Wasp WDI4500

User's Manual

This manual explains how to install, operate and maintain the WDI4500 mobile device.

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Chapter 1 - Getting Started

Introduction

The Wasp WDI4500 combines superior 1D and 2D omnidirectional bar code scanning and sub-second image capture and transfer with a light-weight, hands-free/hand-held design. The digital scanner's built-in stand seamlessly accommodates both counter-top and handheld use. Whether in hands-free (presentation) or hand-held mode, the digital scanner ensures comfort and ease of use for extended periods of time.

This chapter provides beeper and LED definitions, techniques involved in scanning bar codes, general instructions and tips about scanning, and decode zone diagrams.
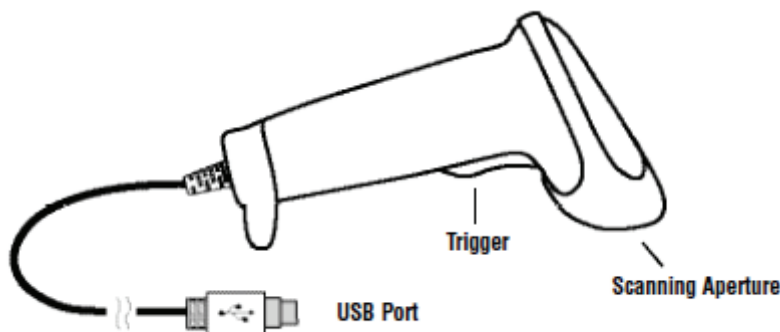
Figure 1-1   *- Parts*

Interfaces

The WDI4500 scanner supports: USB connection to a host. The digital scanner autodetects a USB host and defaults to the HID keyboard interface type. Select other USB interface types by scanning programming bar code menus.This interface supports the following international keyboards (for Windows® environment): North America, German, French, French Canadian, Spanish, Italian, Swedish, UK English, Portuguese-Brazilian, and Japanese.

Setting Up The WDI4500

Installing the Interface Cable:

1.   Plug the USB Connector to the USB port on the host.
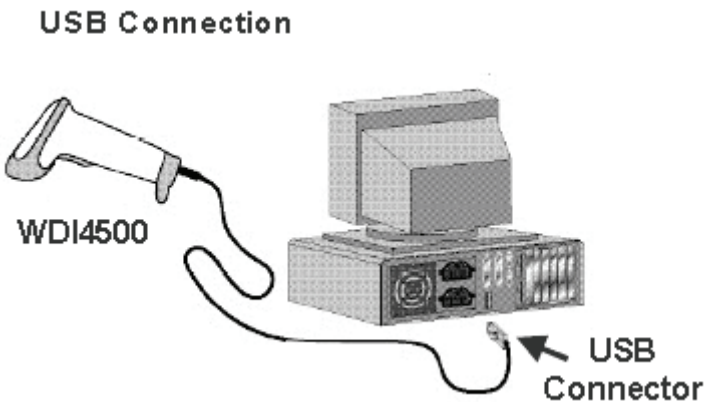
Figure 1-2   *- Connecting the Cable*

Configuring the Barcode Scanner

To configure the digital scanner use the bar codes included in this manual. See *Chapter 2, User Preferences* and *Chapter 4, Imager Preferences* for information about programming the digital scanner using bar code menus. Also see each host-specific chapter to set up connection to a specific host type.

Beeper Definitions

The digital scanner issues different beep sequences and patterns to indicate status. Table 2-1 defines beepsequences that occur during both normal scanning and while programming the digital scanner.

Table 1-1   *Beeper Definitions*

Beeper Sequence	Indication
Low/medium/high beeps	Power up.
Short High Beeps	A barcode symbol was decoded (if decode beeper is enabled).
4 long beeps	Transmission error.
5 low beeps	Conversion or format error.
Parameter Menu Scanning	
Low/high beeps	Input error; incorrect barcode, programming sequence, or **Cancel** scanned.
High/low beeps	Keyboard parameter selected. Enter value using numeric barcodes.
High/low/high/low beeps	Successful program exit with change in parameter setting.
Code 39 Buffering	
High/low beeps	New Code 39 data was entered into the buffer.
3 long high beeps	Code 39 buffer is full.
High/low/high beeps	The Code 39 buffer was erased.
Low/high/low beeps	The Code 39 buffer was erased or there was an attempt to clear or transmit an empty buffer.
Low/high beeps	A successful transmission of buffered data.
Macro PDF	
2 low beeps	MPDF sequence buffered.
2 long low beeps	File ID error. A barcode not in the current MPDF sequence was scanned.
3 long beeps	Out of memory. There is not enough buffer space to store the current MPDF symbol.
4 long low beeps	Bad symbology. Scanned a 1D or 2D barcode in a MPDF sequence, a duplicate MPDF label, a label in an incorrect order, or trying to transmit an empty or illegal MPDF field.
5 long low beeps	Flushing MPDF buffer.
Fast warble beep	Aborting MPDF sequence.
Low/high beeps	Flushing an already empty MPDF buffer.

Table 1-1   *Beeper Definitions*

Beeper Sequence	Indication
Host Specific	
USB Only	
4 short high beeps	The difital scanner has not completed initialization. Wait several seconds and scan again.
Low/medium/high beeps upon scanning a USB device type	Communication with the host must be established before the digital scanner can operate at the highest power level.
Low/medium/high beeps occur more than once	The USB host can put t he digital scanner in a state where power to the scanner is cycled on and off more than once. This is normal and usually happens when the PC cold boots.

LED Definitions

In addition to beep sequences, the digital scanner uses a two-color LED to indicate status. Table 1-2 defines LEDcolors that display during scanning.

Table 1-2   *LED Definitions*

LED	Indication
Hand-Held Scanning Standard Use	
Green	A barcode was successfully decoded.
Red	Transmission error, conversion or format error.
Off	No power is applied to the scanner, or the scanner is on and ready to scan.
Hands-Free (Presentation) Scanning Standard Use	
Green	The scanner is on and ready to scan.
Momentarily Off	A barcode was successfully decoded.
Red	Transmission error, conversion or format error.
Off	No power is applied to the digital scanner, or the scanner is in low power mode.
Parameter Programming	
Green	Number expected. Enter value using numeric barcodes. Successful program exit with change in parameter setting.
Red	Input error: incorrect barcode, programming sequence, or **Cancel** scanned.
ADF Programming	
Green	Enter another digit. Add leading zeros to the front if necessary. Enter another alphabetic character or scan the **End of Message** barcode. All criteria or actions cleared for current rule, continue entering rule. Delete last saved rule. The current rule is left intact. All rules deleted.
Blinking Green	Enter another criterion or action, or scan the **Save Rule** barcode.
Green after Blinking	Rule saved. Rule entry mode exited. Cancel rule entry. Rule entry mode exited because of an error or the user asked to exit rule entry.
Red	Out of rule memory. Erase some existing rules, then try to save rule again. Entry error, wrong barcode scanned, or criteria/action list is too long for a rule. Re-enter criterion or action.

Scanning

The WDI4500 has a built-in, light-weight stand to easily accommodate both hands-free (presentation) handhand-held scanning.

> *NOTE* Certain areas of the scanner's handle may feel warm at times. This is normal.

Hands-Free Scanning

The digital scanner is in hands-free (presentation) mode when it sits on a countertop, or when it is mounted on a wall in the wall mount bracket. In this mode, the digital scanner operates in continuous (constant-on) mode, where it automatically decodes a bar code presented in its field of view.
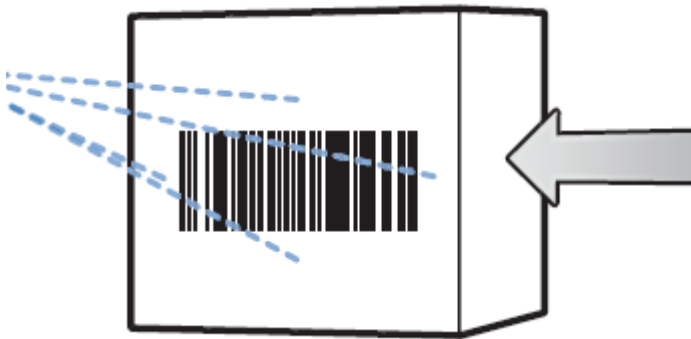
Figure 1-3   *Scanning in Hand-free Mode*

Hand-Held Scanning

When lifted off the counter or removed from the wall mount bracket, the WDI4500 operates in standard trigger mode. Aim the digital scanner at a bar code and pull the trigger to decode.
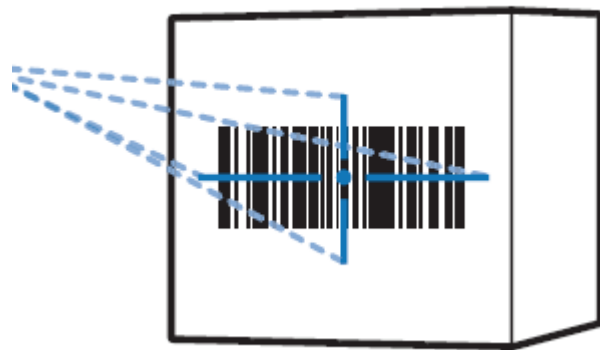
Figure 1-4   *Scanning in Hend-held Mode*

Aiming

When scanning, the digital scanner projects a red laser aiming pattern which allows positioning the bar code within its field of view. See Decode Ranges on page 2-8 for the proper distance to achieve between the digital scanner and a bar code.

Figure 1-5   *Imager Aiming Pattern*

To scan a bar code, center the symbol in any orientation within the aiming pattern. Be sure the entire symbol is within the rectangular area formed by the cross pattern.
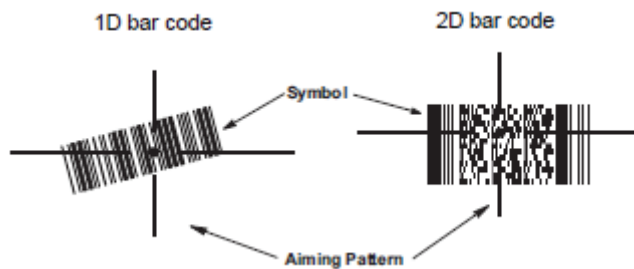
Figure 1-6   *Scanning Orientation with Imager Aiming Pattern*

The digital scanner can also read a bar code presented within the aiming pattern but not centered. The top examples in the figure below show acceptable aiming options, while the bottom examples can not be decoded.
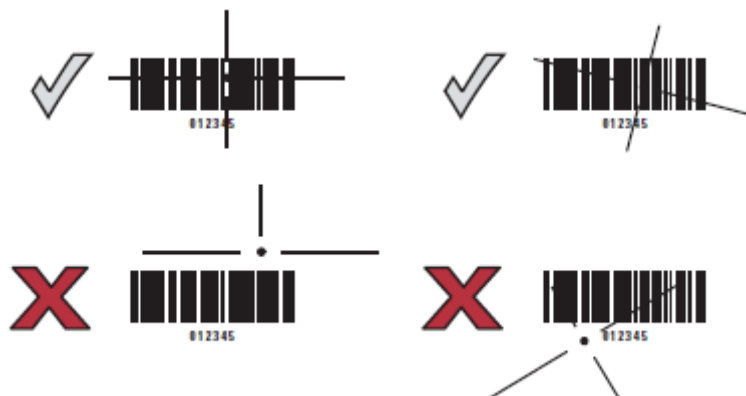
Figure 1-7

Chapter 2 - Interface Setup

Introduction

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

Phantom Scan Session

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

Changing Default Values

The WDI4500 ships with the settings shown in the *Table 2-1 on page 2-3*. If the default values suit requirements, programming is not necessary.

There are two ways to change a parameter value:

- Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory.

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

To return all features to default values, scan **Restore Defaults on page 2-4*. Throughout the programming bar code menus, asterisks (*****) indicate default values.

* Indicates Default ———— ***High Volume** ———— Feature/Option

Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to set the beeper tone to high, scan the **High Frequency** (beeper tone) bar code listed under *Beeper Tone on page 2-8*. The WDI4500 issues a fast warble beep signal and a good decode LED signal, signifying a successful parameter entry.

Other parameters, such as **Decode Session Timeout**, require scanning several bar codes. See these parameter descriptions for this procedure.

