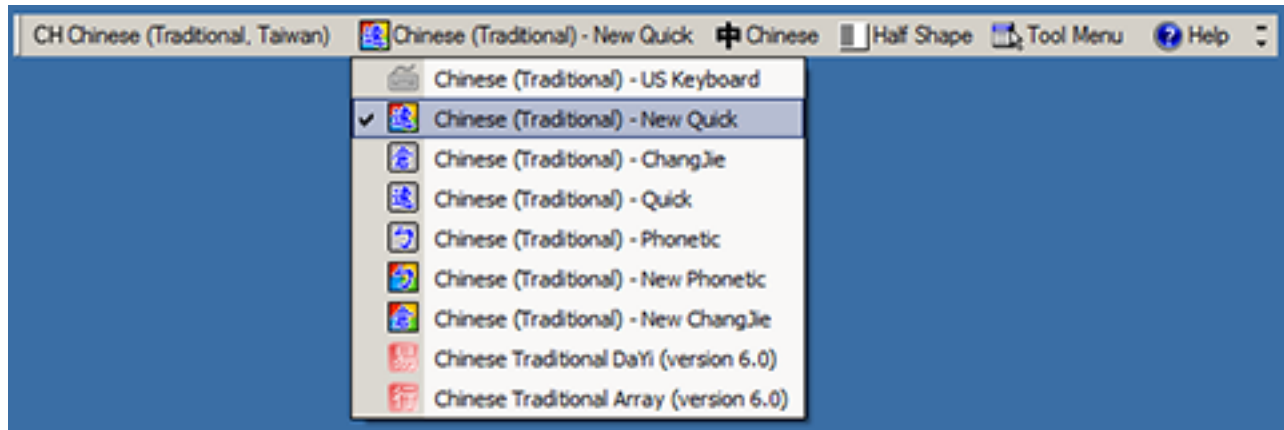
- Select Unicode input on Windows XP: **Chinese (Traditional) - Unicode**



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



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



Non-Parameter Attributes

This section defines the scanner's non-parameter attributes.

Model Number

Attribute #533

number of the scanner. This electronic output matches the printout on the physical device label.

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 M1J26F45V.

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 #614

Date of first electronic programming represents the first time settings were 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

Parameter # 616

Scanning the Set Defaults barcode 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 barcode.

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

Beeper/LED

Attribute #6000

Activates the beeper and/or LED.

Type	X
Size (Bytes)	N/A
User Mode Access	W
Values	See Beeper/LED Values

Table 36 Beeper/LED Values

Beep / LED Action	Value	Beep / LED Action	Value
1 high short beep	0	1 low long beep	15
2 high short beeps	1	2 low long beeps	16
3 high short beeps	2	3 low long beeps	17
4 high short beeps	3	4 low long beeps	18
5 high short beeps	4	5 low long beeps	19
1 low short beep	5	Fast warble beep	20
2 low short beeps	6	Slow warble beep	21
3 low short beeps	7	High-low beep	22
4 low short beeps	8	Low-high beep	23
5 low short beeps	9	High-low-high beep	24
1 high long beep	10	Low-high-low beep	25
2 high long beeps	11	High-high-low-low beep	26
3 high long beeps	12	Green LED off	42
4 high long beeps	13	Green LED on	43
5 high long beeps	14	Red LED on	47
		Red LED off	48

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

Host Trigger Session

Attribute #6005

This attribute triggers a decode session similar to manually depressing the scanner trigger button.

Type	X
Size (Bytes)	N/A
User Mode Access	W
Values	1 = Start Host Trigger Session 0 = Stop Host Trigger Session

Firmware Version

Parameter # 20004 This parameter returns the scanner's operating system version. For example, NBRFMAAC or PAAAABS00-007-R03D0.

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 SKIT4.33T02.

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

Sample Barcodes

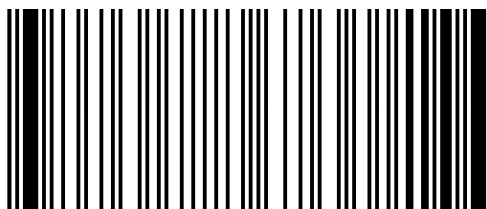
This section provides sample barcodes.

Sample Code 39



123ABC

Sample Code 93



1234567890

Sample UPC/EAN

UPC-A, 100%



0 12345 67890 5

UPC-A Plus 2



0 12345 67890

34

Sample Barcodes

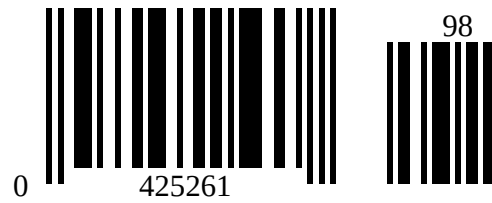
UPC-A Plus 5



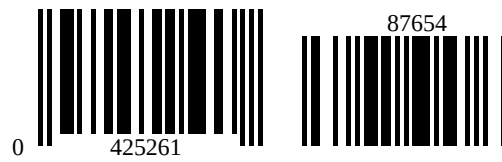
UPC-E



UPC-E Plus 2



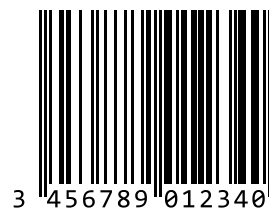
UPC-E Plus 5



EAN-8



EAN-13, 100%



Sample Barcodes

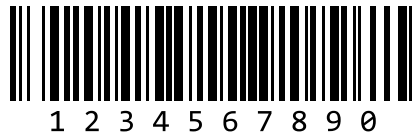
EAN-13 Plus 2



EAN-13 Plus 5



Sample Code 128



Sample Interleaved 2 of 5



Sample Chinese 2 of 5



Sample GS1 DataBar

GS1 DataBar Omnidirectional



NOTE: GS1 DataBar Omnidirectional must be enabled to read the following barcode (see [GS1 DataBar Omnidirectional \(formerly GS1 DataBar-14\)](#)).



GS1 DataBar Limited



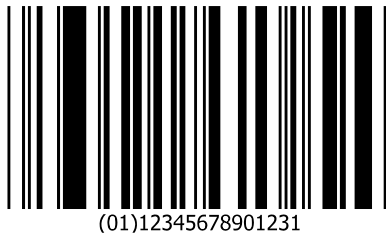
NOTE: DataDataBar Limited must be enabled to read the following barcode (see [GS1 DataBar Limited](#)).



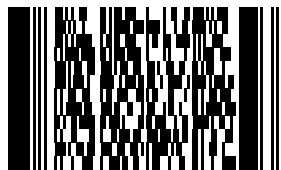
GS1 DataBar Expanded



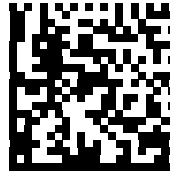
NOTE: DataBar Expanded must be enabled to read the following barcode (see [GS1 DataBar Expanded](#)).



Sample PDF417

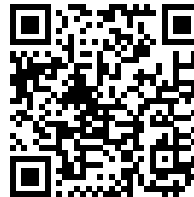


Sample Data Matrix



123456789abcdefghijklmnopqrstuvwxyz

Sample QR Code



0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789

Sample Aztec



0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
WXYZ01234567890123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHI
JKLMNOPQRSTUVWXYZ0123456789

Sample Grid Matrix



NOTE: Grid Matrix must be enabled to read the following bar code (see [Grid Matrix](#)).