Errors While Scanning

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

User Preferences Parameter Defaults

Table 2-1 lists defaults for user preferences parameters. To change any parameter value, scan the appropriate bar code(s) provided in the User Preferences section beginning on *page 2-4*.

Table 2-1 *User Preferences Default Table*

Parameter	Default	Page Number
User Preferences		
Set Default Parameter	Restore Defaults	*2-4*
Parameter Scanning	Enable	*2-4*
User Parameter Pass Through	Disable	*2-6*
Beep After Good Decode	Enable	*2-7*
Beeper Tone	Medium	*2-8*
Beeper Volume	High	*2-9*
Trigger Modes	Level	*2-10*
Motion Enhancement for Presentation Mode	Disable	*2-11*
Motion Enhancement Performance Setting	Standard	*2-11*
Time Delay to Motion Enhancement Sleep Mode	1 Minute	*2-12*
Power Mode	Low Power	*2-14*
Time Delay to Low Power Mode	1.0 Sec	*2-14*
Picklist Mode	Disabled Always	*2-16*
Decode Session Timeout	9.9 Sec	*2-16*
Timeout Between Decodes, Same Symbol	0.6 Sec	*2-17*
Continuous Bar Code Read	Disable	*2-17*
Mirrored Image	Disable	*2-18*
Mobile Phone/Display Mode	Disable	*2-18*
Validate Concatenated Parameter Bar Codes	Disable	*2-19*
PDF Prioritization	Disable	*2-20*
PDF Prioritization Timeout	200 ms	*2-20*
Multicode Mode	Disable	*2-21*
Multicode Expression	1	*2-22*

User Preferences

Set Default Parameter

You can reset the WDI4500 to two types of defaults: factory defaults or custom defaults. Scan the appropriate bar code below to reset the decoder to its default settings and/or set its current settings as custom defaults.

- **Restore Defaults** - Scan this bar code to reset all default parameters as follows.
  - If you previously set custom defaults by scanning **Write to Custom Defaults**, scan **Restore Defaults** to retrieve and restore the decoder's custom default settings.
  - If you did not set custom defaults, scan **Restore Defaults** to restore the factory default values.
- **Set Factory Defaults** - Scan this bar code to restore the factory default values. This deletes any custom defaults set.
- **Write to Custom Defaults** - Scan this bar code to set the current decoder settings as custom defaults. Once set, you can recover custom default settings by scanning **Restore Defaults**.

*Restore Defaults

Set Factory Defaults

Write to Custom Defaults

Parameter Scanning

To disable the decoding of parameter bar codes, including the **Set Defaults** parameter bar codes, scan the **Disable Parameter Scanning** bar code below. To enable decoding of parameter bar codes, scan **Enable Parameter Scanning**.

*Enable Parameter Scanning

Disable Parameter Scanning

User Parameter Pass Through

Enable this to send user-defined parameter bar codes as normal decode data in decode data packets for SNAPI hosts.

User-Defined Parameter Bar Code Format

Code 128 bar codes with:

<FNC3><L><data>

or

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

Decode Data Format

<0xf3><L><data>

or

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

Note that the **B** type only works with 12 bytes of data.

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

Enable User Parameter Pass Through

*Disable User Parameter Pass Through

Beep After Good Decode

Scan a bar code below to select whether or not the decoder issues a beep signal after a good decode. If selecting **Do Not Beep After Good Decode**, beeper signals still occur during parameter menu scanning and to indicate error conditions.

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

**Do Not Beep After Good Decode
(Disable)**

Beeper Tone

To select a decode beep frequency (tone), scan the **Low Frequency, Medium Frequency**, or **High Frequency** bar code.
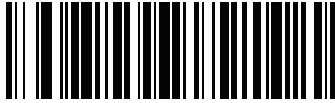
Low Frequency

***Medium Frequency
(Optimum Setting)**
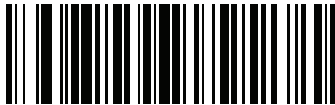
High Frequency

Beeper Volume

To select a beeper volume, scan the **Low Volume, Medium Volume**, or **High Volume** bar code.

Low Volume

Medium Volume

*High Volume

Trigger Modes

- **Trigger** - A trigger event activates decode processing, which continues until the trigger event ends, a valid decode, or the decode session time-out occurs.
- **Presentation Mode** - When the WDI4500 detects an object in its field of view, it triggers and attempts to decode. The range of object detection does not vary under normal lighting conditions. This applies to decode mode only. In this mode the unit does not enter Low Power mode.
- **Auto Aim** - This trigger mode turns on the red laser aiming pattern when the WDI4500 senses motion. A trigger pull activates decode processing. After 2 seconds of inactivity the red laser aiming pattern automatically shuts off.
- **Auto Aim with Illumination** - This trigger mode turns on the red laser aiming pattern and internal illumination LEDs when the WDI4500 senses motion. A trigger pull activates decode processing. After 2 seconds of inactivity the red laser aiming pattern and internal illumination LEDs automatically shut off..

*Trigger

Presentation Mode

Auto Aim

Auto Aim with Illumination

Motion Enhancement for Presentation Mode

Select **Enable Motion Enhancement** to fine-tune engine and decoder behavior for bar codes moving quickly through the WDI4500's field of view. Select **Disable Motion Enhancement to** revert to standard Presentation Mode behavior.

✓ *NOTE* Motion Enhancement and its associated parameters require setting *Trigger Modes on page 2-10* to **Presentation Mode**.

Enable Motion Enhancement

*Disable Motion Enhancement

Motion Enhancement Performance Setting

Standard Motion Performance is optimized for both motion insensitivity and depth of field. To further increase the WDI4500 system's motion tolerance, select **Extended Motion Performance.** This option slightly reduces decode range. This parameter is only valid when **Enable Motion Enhancement** is selected.

*Standard Motion Performance

Extended Motion Performance

Time Delay to Motion Enhancement Sleep Mode

When **Enable Motion Enhancement** is selected, this parameter sets the time the engine and decoder remain active before entering sleep mode with no illumination. The WDI4500 system wakes when it detects an object in its field of view, or after a trigger event.

✓ *NOTE Low Light Enhancement on page 4-6 does not apply when* **Motion Enhancement** *is enabled. Performance is not guaranteed in dim conditions.*

Disable

1 Second

10 Seconds

*1 Minute

5 Minutes

Time Delay to Motion Enhancement Sleep Mode (continued)

15 Minutes

30 Minutes

45 Minutes

1 Hour
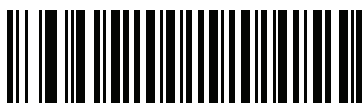
3 Hours

6 Hours

9 Hours

Power Mode (RS-232 Hosts Only)

Select whether or not the decoder enters Low Power consumption mode after a decode attempt. In Continuous On mode, the decoder does not enter this low power state.

Continuous On

*Low Power Mode

Time Delay to Low Power Mode

This parameter sets the time the decoder remains active after decoding. After a scan session, the decoder waits this amount of time before entering Low Power mode.

*1 Second

5 Seconds

1 Minute

Time Delay to Low Power Mode (continued)

5 Minutes

15 Minutes

1 Hour

Picklist Mode

Picklist mode enables the decoder to decode only bar codes aligned under the center of the laser aiming pattern. Select one of the following picklist modes:

- **Disabled Always** - Picklist mode is always disabled.

- **Enabled Always** - Picklist mode is always enabled.

✓ *NOTE* With Picklist Mode enabled, the decode aiming pattern turns on even when the *Decode Aiming Pattern on page 4-4* is disabled.

Picklist mode does not apply to OCR reading.

*Disabled Always

Enabled Always

Decode Session Timeout

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

To set a Decode Session Timeout, scan the bar code below. Next, scan two numeric bar codes from *Appendix A, Numeric Barcodes* that correspond to the desired on time. Provide a leading zero for single digit numbers. For example, to set a Decode Session Timeout of 0.5 seconds, scan the bar code below, then scan the **0** and **5** bar codes. To correct an error or change the selection, scan *Cancel Barcode on page A-3*.

Decode Session Timeout

Timeout Between Decodes, Same Symbol

Use this option in presentation mode to prevent multiple reads of a symbol left in the WDI4500's field of view. The timeout begins when you remove the symbol from the field of view.

To select the timeout between decodes for the same symbol, available in 0.1 second increments from 0.0 to 9.9 seconds, scan the bar code below, then scan two numeric bar codes from *Appendix A, Numeric Barcodes* that correspond to the desired interval. The default interval is 0.6 seconds.

Timeout Between Decodes, Same Symbol

Continuous Bar Code Read

Select **Enable** to allow decode processing to continue until the trigger event ends or the decode session time-out occurs. User indications occur upon decoding each bar code. Select **Disable** to end decode processing upon a valid decode as well. This mode does not apply to presentation mode.

✓ *NOTE* It is strongly recommended to enabe *Picklist Mode on page 2-16* with this feature. Disabling Picklist Mode can cause accidental decodes when more than one bar code is in the imager engine's field of view.

*Disable Continuous Bar Code Read

Enable Continuous Bar Code Read

Mirrored Image

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

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

*Disable Mirrored Image

Enable Mirrored Image

Mobile Phone/Display Mode

This mode improves bar code reading performance with target bar codes displayed on mobile phones and electronic displays.

*Disable Mobile Phone/Display Mode

Enable Mobile Phone/Display Mode

Validate Concatenated Parameter Bar Codes

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

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

*Disable Validate Concatenated Parameter Bar Codes

Enable Validate Concatenated Parameter Bar Codes

PDF Prioritization

Enable this feature to delay decoding a 1D bar code (Code 128 of 8 to 25 characters length) by the value specified in *PDF Prioritization Timeout*. During that time the decoder attempts to decode a PDF417 symbol (e.g., on a US driver's license), and if successful reports this only. If it does not decode (can not find) a PDF417 symbol, it reports the 1D symbol after the timeout. The 1D symbol must be in the device's field of view for the decoder to report it. This parameter does not affect decoding other symbologies.

*Disable PDF Prioritization

Enable PDF Prioritization

PDF Prioritization Timeout

When *PDF Prioritization* is enabled, this timeout specifies how long the decoder attempts to decode a PDF417 symbol before reporting the 1D bar code in the field of view.

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

PDF Prioritization Timeout

Multicode Mode

Enable this parameter to allow multiple bar codes to decode upon one trigger event based on the programmed multicode expression. The decoder reports a successful decode and provides user indication only if it decodes all bar codes indicated by the multicode expression, otherwise the decode fails. Bar codes are transmitted in the order defined in the multicode expression. Disable this to operate in normal decode mode.

This mode operates in Level trigger mode only. Also disable *Continuous Bar Code Read*. If you enable this mode, always orient scanner at the same distance and angle (perpendicular).

*Disable Multicode Mode

Enable Multicode Mode

Multicode Expression

Use this feature to program a multicode expression for *Multicode Mode* (grid method). The default is 1, which indicates any bar code.

To set the multicode expression:

1. Scan the bar code below.
2. Scan bar codes from the *Alphanumeric Keyboard on page 12-91* to define the expression.
3. Scan *End of Message on page 12-100*.

Multicode Expression

Multicode Expression Syntax: [n] [Element 1]; [Element 2]; ... [Element n];

Where *n* is the number of elements in the overall expression.

The multicode expression describes the bar code(s) that the decoder can expect to find in an image. Each element represents one bar code in the WDI4500's field of view. The order of elements in the expression is the order in which bar code data from each element transmits to the host. Elements are defined using one or more of the following methods:

By Region. This type of element limits decoding to a specific area within the WDI4500's field of view. Region coordinates are defined as the top left and bottom right corners of the region, expressed in percentages of the field of view. These can range from 0% to 100%, or 0x00 to 0x64 in hex, for both horizontal and vertical axes. A region element is constructed as:

[R] [4] [Top, Left] [Bottom, Right]

Where:

- [R] is the character R

- [4] is 0x04, indicating there are four bytes thereafter to describe the region

- [Top, Left] are two values representing the top left corner of the region

- [Bottom, Right] are two values representing the bottom right corner of the region

Note that the top of the field of view used for multicode expressions is the topmost part of the field of view when the WDI4500's chassis rests on a horizontal surface.

By Code Type. An element can specify a specific bar code symbology to find and decode somewhere in the field of view. A code type element is constructed as:

[C] [2] [Code Type]

Where:

- [C] is the character C
- [2] is 0x02, indicating there are two bytes thereafter to describe the code type
- [Code Type] is the desired symbology's parameter number (see *Chapter 10, Symbologies*). For single-byte parameter numbers, extend the value to two bytes by adding 00 before the parameter number.

Notes

When defining multicode expressions consider the following:

- Use the Code Type specifier if there are bar codes of more than one code type in view.
- Always use the Region specifier when there are multiple bar codes of the same code type.
- When transmission order is important (the first element in the expression transmits first), use either type to define the order.
- When there are unwanted bar codes in view, filter them out in one of two ways:
  - Use Code Type to specify only the target bar codes.
  - Use Region to identify only the target bar codes.
- If the expression does not contain a Region specifier, scanning angle and distance do not matter. If you specify a region you must scan in a fixed orientation and at a fixed distance. Because of this, it is preferable to use the Code Type specifier rather than the Region specifier.
- When defining regions:
  - Defining a region much larger than the bar code improves tolerance to scan distance and angle, but can cause a decode of a nearby bar code instead of the target bar code. Therefore, for best performance define larger regions when only a few bar codes are in view and those in view are widely separated.
  - Defining a region close to (or smaller than) the target bar code improves the probability of decoding this bar code rather than one nearby, but scan distance and angle must be more accurate. Therefore, for best performance define small regions when many bar codes are in view or those in view are close together.
- Use Region elements to improve decode speeds by reducing the image area to search for the target bar code.
- Specifying Code Type may also improve decode speeds for some code types.
- Although you can scan parameter bar codes when multicode mode is enabled, be aware of the following: If the multicode expression defined a region(s), to scan a parameter bar code you must position the bar code within the first region defined in the expression. In some cases, this first region is not the center of the image and aiming at the parameter bar code does not result in a successful decode.

The following examples show the multicode expressions in both hex and decimal formats, however in the sample figures the values are decimal. Be sure to use the correct base numbering system when creating an expression. A region specified as 0x00 0x00 0x64 0x32 represents a region with coordinates of Top-Left (0,0) and Bottom Right (100,50).

Example 1

To decode one Code 128 bar code anywhere in the image (even when bar codes of other types are in view), as in *Figure 2-1*, program the expression as follows:

The expression in decimal is (formatted for readability):

1 C 2 0 8 ;

To program the expression via scanning parameters the sequence is (spaces are for readability):

[MultiCode-Expression] 01 C 02 00 08 ; [End Of Message]

.
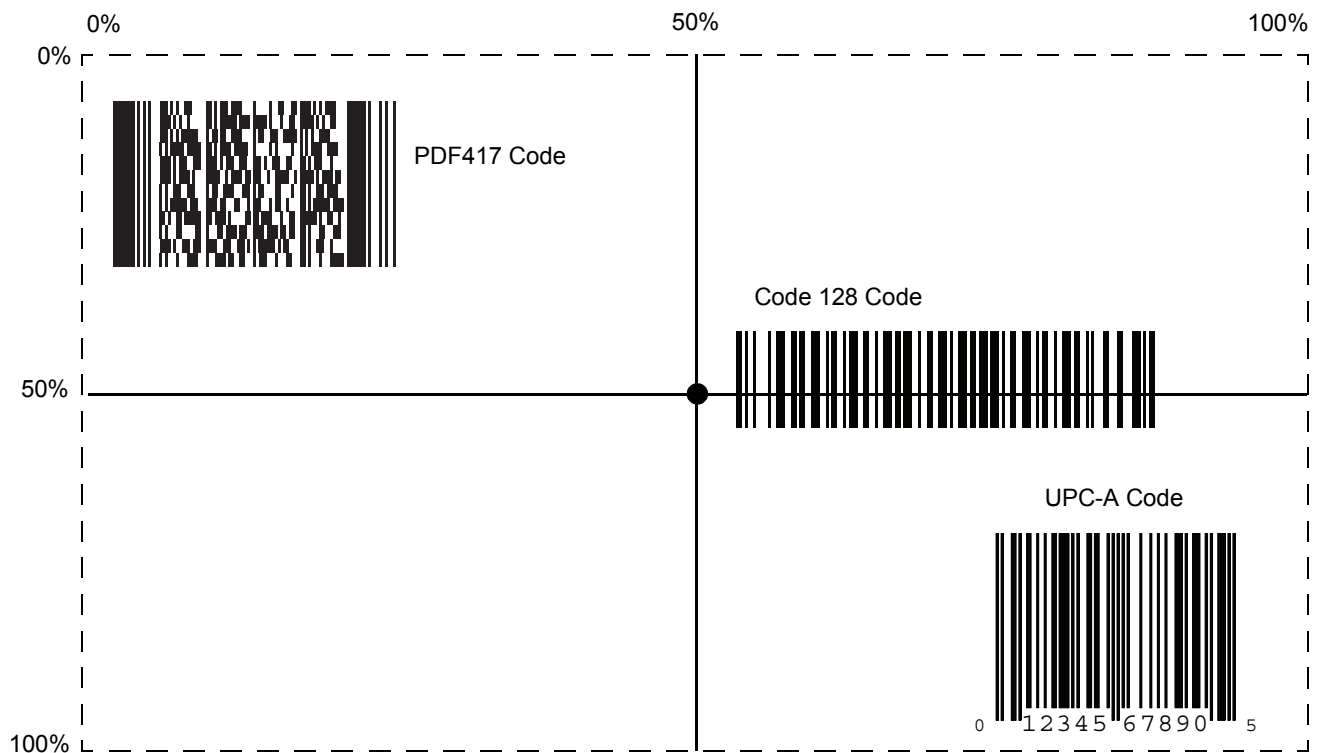
Figure 2-1   *Multicode Expression Example 1*

Example 2a

To decode a Code128 (Code Type=8) on the top half of the image and a PDF417 (Code Type=15) on the bottom half of the image, as in *Figure 2-2*, program the expression as follows:

The expression in decimal is (formatted for readability):

2 C 2 0 8 R 4 0 0 100 50 ; C 2 0 15 R 4 0 50 100 100 ;

To program the expression via scanning parameters the sequence is:

[MultiCode-Expression] 02 C 02 00 08 R 04 00 00 64 32 ; C 02 00 0F R 04 00 32 64 64 ; [End Of Message]

Example 2b

In *Figure 2-2*, if the bottom PDF417 bar code must transmit first, reverse the sequence of the two bar codes:

The expression in decimal is (formatted for readability):

2 C 2 0 15 R 4 0 50 100 100 ; C 2 0 8 R 4 0 0 100 50 ;

To program the expression via scanning parameters the sequence is:

[MultiCode-Expression] 02 C 02 00 0F R 04 00 32 64 64 ; C 02 00 08 R 04 00 00 64 32 ; [End Of Message]
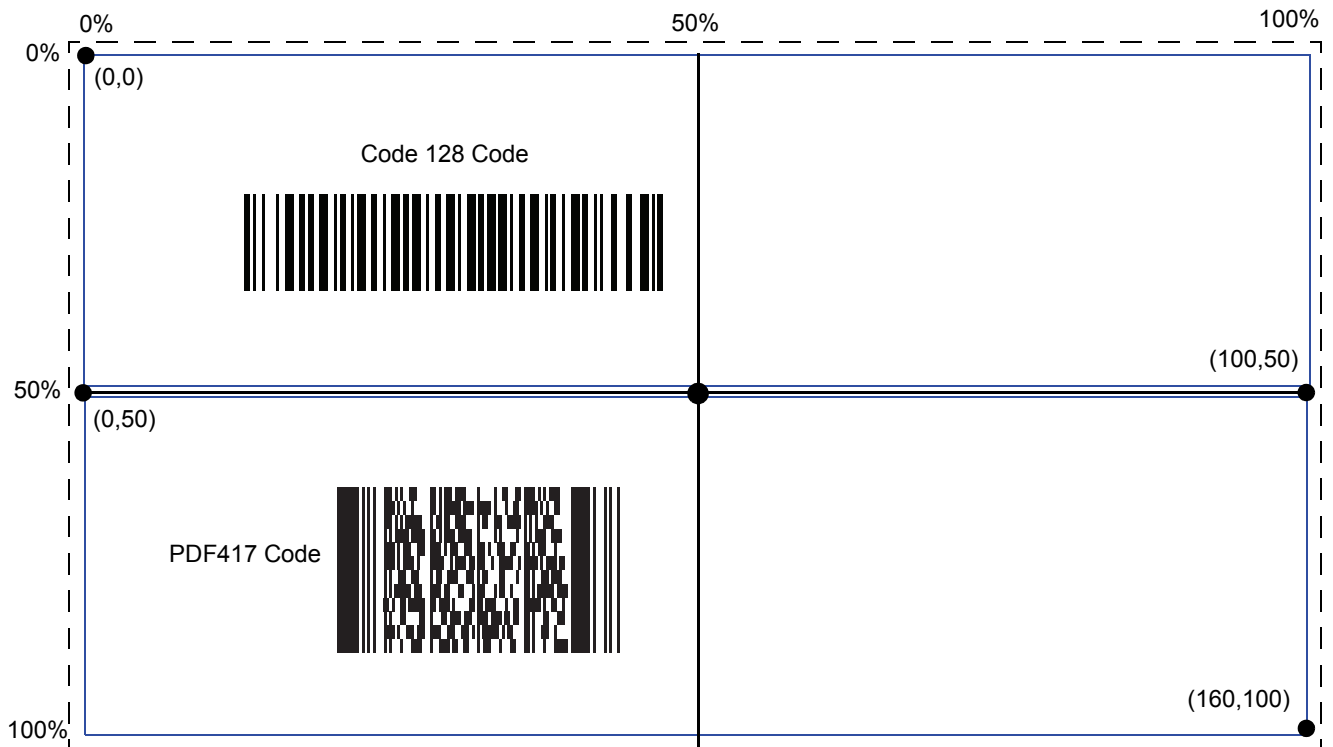
Figure 2-2 *Multicode Expression Example 2*

Example 3

To decode the set of three bar codes while excluding the center Code 128 bar code, as in *Figure 2-3*, the expression is:

The expression in decimal is (formatted for readability):

3 C 2 0 15 R 4 0 0 50 50 ; C 2 [F0 24] R 4 70 0 100 40 ; C 2 0 8 R 4 65 60 100 100 ;

To program the expression via scanning parameters the sequence is:

[MultiCode-Expression] 03 C 02 00 0F R 04 00 00 32 32 ; C 02 F0 24 R 04 46 00 64 28 ;
C 02 00 08 R 04 41 3C 64 64 ; [End Of Message]
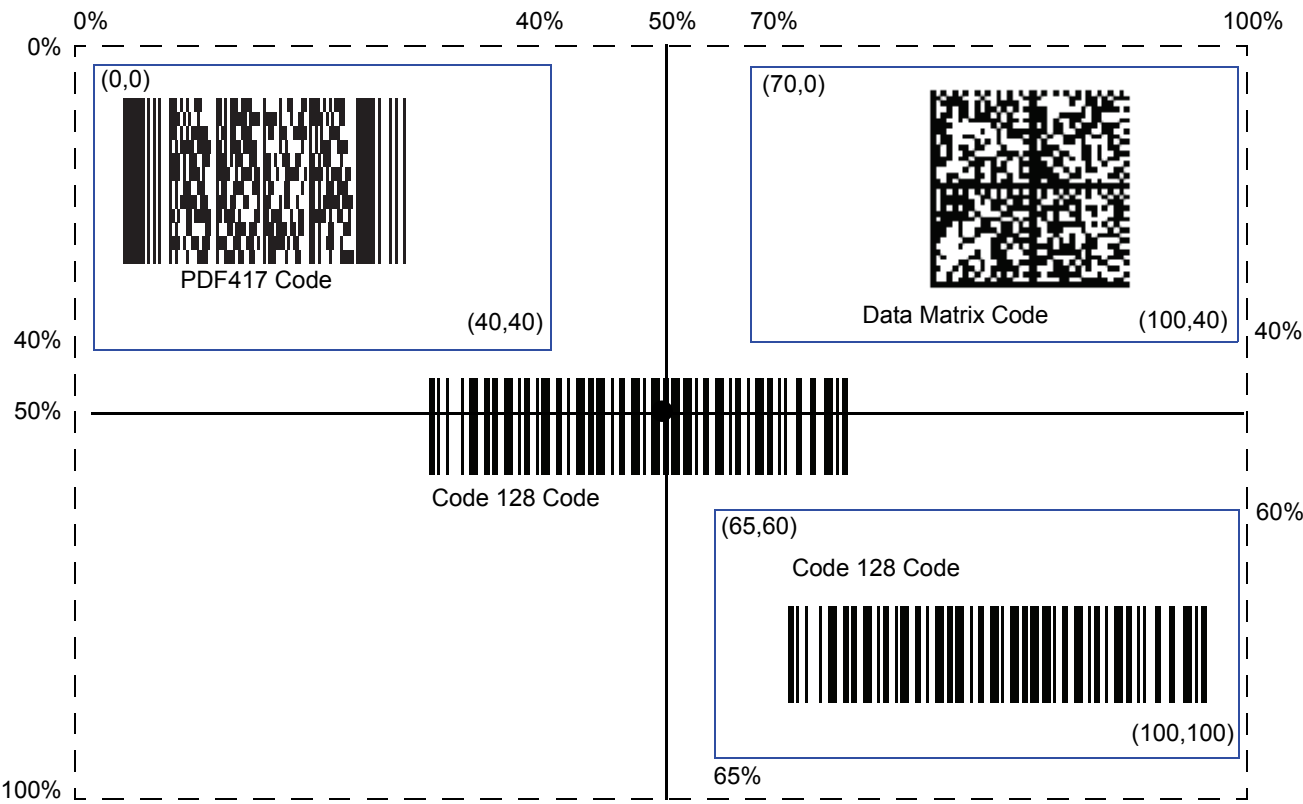
Figure 2-3 *Multicode Expression Example 3*

Multicode Troubleshooting

Troubleshooting Multicode Expression Programming

Use the following suggestions if encountering problems programming a multicode expression:

- Ensure the expression is valid. Invalid expressions are rejected during programming. When an expression is rejected the previous expression remains intact. If after programming the expression the decoder can still decode any bar code, the expression was possibly rejected.

- When programming the multicode expression via parameter bar code, the WDI4500 generates beeps. If any of the following beeps do not sound during programming, an error occurred:
  - Scanning the **Multicode Expression** bar code produces a two-tone (same pitch) beep.
  - Scanning each value of the expression produces a two-tone (same pitch) beep.
  - Scanning the **End Of Message** bar code produces a four-tone (high-low-high-low) beep.

- Check the expression for syntax errors.

- Try programming a simple expression to ensure the syntax is correct. See *Examples of Simple Multicode Expressions*.

- Review *Notes on page 2-23* for additional hints.

Troubleshooting Multicode Mode Scanning and Decoding

Use the following suggestions if encountering problems using multicode mode:

- If the WDI4500 appears to decode any single bar code instead of the intended multiple bar codes, ensure you enabled *Multicode Mode on page 2-21*. Programming the multicode expression does not enable multicode mode.

- When specifying **Region**, ensure:
  - Coordinates are within range the 0-100 decimal (or 0x00 - 0x64 hexadecimal).
  - Top, Left is above Bottom, Right. Top, Left is 0,0 (0x00, 0x00 hexadecimal), and Bottom, Right is 100,100 (0x64, 0x64 hexadecimal).
  - Regions for two or more bar codes do not overlap.

- When specifying **Code Type** ensure the WDI4500 supports the code type. Try decoding a single bar code without using multicode. If it does not decode try enabling the bar code type. See *Chapter 10, Symbologies*.

- Experiment with simpler expressions, then add to it until you discover the source of the error. For example try the simplest expression (see *Examples of Simple Multicode Expressions*) and make sure you can scan a single bar code. If so, extend the expression by adding a second bar code, specifying a region, or specifying the code type. Verify that the WDI4500 can decode this new expression. Continue adding to the expression until it fails to decode as expected, indicating the source of the error.

- Review *Notes on page 2-23* for additional hints.

Examples of Simple Multicode Expressions

The simplest multicode expression is:

- One bar code of any type, anywhere in the image.

- To program this use: **[MultiCode-Expression] 01 ; [End Of Message]**

Another simple multicode expression is:

- One Code 128 bar code, anywhere in the image.

- To program this use: **[MultiCode-Expression] 01 C 02 00 08 ; [End Of Message]**

Chapter 3 - USB Interface

Introduction

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

Throughout the programming bar code menus, asterisks (*) indicate default values.

* Indicates Default —— ***North American Standard USB Keyboard** —— Feature/Option

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

USB Parameter Defaults

Table 3-1 lists the defaults for USB host parameters. To change any option, scan the appropriate bar code(s) provided in the Parameter Descriptions section beginning on *page 3-3*.

Table 3-1   *USB Host Default Table*

Parameter	Default	Page Number
USB Host Parameters		
USB Device Type	SNAPI with Imaging	*3-3*
Symbol Native API (SNAPI) Status Handshaking	Enable	*3-4*
USB Country Keyboard Types (Country Codes)	North American	*3-5*
USB Keystroke Delay	No Delay	*3-7*
USB CAPS Lock Override	Disable	*3-7*
USB Ignore Unknown Characters	Enable	*3-8*
Emulate Keypad	Disable	*3-8*
Emulate Keypad with Leading Zero	Disable	*3-9*
USB FN1 Substitution	Disable	*3-9*
Function Key Mapping	Disable	*3-10*
Simulated Caps Lock	Disable	*3-10*
Convert Case	None	*3-11*

USB Host Parameters

USB Device Type

Select the desired USB device type.

NOTE When changing USB Device Types, the decoder automatically resets. The decoder issues the standard startup beep sequences.

*Symbol Native API (SNAPI) with Imaging Interface

Symbol Native API (SNAPI) without Imaging Interface

USB Device Type (continued)

HID Keyboard Emulation

*Default

Symbol Native API (SNAPI) Status Handshaking

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

*Enable SNAPI Status Handshaking

Disable SNAPI Status Handshaking

USB Country Keyboard Types (Country Codes)

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

✓ *NOTE* When changing USB country keyboard types the decoder automatically resets. The decoder issues the standard startup beep sequences.
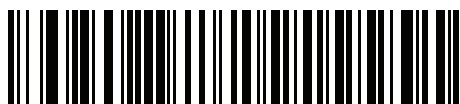
*North American Standard USB Keyboard

German Windows
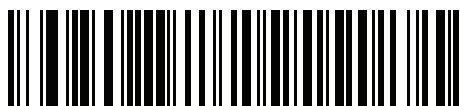
French Windows

French Canadian Windows 95/98

French Canadian Windows 2000/XP

French Belgian Windows

USB Country Keyboard Types (continued)

Spanish Windows
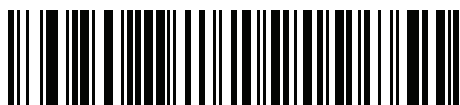
Italian Windows

Swedish Windows
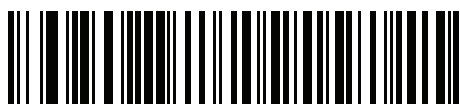
UK English Windows

Japanese Windows (ASCII)
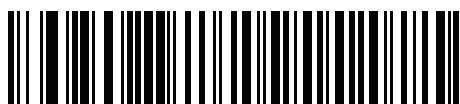
Portuguese-Brazilian Windows

USB Keystroke Delay

This parameter sets the delay, in milliseconds, between emulated keystrokes. Scan a bar code below to increase the delay when hosts require a slower data transmission.

*No Delay
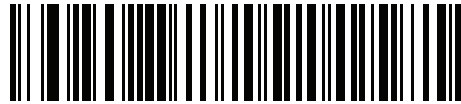
Medium Delay (20 msec)

Long Delay (40 msec)

USB CAPS Lock Override

This option applies only to the HID Keyboard Emulation device. Enable this to preserve the case of the data regardless of the state of the caps lock key. This setting is always enabled for the Japanese, Windows (ASCII) keyboard type and can not be disabled.

**Override Caps Lock Key
(Enable)**

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

USB Ignore Unknown Characters

This option applies only to the HID Keyboard Emulation device and IBM device. Unknown characters are characters the host does not recognize. Select **Send Bar Codes With Unknown Characters** to send all bar code data except for unknown characters. No error beeps sound. When **Do Not Send Bar Codes With Unknown Characters** is selected, for IBM devices, bar codes containing at least one unknown character are not sent to the host, and an error beep sounds. For HID Keyboard Emulation devices, the bar code characters up to the unknown character are sent, and an error beep sounds.

***Send Bar Codes with Unknown Characters
(Transmit)**

**Do Not Send Bar Codes with Unknown Characters
(Disable)**

Emulate Keypad

Enable this to send all characters as ASCII sequences over the numeric keypad. For example ASCII A is sent as "ALT make" 0 6 5 "ALT Break". This allows support for other country variants.

*Disable Keypad Emulation

Enable Keypad Emulation

Emulate Keypad with Leading Zero

Enable this to send character sequences sent over the numeric keypad as ISO characters which have a leading zero. For example ASCII A is sent as "ALT MAKE" 0 0 6 5 "ALT BREAK".

*Disable Keypad Emulation with Leading Zero

Enable Keypad Emulation with Leading Zero

USB Keyboard FN1 Substitution

This option applies only to the USB HID Keyboard Emulation device. Enable this to replace any FN1 characters in an EAN 128 bar code with a Key Category and value (see *USB Keyboard FN1 Substitution on page 3-9* to set the Key Category and Key Value).

Enable FN1 Substitution
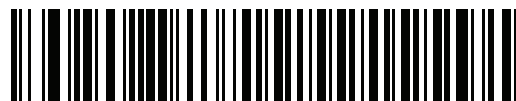
*Disable FN1 Substitution

Function Key Mapping

ASCII values under 32 are normally sent as control-key sequences (see *Table 3-2 on page 3-12*). Enable this to send the keys in bold in place of the standard key mapping. Table entries that do not have a bold entry remain the same whether or not this parameter is enabled.

*Disable Function Key Mapping

Enable Function Key Mapping

Simulated Caps Lock

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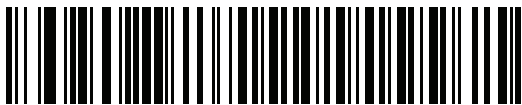
*Disable Simulated Caps Lock

Enable Simulated Caps Lock

Convert Case

Enable this to convert all bar code data to the selected case.

||||||| *barcode* |||||||
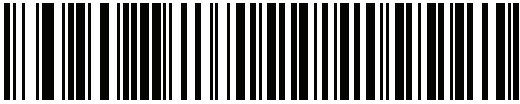
*No Case Conversion

||||||| *barcode* |||||||

Convert All to Upper Case

||||||| *barcode* |||||||
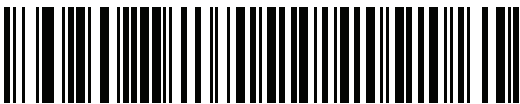
Convert All to Lower Case

ASCII Character Set for USB

Table 3-2 *USB Prefix/Suffix Values*

Prefix/ Suffix Value	Full ASCII Code 39 Encode Character	Keystroke
1000	%U	CTRL 2
1001	$A	CTRL A
1002	$B	CTRL B
1003	$C	CTRL C
1004	$D	CTRL D
1005	$E	CTRL E
1006	$F	CTRL F
1007	$G	CTRL G
1008	$H	CTRL H/**BACKSPACE**[1]
1009	$I	CTRL I/**HORIZONTAL TAB**[1]
1010	$J	CTRL J
1011	$K	CTRL K
1012	$L	CTRL L
1013	$M	CTRL M/**ENTER**[1]
1014	$N	CTRL N
1015	$O	CTRL O
1016	$P	CTRL P
1017	$Q	CTRL Q
1018	$R	CTRL R
1019	$S	CTRL S
1020	$T	CTRL T
1021	$U	CTRL U
1022	$V	CTRL V
1023	$W	CTRL W

[1]**The keystroke in bold is sent only if *Function Key Mapping on page 3-10* is enabled. Otherwise, the unbolded keystroke is sent.**

Table 3-2 *USB Prefix/Suffix Values (Continued)*

Prefix/ Suffix Value	Full ASCII Code 39 Encode Character	Keystroke
1024	$X	CTRL X
1025	$Y	CTRL Y
1026	$Z	CTRL Z
1027	%A	CTRL [/**ESC**[1]
1028	%B	CTRL \
1029	%C	CTRL]
1030	%D	CTRL 6
1031	%E	CTRL -
1032	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
1049	1	1
1050	2	2
1051	3	3

[1]The keystroke in bold is sent only if *Function Key Mapping on page 3-10* is enabled. Otherwise, the unbolded keystroke is sent.

Table 3-2 *USB Prefix/Suffix Values (Continued)*

Prefix/ Suffix Value	Full ASCII Code 39 Encode Character	Keystroke
1052	4	4
1053	5	5
1054	6	6
1055	7	7
1056	8	8
1057	9	9
1058	/Z	:
1059	%F	;
1060	%G	<
1061	%H	=
1062	%I	>
1063	%J	?
1064	%V	@
1065	A	A
1066	B	B
1067	C	C
1068	D	D
1069	E	E
1070	F	F
1071	G	G
1072	H	H
1073	I	I
1074	J	J
1075	K	K
1076	L	L
1077	M	M
1078	N	N
1079	O	O

[1]**The keystroke in bold is sent only if** *Function Key Mapping on page 3-10* **is enabled. Otherwise, the unbolded keystroke is sent.**

Table 3-2 *USB Prefix/Suffix Values (Continued)*

Prefix/ Suffix Value	Full ASCII Code 39 Encode Character	Keystroke
1080	P	P
1081	Q	Q
1082	R	R
1083	S	S
1084	T	T
1085	U	U
1086	V	V
1087	W	W
1088	X	X
1089	Y	Y
1090	Z	Z
1091	%K	[
1092	%L	\
1093	%M	]
1094	%N	^
1095	%O	_
1096	%W	`
1097	+A	a
1098	+B	b
1099	+C	c
1100	+D	d
1101	+E	e
1102	+F	f
1103	+G	g
1104	+H	h
1105	+I	i
1106	+J	j
1107	+K	k

[1]**The keystroke in bold is sent only if** *Function Key Mapping on page 3-10* **is enabled. Otherwise, the unbolded keystroke is sent.**

Table 3-2 *USB Prefix/Suffix Values (Continued)*

Prefix/ Suffix Value	Full ASCII Code 39 Encode Character	Keystroke
1108	+L	l
1109	+M	m
1110	+N	n
1111	+O	o
1112	+P	p
1113	+Q	q
1114	+R	r
1115	+S	s
1116	+T	t
1117	+U	u
1118	+V	v
1119	+W	w
1120	+X	x
1121	+Y	y
1122	+Z	z
1123	%P	{
1124	%Q	|
1125	%R	}
1126	%S	~

[1]**The keystroke in bold is sent only if** *Function Key Mapping on page 3-10* **is enabled. Otherwise, the unbolded keystroke is sent.**

Table 3-3 *USB ALT Key Character Set*

ALT Keys	Keystroke
2064	ALT 2
2065	ALT A
2066	ALT B
2067	ALT C
2068	ALT D
2069	ALT E

Table 3-3 *USB ALT Key Character Set (Continued)*

ALT Keys	Keystroke
2070	ALT F
2071	ALT G
2072	ALT H
2073	ALT I
2074	ALT J
2075	ALT K
2076	ALT L
2077	ALT M
2078	ALT N
2079	ALT O
2080	ALT P
2081	ALT Q
2082	ALT R
2083	ALT S
2084	ALT T
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z

Table 3-4 *USB GUI Key Character Set*

GUI Key	Keystroke
3000	Right Control Key
3048	GUI 0
3049	GUI 1
3050	GUI 2
3051	GUI 3

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 3-4 *USB GUI Key Character Set (Continued)*

GUI Key	Keystroke
3052	GUI 4
3053	GUI 5
3054	GUI 6
3055	GUI 7
3056	GUI 8
3057	GUI 9
3065	GUI A
3066	GUI B
3067	GUI C
3068	GUI D
3069	GUI E
3070	GUI F
3071	GUI G
3072	GUI H
3073	GUI I
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

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 3-4 *USB GUI Key Character Set (Continued)*

GUI Key	Keystroke
3087	GUI W
3088	GUI X
3089	GUI Y
3090	GUI Z

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

Table 3-5 *USB F Key Character Set*

F Keys	Keystroke
5001	F1
5002	F2
5003	F3
5004	F4
5005	F5
5006	F6
5007	F7
5008	F8
5009	F9
5010	F10
5011	F11
5012	F12
5013	F13
5014	F14
5015	F15
5016	F16
5017	F17
5018	F18
5019	F19
5020	F20
5021	F21

Table 3-5 *USB F Key Character Set (Continued)*

F Keys	Keystroke
5022	F22
5023	F23
5024	F24

Table 3-6 *USB Numeric Keypad 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 3-7 *USB Extended Keypad Character Set*

Extended Keypad	Keystroke
7001	Break
7002	Delete
7003	PgUp
7004	End
7005	Pg Dn

Table 3-7 *USB Extended Keypad Character Set (Continued)*

Extended Keypad	Keystroke
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert
7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Down Arrow
7017	Left Arrow
7018	Right Arrow

Chapter 4 - Imager Setup

Introduction

This chapter describes imager setup features and provides the programming bar codes for selecting these features.

The barcode scanner ships with the settings shown in the *Imager Preferences Default Table on page 4-2*. If the default values suit requirements, programming is not necessary.

There are two ways to change a parameter value:

- Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory.

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

To return all features to default values, scan the *Set Default Parameter on page 2-4*. Throughout the programming bar code menus, asterisks (*****) indicate default values.

Feature/Option

* Indicates Default — ***Enable Decode Aiming Pattern**

Scanning Sequence Examples

In most cases scanning one bar code sets the parameter value. For example, to disable the decode aiming pattern, scan the **Disable Decode Aiming Pattern** bar code listed under *Decode Aiming Pattern on page 4-4*. For systems that use a beeper and LED, a fast warble beep sounds and the LED lights, signifying a successful parameter entry.

Other parameters, such as **Crop to Pixel Address**, require scanning several bar codes. See these parameter descriptions for this procedure.

Errors While Scanning

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

Imager Preferences Parameter Defaults

Table 4-1 lists defaults for imager preferences parameters. To change any option, scan the appropriate bar code(s) provided in Table 2-1 lists defaults for imager preferences parameters. To change any option, scan the appropriate bar code(s) provided..

Table 4-1   *Imager Preferences Default Table*

Parameter	Default	Page Number
Imaging Options		
Decoding Illumination	Enable	*4-4*
Decode Aiming Pattern	Enable	*4-4*
Aim Brightness	0	*4-5*
Illumination Brightness	10	*4-5*
Low Light Enhancement	Disable	*4-6*
Presentation Mode Field of View	Default (Reduced)	*4-6*

The parameters in this chapter control image capture characteristics. Image capture occurs in all modes of operation, including decode, video, and snapshot.

Imager Preferences

The parameters in this chapter control image capture characteristics. Image capture occurs in all modes of operation, including decode, video, and snapshot.

Operational Modes

The barcode scanner has three modes of operation:

- Decode Mode
- Snapshot Mode
  - Snapshot with Viewfinder Mode
- Video Mode.

Decode Mode

By default, upon a trigger event, the barcode scanner attempts to locate and decode bar codes within its field of view. The barcode scanner remains in this mode as long as the trigger is active, until it decodes a bar code, or it reaches the decode session timeout.

Decoding Illumination

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

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

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

*Enable Decoding Illumination

Disable Decoding Illumination

Decode Aiming Pattern

This parameter only applies in Decode Mode. Select **Enable Decode Aiming Pattern** to project the aiming pattern during bar code capture, or **Disable Decode Aiming Pattern** to turn the aiming pattern off.

✓ *NOTE* If *Picklist Mode on page 2-16* is enabled, the decode aiming pattern turns on even when disabled.

*Enable Decode Aiming Pattern

Disable Decode Aiming Pattern

Aim Brightness

This feature sets the brightness of the aim pattern. The default is 0, which indicates that the aim pattern is always on in between camera exposures. For values above 0, each increment of the brightness value increments the aim duration 0.5 ms.

To program Aim Brightness, scan this bar code followed by three numeric bar codes in *Appendix A, Numeric Barcodes* that correspond to the value representing brightness. Settings range from 0 to 255. The maximum aim duration is limited by the frame time, so the recommended range is 0 to 30 when the frame rate is set to 60 fps.

Aim Brightness

Illumination Brightness

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

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

Illumination Brightness

Low Light Enhancement

In presentation mode, selecting **Enable Low Light Enhancement** causes illumination to remain on at a low power in low lighting conditions. When the WDI4500 detects an object in its field of view, it turns on illumination full power. Select **Disable Low Light Enhancement** to prevent illumination from remaining on under low lighting conditions

Enable Low Light Enhancement
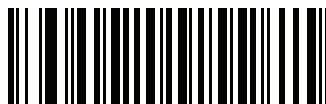
*Disable Low Light Enhancement

Presentation Mode Field of View

In presentation mode, by default the decoder searches for a bar code in a smaller region around the aiming pattern's center cross to speed search time.

To use a full field of view, scan **Presentation Mode Full Field of View**. This allows the decoder to search the larger area of the aiming pattern.
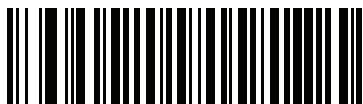
*Presentation Mode Default Field of View

Presentation Mode Full Field of View

Chapter 5 - Symbologies

Introduction

This chapter describes symbology features and provides the programming bar codes for selecting these features. Before programming, follow the instructions in *Chapter 1, - Getting Started*.

The decoder is shipped with the settings shown in the *Symbology Default Table on page 5-2*. If the default values suit requirements, programming is not necessary.

There are two ways to change a parameter value:

- Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory..

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

To return all features to default values, scan *Set Default Parameter on page 2-4*. Throughout the programming bar code menus, default values are indicated with asterisks (*).
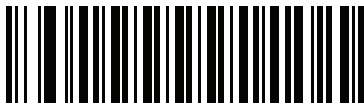
* Indicates Default ——— ***Enable UPC-A** ——— Feature'/Option

Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to transmit bar code data without the UPC-A check digit, simply scan the **Do Not Transmit UPC-A Check Digit** bar code under *Transmit UPC-A Check Digit on page 5-15*. The decoder issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

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

Errors While Scanning

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

Symbology Parameter Defaults

Table 5-1 lists the defaults for all symbologies parameters. To change any option, scan the appropriate bar code(s) provided in the Symbologies Parameters section beginning on *page 5-8*.

Table 5-1   *Symbology Default Table*

Parameter	Default	Page Number
Disable All Symbologies	N/A	*5-7*
UPC/EAN		
UPC-A	Enable	*5-8*
UPC-E	Enable	*5-8*
UPC-E1	Disable	*5-9*
EAN-8/JAN 8	Enable	*5-9*
EAN-13/JAN 13	Enable	*5-10*
Bookland EAN	Disable	*5-10*
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	Ignore	*5-11*

User-Programmable Supplementals
    Supplemental 1:
    Supplemental 2:
		5-14

UPC/EAN/JAN Supplemental Redundancy	10	*5-14*
Transmit UPC-A Check Digit	Enable	*5-15*
Transmit UPC-E Check Digit	Enable	*5-15*
Transmit UPC-E1 Check Digit	Enable	*5-16*
UPC-A Preamble	System Character	*5-17*
UPC-E Preamble	System Character	*5-18*
UPC-E1 Preamble	System Character	*5-19*
Convert UPC-E to A	Disable	*5-20*
Convert UPC-E1 to A	Disable	*5-20*

Table 5-1   *Symbology Default Table (Continued)*

Parameter	Default	Page Number
EAN-8/JAN-8 Extend	Disable	*5-21*
Bookland ISBN Format	ISBN-10	*5-22*
UCC Coupon Extended Code	Disable	*5-23*
ISSN EAN	Disable	*5-23*
Code 128		
Code 128	Enable	*5-24*
Set Length(s) for Code 128	Any Length	*5-24*
GS1-128 (formerly UCC/EAN-128)	Enable	*5-26*
ISBT 128	Enable	*5-26*
ISBT Concatenation	Disable	*5-27*
Check ISBT Table	Enable	*5-28*
ISBT Concatenation Redundancy	10	*5-28*
Code 39		
Code 39	Enable	*5-29*
Trioptic Code 39	Disable	*5-29*
Convert Code 39 to Code 32 (Italian Pharmacy Code)	Disable	*5-30*
Code 32 Prefix	Disable	*5-30*
Set Length(s) for Code 39	2 to 55	*5-31*
Code 39 Check Digit Verification	Disable	*5-32*
Transmit Code 39 Check Digit	Disable	*5-42*
Code 39 Full ASCII Conversion	Disable	*5-33*
Buffer Code 39	Disable	*5-34*
Code 93		
Code 93	Disable	*5-37*
Set Length(s) for Code 93	4 to 55	*5-37*
Code 11		
Code 11	Disable	*5-39*
Set Lengths for Code 11	4 to 55	*5-39*
Code 11 Check Digit Verification	Disable	*5-41*
Transmit Code 11 Check Digit(s)	Disable	*5-42*

Table 5-1   *Symbology Default Table (Continued)*

Parameter	Default	Page Number
Interleaved 2 of 5 (ITF)		
Interleaved 2 of 5 (ITF)	Enable	*5-42*
Set Lengths for I 2 of 5	14	*5-43*
I 2 of 5 Check Digit Verification	Disable	*5-44*
Transmit I 2 of 5 Check Digit	Disable	*5-45*
Convert I 2 of 5 to EAN 13	Disable	*5-45*
Discrete 2 of 5 (DTF)		
Discrete 2 of 5	Disable	*5-46*
Set Length(s) for D 2 of 5	12	*5-46*
Codabar (NW - 7)		
Codabar	Disable	*5-48*
Set Lengths for Codabar	5 to 55	*5-48*
CLSI Editing	Disable	*5-50*
NOTIS Editing	Disable	*5-50*
MSI		
MSI	Disable	*5-51*
Set Length(s) for MSI	4 to 55	*5-51*
MSI Check Digits	One	*5-53*
Transmit MSI Check Digit	Disable	*5-54*
MSI Check Digit Algorithm	Mod 10/Mod 10	*5-54*
Chinese 2 of 5		
Chinese 2 of 5	Disable	*5-55*
Matrix 2 of 5		
Matrix 2 of 5	Disable	*5-55*
Matrix 2 of 5 Lengths	1 Length: 14	*5-56*
Matrix 2 of 5 Redundancy	Disable	*5-57*
Matrix 2 of 5 Check Digit	Disable	*5-57*
Transmit Matrix 2 of 5 Check Digit	Disable	*5-58*

Table 5-1 *Symbology Default Table (Continued)*

Parameter	Default	Page Number
Korean 3 of 5		
Korean 3 of 5	Disable	*5-58*
Inverse 1D	Regular	*5-59*
Postal Codes		
US Postnet	Enable	*5-60*
US Planet	Enable	*5-60*
Transmit US Postal Check Digit	Enable	*5-61*
UK Postal	Enable	*5-61*
Transmit UK Postal Check Digit	Enable	*5-62*
Japan Postal	Enable	*5-62*
Australian Postal	Enable	*5-63*
Netherlands KIX Code	Enable	*5-63*
USPS 4CB/One Code/Intelligent Mail	Disable	*5-64*
UPU FICS Postal	Disable	*5-64*
GS1 DataBar (formerly RSS, Reduced Space Symbology)		
GS1 DataBar-14	Enable	*5-65*
GS1 DataBar Limited	Enable	*5-65*
GS1 DataBar Expanded	Enable	*5-66*
Convert GS1 DataBar to UPC/EAN	Disable	*5-66*
Composite		
Composite CC-C	Disable	*5-67*
Composite CC-A/B	Disable	*5-67*
Composite TLC-39	Disable	*5-68*
UPC Composite Mode	Always Linked	*5-69*
Composite Beep Mode	Beep As Each Code Type is Decoded	*5-70*
GS1-128 Emulation Mode for UCC/EAN Composite Codes	Disable	*5-70*
2D Symbologies		
PDF417	Enable	*5-71*
MicroPDF417	Disable	*5-71*

Table 5-1   *Symbology Default Table (Continued)*

Parameter	Default	Page Number
Code 128 Emulation	Disable	*5-72*
Data Matrix	Enable	*5-73*
Data Matrix Inverse	Regular	*5-74*
Decode Mirror Images (Data Matrix Only)	Never	*5-75*
Maxicode	Enable	*5-76*
QR Code	Enable	*5-76*
QR Inverse	Regular	*5-77*
MicroQR	Enable	*5-78*
Aztec	Enable	*5-78*
Aztec Inverse	Regular	*5-79*
Symbology-Specific Security Levels		
Redundancy Level	1	*5-80*
Security Level	1	*5-82*
Intercharacter Gap Size	Normal	*5-83*
Macro PDF		
Macro PDF Transmit/Decode Mode Symbols	Passthrough Mode	*5-85*
Transmit Macro PDF Control Header	Disable	*5-86*
Escape Characters	None	*5-86*
Flush Macro PDF Buffer		*5-87*
Abort Macro PDF Entry		*5-87*

Disable All Symbologies

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

Disable All Symbologies

UPC/EAN

Enable/Disable UPC-A

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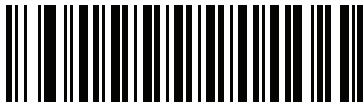
*Enable UPC-A
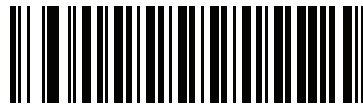
Disable UPC-A

Enable/Disable UPC-E

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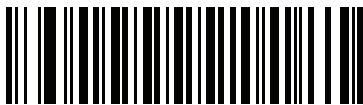
*Enable UPC-E
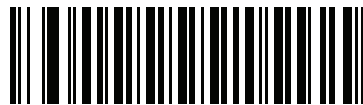
Disable UPC-E

Enable/Disable UPC-E1

UPC-E1 is disabled by default.

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

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

Enable UPC-E1

*Disable UPC-E1

Enable/Disable EAN-8/JAN-8

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

*Enable EAN-8/JAN-8

Disable EAN-8/JAN-8

Enable/Disable EAN-13/JAN-13

To enable or disable EAN-13/JAN-13, scan the appropriate bar code below.
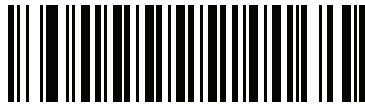
*Enable EAN-13/JAN-13
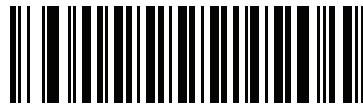
Disable EAN-13/JAN-13

Enable/Disable Bookland EAN

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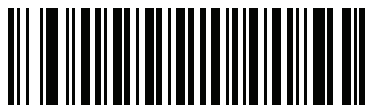
Enable Bookland EAN
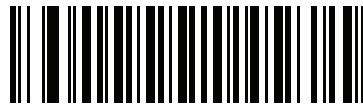
*Disable Bookland EAN

✓ *NOTE* If you enable Bookland EAN, select a *Bookland ISBN Format on page 5-22*. Also select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in *Decode UPC/EAN/JAN Supplementals on page 5-11*.

Decode UPC/EAN/JAN Supplementals

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

- If you select **Ignore UPC/EAN with Supplementals**, and the scanner is presented with a UPC/EAN plus supplemental symbol, the scanner decodes UPC/EAN and ignores the supplemental characters.

- If you select **Decode UPC/EAN with Supplementals**, the scanner only decodes UPC/EAN symbols with supplemental characters, and ignores symbols without supplementals.

- If you select **Autodiscriminate UPC/EAN Supplementals**, the scanner decodes UPC/EAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times set via *UPC/EAN/JAN Supplemental Redundancy on page 5-14* before transmitting its data to confirm that there is no supplemental.

- If you select one of the following **Supplemental Mode** options, the scanner immediately transmits EAN-13 bar codes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times set via *UPC/EAN/JAN Supplemental Redundancy on page 5-14* before transmitting its data to confirm that there is no supplemental. The scanner transmits UPC/EAN bar codes that do not have that prefix immediately.
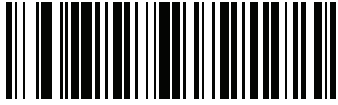
  - Enable 378/379 Supplemental Mode
  - Enable 978/979 Supplemental Mode.

✓ *NOTE* If you select 978 Supplemental Mode and are scanning Bookland EAN bar codes, see *Enable/Disable Bookland EAN on page 5-10* to enable Bookland EAN, and select a format using *Bookland ISBN Format on page 5-22*.

  - Enable 977 Supplemental Mode
  - Enable 414/419/434/439 Supplemental Mode
  - Enable 491 Supplemental Mode
  - **Enable Smart Supplemental Mode** - applies to EAN-13 bar codes starting with any prefix listed previously.
  - **Supplemental User-Programmable Type 1** - applies to EAN-13 bar codes starting with a 3-digit user-defined prefix. Set this 3-digit prefix using *User-Programmable Supplementals on page 5-14*.
  - **Supplemental User-Programmable Type 1 and 2 -** applies to EAN-13 bar codes starting with either of two 3-digit user-defined prefixes. Set the 3-digit prefixes using *User-Programmable Supplementals on page 5-14*.
  - **Smart Supplemental Plus User-Programmable 1** - applies to EAN-13 bar codes starting with any prefix listed previously or the user-defined prefix set using *User-Programmable Supplementals on page 5-14*.
  - **Smart Supplemental Plus User-Programmable 1 and 2 -** applies to EAN-13 bar codes starting with any prefix listed previously or one of the two user-defined prefixes set using *User-Programmable Supplementals on page 5-14*.

✓ *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 Only With Supplementals

*Ignore Supplementals

Autodiscriminate UPC/EAN/JAN Supplementals

Enable 378/379 Supplemental Mode

Enable 978/979 Supplemental Mode

Enable 977 Supplemental Mode

Decode UPC/EAN/JAN Supplementals (continued)

Enable 414/419/434/439 Supplemental Mode

Enable 491 Supplemental Mode

Enable Smart Supplemental Mode

Supplemental User-Programmable Type 1

Supplemental User-Programmable Type 1 and 2

Smart Supplemental Plus User-Programmable 1

Smart Supplemental Plus User-Programmable 1 and 2

User-Programmable Supplementals

If you selected a Supplemental User-Programmable option from *Decode UPC/EAN/JAN Supplementals on page 5-11*, select **User-Programmable Supplemental 1** to set the 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on *page A-1.* Select **User-Programmable Supplemental 2** to set a second 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on *page A-1.*

User-Programmable Supplemental 1

User-Programmable Supplemental 2

UPC/EAN/JAN Supplemental Redundancy

With **Autodiscriminate UPC/EAN/JAN Supplementals** selected, this option adjusts the number of times a symbol without supplementals is decoded before transmission. The range is from two to thirty times. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals, and the autodiscriminate option is selected. The default is set at 10.

Scan the bar code below to set a decode redundancy value. Next, scan two numeric bar codes in *Appendix A, Numeric Barcodes*. Single digit numbers must have a leading zero. To correct an error or change a selection, scan **Cancel** .
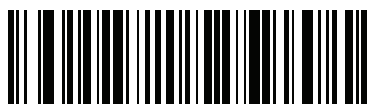
UPC/EAN/JAN Supplemental Redundancy

Transmit UPC-A Check Digit

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

*Transmit UPC-A Check Digit
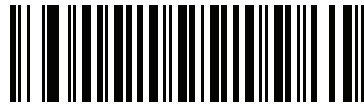
Do Not Transmit UPC-A Check Digit

Transmit UPC-E Check Digit

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

*Transmit UPC-E Check Digit

Do Not Transmit UPC-E Check Digit

Transmit UPC-E1 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-E1 check digit. It is always verified to guarantee the integrity of the data.
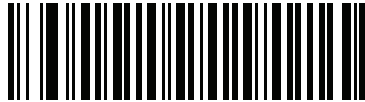
*Transmit UPC-E1 Check Digit
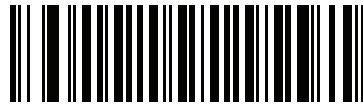
Do Not Transmit UPC-E1 Check Digit

UPC-A Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-A preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.
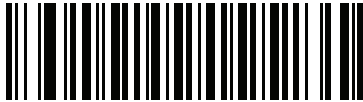
No Preamble (<DATA>)

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

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

UPC-E Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.
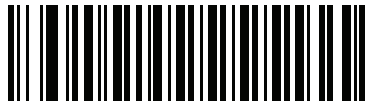
No Preamble (<DATA>)

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

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

UPC-E1 Preamble

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E1 preamble to the host device: transmit System Character only, transmit System Character and Country Code ("0" for USA), and transmit no preamble. Select the appropriate option to match the host system.

No Preamble (<DATA>)

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

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

Convert UPC-E to UPC-A

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

When disabled, UPC-E decoded data is transmitted as UPC-E data, without conversion.

Convert UPC-E to UPC-A (Enable)

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

Convert UPC-E1 to UPC-A

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

When disabled, UPC-E1 decoded data is transmitted as UPC-E1 data, without conversion.

Convert UPC-E1 to UPC-A (Enable)

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

EAN-8/JAN-8 Extend

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

When disabled, EAN-8 symbols are transmitted as is.
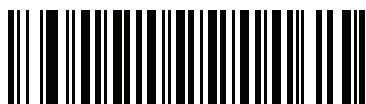
Enable EAN/JAN Zero Extend

*Disable EAN/JAN Zero Extend

Bookland ISBN Format

If you enabled Bookland EAN using *Enable/Disable Bookland EAN on page 5-10*, select one of the following formats for Bookland data:

- **Bookland ISBN-10** - The scanner reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode.

- **Bookland ISBN-13** - The scanner reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.

*Bookland ISBN-10

Bookland ISBN-13

NOTE For Bookland EAN to function properly, first enable Bookland EAN using *Enable/Disable Bookland EAN on page 5-10*, then select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in *Decode UPC/EAN/JAN Supplementals on page 5-11*.

UCC Coupon Extended Code

When enabled, this parameter decodes UPC-A bar codes starting with digit '5', EAN-13 bar codes starting with digit '99', and UPC-A/EAN-128 Coupon Codes. UPCA, EAN-13, and EAN-128 must be enabled to scan all types of Coupon Codes.

Enable UCC Coupon Extended Code

*Disable UCC Coupon Extended Code

✓ *NOTE* Use the Decode UPC/EAN Supplemental Redundancy parameter to control autodiscrimination of the EAN128 (right half) of a coupon code.

ISSN EAN

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

Enable ISSN EAN

*Disable ISSN EAN

Code 128

Enable/Disable Code 128

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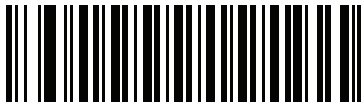
*Enable Code 128
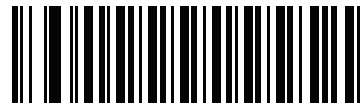
Disable Code 128

Set Lengths for Code 128

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

> ✓ *NOTE* When setting lengths for different bar code types by scanning single digit numbers, single digit numbers must always be preceded by a leading zero.

- **One Discrete Length** - Select this option to decode only Code 128 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Code 128 symbols with 14 characters, scan **Code 128 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or change the selection, scan *Cancel Barcode on page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Code 128 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only those Code 128 symbols containing either 2 or 14 characters, select **Code 128 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or change the selection, scan *Cancel Barcode on page A-3*.

- **Length Within Range** - Select this option to decode a Code 128 symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode Code 128 symbols containing between 4 and 12 characters, first scan **Code 128 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan *Cancel Barcode on page A-3*.

- **Any Length** - Select this option to decode Code 128 symbols containing any number of characters within the digital scanner capability.

Set Lengths for Code 128 (continued)
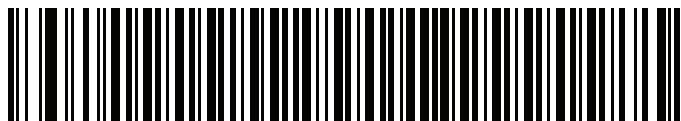
Code 128 - One Discrete Length

Code 128 - Two Discrete Lengths

Code 128 - Length Within Range

*Code 128 - Any Length

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

To enable or disable GS1-128, scan the appropriate bar code below.
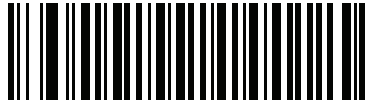
*Enable GS1-128
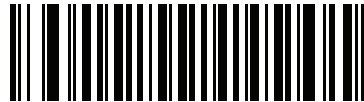
Disable GS1-128

Enable/Disable ISBT 128

ISBT 128 is a variant of Code 128 used in the blood bank industry. Scan a bar code below to enable or disable ISBT 128. If necessary, the host must perform concatenation of the ISBT data.

*Enable ISBT 128

Disable ISBT 128

ISBT Concatenation

Select an option for concatenating pairs of ISBT code types:

- If you select **Disable ISBT Concatenation**, the decoder does not concatenate pairs of ISBT codes it encounters.

- If you select **Enable ISBT Concatenation**, there must be two ISBT codes in order for the decoder to decode and perform concatenation. The decoder does not decode single ISBT symbols.

- If you select **Autodiscriminate ISBT Concatenation**, the decoder decodes and concatenates pairs of ISBT codes immediately. If only a single ISBT symbol is present, the decoder must decode the symbol the number of times set via *ISBT Concatenation Redundancy on page 5-28* before transmitting its data to confirm that there is no additional ISBT symbol.

*Disable ISBT Concatenation

Enable ISBT Concatenation
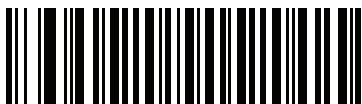
Autodiscriminate ISBT Concatenation

Check ISBT Table

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

*Enable Check ISBT Table

Disable Check ISBT Table

ISBT Concatenation Redundancy

If you set **ISBT Concatenation** to **Autodiscriminate,** use this parameter to set the number of times the digital scanner must decode an ISBT symbol before determining that there is no additional symbol.

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

ISBT Concatenation Redundancy

Code 39

Enable/Disable Code 39

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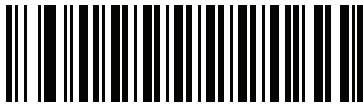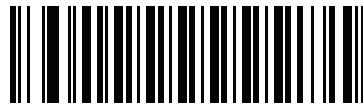
*Enable Code 39

Disable Code 39

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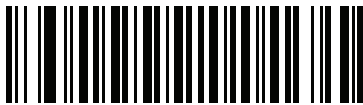
Enable Trioptic Code 39

*Disable Trioptic Code 39

✓ *NOTE* Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously.

Convert Code 39 to Code 32

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32.

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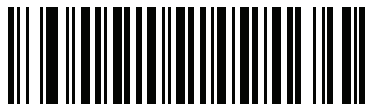
Enable Convert Code 39 to Code 32

*Disable Convert Code 39 to Code 32

Code 32 Prefix

Parameter # E7h

Scan the appropriate bar code below to enable or disable adding the prefix character "A" to all Code 32 bar codes.

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

**Enable Code 32 Prefix
(01h)**

***Disable Code 32 Prefix
(00h)**

Set Lengths for Code 39

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

✓ *NOTE* When setting lengths for different bar code types by scanning single digit numbers, single digit numbers must always be preceded by a leading zero.

- **One Discrete Length** - Select this option to decode only Code 39 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Code 39 symbols with 14 characters, scan **Code 39 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Code 39 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix , Cancel Barcode*. For example, to decode only those Code 39 symbols containing either 2 or 14 characters, select **Code 39 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a Code 39 symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Any Length** - Select this option to decode Code 39 symbols containing any number of characters within the decoder capability.

Code 39 - One Discrete Length

Code 39 - Two Discrete Lengths

Set Lengths for Code 39 (continued)

Code 39 - Length Within Range

Code 39 - Any Length

Code 39 Check Digit Verification

When this feature is enabled, the decoder 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.

Enable Code 39 Check Digit
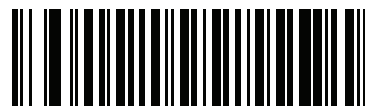
*Disable Code 39 Check Digit

Transmit Code 39 Check Digit

Scan a bar code below to transmit Code 39 data with or without the check digit.

Transmit Code 39 Check Digit (Enable)

*Do Not Transmit Code 39 Check Digit (Disable)

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

Code 39 Full ASCII Conversion

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

Enable Code 39 Full ASCII

*Disable Code 39 Full ASCII

✓ *NOTE* Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously.

Code 39 Full ASCII to Full ASCII Correlation is host-dependent, and is therefore described in the ASCII Character Set Table for the appropriate interface.

Code 39 Buffering (Scan & Store)

This feature allows the decoder to accumulate data from multiple Code 39 symbols.

Selecting the Scan and Store option (Buffer Code 39) temporarily buffers all Code 39 symbols having a leading space as a first character for later transmission. The leading space is not buffered.

Decode of a valid Code 39 symbol with no leading space causes transmission in sequence of all buffered data in a first-in first-out format, plus transmission of the "triggering" symbol. See the following pages for further details.

When the **Do Not Buffer Code 39** option is selected, all decoded Code 39 symbols are transmitted immediately without being stored in the buffer.

This feature affects Code 39 only. If selecting **Buffer Code 39**, we recommend configuring the decoder to decode Code 39 symbology only.
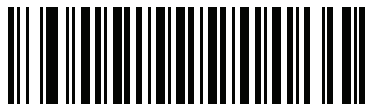
Buffer Code 39 (Enable)
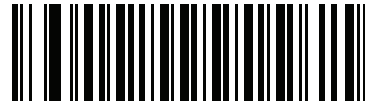
*Do Not Buffer Code 39 (Disable)

While there is data in the transmission buffer, selecting **Do Not Buffer Code 39** is not allowed. The buffer holds 200 bytes of information.

To disable Code 39 buffering when there is data in the transmission buffer, first force the buffer transmission (see *Transmit Buffer on page 5-35*) or clear the buffer.

Buffer Data

To buffer data, Code 39 buffering must be enabled and a Code 39 symbol must be read with a space immediately following the start pattern.

- Unless the data overflows the transmission buffer, the decoder issues a lo/hi beep to indicate successful decode and buffering. (For overflow conditions, see *Overfilling Transmission Buffer*.)

- The decoder adds the decoded data excluding the leading space to the transmission buffer.

- No transmission occurs.

Clear Transmission Buffer

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

- The decoder issues a short hi/lo/hi beep.

- The decoder erases the transmission buffer.

- No transmission occurs.

Clear Buffer

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

Transmit Buffer

There are two methods to transmit the Code 39 buffer.

1. Scan the **Transmit Buffer** bar code below. Only a start character, a plus (+), and a stop character.

    - The decoder transmits and clears the buffer.

    - The decoder issues a Lo/Hi beep.

Transmit Buffer

2. Scan a Code 39 bar code with a leading character other than a space.
    - The decoder appends new decode data to buffered data.
    - The decoder transmits and clears the buffer.
    - The decoder signals that the buffer was transmitted with a lo/hi beep.
    - The decoder transmits and clears the buffer.

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

Overfilling Transmission Buffer

The Code 39 buffer holds 200 characters. If the symbol just read results in an overflow of the transmission buffer:

- The decoder indicates that the symbol was rejected by issuing three long, high beeps.

- No transmission occurs. The data in the buffer is not affected.

Attempt to Transmit an Empty Buffer

If the symbol just read was the **Transmit Buffer** symbol and the Code 39 buffer is empty:

- A short lo/hi/lo beep signals that the buffer is empty.

- No transmission occurs.
- The buffer remains empty.

Code 93

Enable/Disable Code 93

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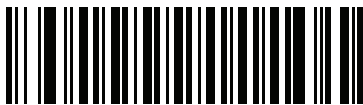
Enable Code 93

*Disable Code 93

Set Lengths for Code 93

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

- **One Discrete Length** - Select this option to decode only Code 93 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Code 93 symbols with 14 characters, scan **Code 93 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Code 93 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only those Code 93 symbols containing either 2 or 14 characters, select **Code 93 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a Code 93 symbol with a specific length range. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Any Length** - Scan this option to decode Code 93 symbols containing any number of characters within the decoder's capability.

Set Lengths for Code 93 (continued)

Code 93 - One Discrete Length

Code 93 - Two Discrete Lengths

Code 93 - Length Within Range

Code 93 - Any Length

Code 11

Code 11

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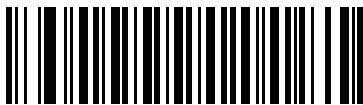
Enable Code 11
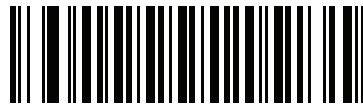
*Disable Code 11

Set Lengths for Code 11

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

- **One Discrete Length** - Select this option to decode only Code 11 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Code 11 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only those Code 11 symbols containing either 2 or 14 characters, select **Code 11 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a Code 11 symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode Code 11 symbols containing between 4 and 12 characters, first scan **Code 11 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Any Length** - Scan this option to decode Code 11 symbols containing any number of characters within the decoder capability.

Set Lengths for Code 11 (continued)

Code 11 - One Discrete Length

Code 11 - Two Discrete Lengths

Code 11 - Length Within Range

Code 11 - Any Length

Code 11 Check Digit Verification

This feature allows the decoder to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature.

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

*Disable

One Check Digit

Two Check Digits

Transmit Code 11 Check Digits

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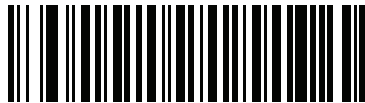
Transmit Code 11 Check Digit(s) (Enable)

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

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

Interleaved 2 of 5 (ITF)

Enable/Disable Interleaved 2 of 5

To enable or disable Interleaved 2 of 5, scan the appropriate bar code below, and select an Interleaved 2 of 5 length from the following pages.

*Enable Interleaved 2 of 5

Disable Interleaved 2 of 5

Set Lengths for Interleaved 2 of 5

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

- **One Discrete Length** - Select this option to decode only I 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only I 2 of 5 symbols with 14 characters, scan **I 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3.*

- **Two Discrete Lengths** - Select this option to decode only I 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only those I 2 of 5 symbols containing either 2 or 14 characters, select **I 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode an I 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

- **Any Length** - Scan this option to decode I 2 of 5 symbols containing any number of characters within the decoder 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 be interpreted as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length - Two Discrete Lengths) for I 2 of 5 applications.

I 2 of 5 - One Discrete Length

I 2 of 5 - Two Discrete Lengths

Set Lengths for Interleaved 2 of 5 (continued)

I 2 of 5 - Length Within Range

I 2 of 5 - Any Length

I 2 of 5 Check Digit Verification

When this feature is enabled, the decoder checks 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

USS Check Digit

OPCC Check Digit

Transmit I 2 of 5 Check Digit

Scan the appropriate bar code below to transmit I 2 of 5 data with or without the check digit.

Transmit I 2 of 5 Check Digit (Enable)

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

Convert I 2 of 5 to EAN-13

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

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

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

Discrete 2 of 5 (DTF)

Enable/Disable Discrete 2 of 5

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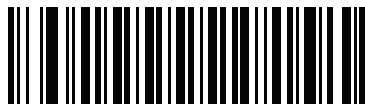
Enable Discrete 2 of 5

*Disable Discrete 2 of 5

Set Lengths for Discrete 2 of 5

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

- **One Discrete Length** - Select this option to decode only D 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only D 2 of 5 symbols with 14 characters, scan **D 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Two Discrete Lengths** - Select this option to decode only D 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only those D 2 of 5 symbols containing either 2 or 14 characters, select **D 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a D 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes.* For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

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

Set Lengths for Discrete 2 of 5 (continued)

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 be interpreted as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (D 2 of 5 - One Discrete Length - Two Discrete Lengths) for D 2 of 5 applications.

D 2 of 5 - One Discrete Length

D 2 of 5 - Two Discrete Lengths

D 2 of 5 - Length Within Range

D 2 of 5 - Any Length

Codabar (NW - 7)

Enable/Disable Codabar

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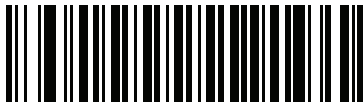
Enable Codabar
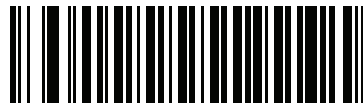
*Disable Codabar

Set Lengths for Codabar

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

- **One Discrete Length** - Select this option to decode only Codabar symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Codabar symbols with 14 characters, scan **Codabar - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Codabar symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Codabar symbols containing either 2 or 14 characters, select **Codabar - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a Codabar symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes.* For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3*.

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

Set Lengths for Codabar (continued)

Codabar - One Discrete Length

Codabar - Two Discrete Lengths

Codabar - Length Within Range

Codabar - Any Length

CLSI Editing

When enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol. Enable this feature if the host system requires this data format.

✓ *NOTE* Symbol length does not include start and stop characters.
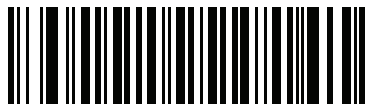
Enable CLSI Editing

*Disable CLSI Editing)

NOTIS Editing

When enabled, this parameter strips the start and stop characters from a decoded Codabar symbol. Enable this feature if the host system requires this data format.

Enable NOTIS Editing
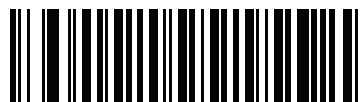
*Disable NOTIS Editing

MSI

Enable/Disable MSI

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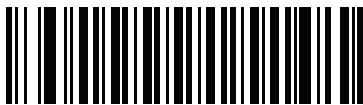
Enable MSI
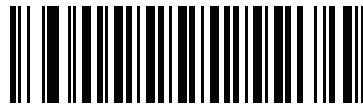
*Disable MSI

Set Lengths for MSI

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

- **One Discrete Length** - Select this option to decode only MSI symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only MSI symbols with 14 characters, scan **MSI - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3.*

- **Two Discrete Lengths** - Select this option to decode only MSI symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only MSI symbols containing either 2 or 14 characters, select **MSI - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on *page A-3*.

- **Length Within Range** - Select this option to decode a MSI symbol with a specific length range. Select lengths using numeric bar codes in *Appendix A, Numeric Barcodes.* For example, to decode MSI symbols containing between 4 and 12 characters, first scan **MSI - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on *page A-3.*

- **Any Length** - Scan this option to decode MSI symbols containing any number of characters within the decoder capability.

Set Lengths for MSI (continued)

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

MSI - One Discrete Length

MSI - Two Discrete Lengths
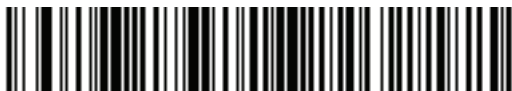
MSI - Length Within Range

MSI - Any Length

MSI Check Digits

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

See *MSI Check Digit Algorithm on page 5-54* for the selection of second digit algorithms.

*One MSI Check Digit

Two MSI Check Digits

Transmit MSI Check Digit(s)

Scan a bar code below to transmit MSI data with or without the check digit.
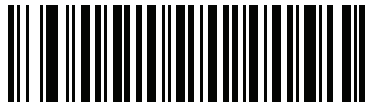
Transmit MSI Check Digit(s) (Enable)
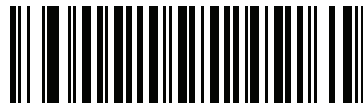
*Do Not Transmit MSI Check Digit(s) (Disable)

MSI Check Digit Algorithm

Two algorithms are possible for the verification of the second MSI check digit. Select the bar code below corresponding to the algorithm used to encode the check digit.
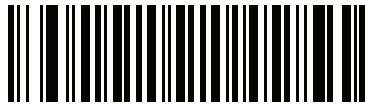
MOD 10/MOD 11

*MOD 10/MOD 10

Chinese 2 of 5

Enable/Disable Chinese 2 of 5

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

Enable Chinese 2 of 5
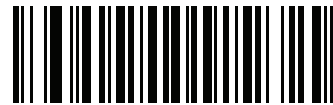
*Disable Chinese 2 of 5

Matrix 2 of 5

Enable/Disable Matrix 2 of 5

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

Enable Matrix 2 of 5

*Disable Matrix 2 of 5

Set Lengths for Matrix 2 of 5

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

- **One Discrete Length** - Select this option to decode only Matrix 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Matrix 2 of 5 symbols with 14 characters, scan **Matrix 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan *Cancel Barcode on page A-3*.

- **Two Discrete Lengths** - Select this option to decode only Matrix 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode only Matrix 2 of 5 symbols containing either 2 or 14 characters, select **Matrix 2 of 5 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan *Cancel Barcode on page A-3*.

- **Length Within Range** - Select this option to decode a Matrix 2 of 5 symbol with a specific length range. Select lengths using the numeric bar codes in *Appendix A, Numeric Barcodes*. For example, to decode Matrix 2 of 5 symbols containing between 4 and 12 characters, first scan **Matrix 2 of 5 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (enter a leading zero for single digit numbers). To correct an error or change the selection, scan *Cancel Barcode on page A-3*.

- **Any Length** - Scan this option to decode Matrix 2 of 5 symbols containing any number of characters within the digital scanner's capability.

*Matrix 2 of 5 - One Discrete Length

Matrix 2 of 5 - Two Discrete Lengths
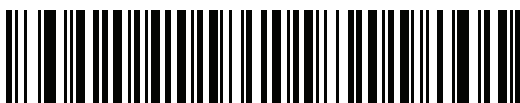
Matrix 2 of 5 - Length Within Range

Matrix 2 of 5 - Any Length

Matrix 2 of 5 Redundancy

Enable this option to ensure the device scans each bar code at least two times before reporting a decode. This reduces the likelihood of misdecodes but can decrease performance.

Enable Matrix 2 of 5 Redundancy

*Disable Matrix 2 of 5 Redundancy

Matrix 2 of 5 Check Digit

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the Matrix 2 of 5 check digit.

Enable Matrix 2 of 5 Check Digit
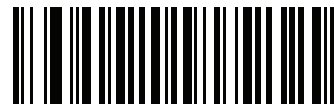
*Disable Matrix 2 of 5 Check Digit

Transmit Matrix 2 of 5 Check Digit

Scan a bar code below to transmit Matrix 2 of 5 data with or without the check digit.
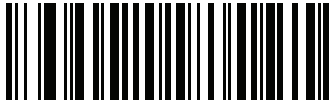
Transmit Matrix 2 of 5 Check Digit
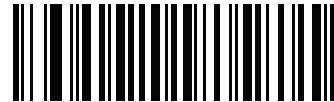
*Do Not Transmit Matrix 2 of 5 Check Digit

Korean 3 of 5

Enable/Disable Korean 3 of 5

To enable or disable Korean 3 of 5, scan the appropriate bar code below.

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

Enable Korean 3 of 5

*Disable Korean 3 of 5

Inverse 1D

This parameter sets the 1D inverse decoder setting. Options are:

- **Regular Only** - the scanner decodes regular 1D bar codes only.

- **Inverse Only** - the scanner decodes inverse 1D bar codes only.

- **Inverse Autodetect** - the scanner decodes both regular and inverse 1D bar codes.

*Regular

Inverse Only

Inverse Autodetect

Postal Codes

US Postnet

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

*Enable US Postnet

Disable US Postnet

US Planet

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

*Enable US Planet

Disable US Planet

Transmit US Postal Check Digit

Select whether to transmit US Postal data, which includes both US Postnet and US Planet, with or without the check digit.

*Transmit US Postal Check Digit

Do Not Transmit US Postal Check Digit

UK Postal

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

*Enable UK Postal
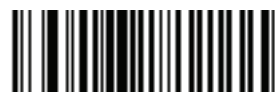
Disable UK Postal

Transmit UK Postal Check Digit

Select whether to transmit UK Postal data with or without the check digit.

***Transmit UK Postal
Check Digit**

Do Not Transmit UK Postal Check Digit

Japan Postal

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

*Enable Japan Postal

Disable Japan Postal

Australian Postal

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

*Enable Australian Postal

Disable Australian Postal

Netherlands KIX Code

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

*Enable Netherlands KIX Code

Disable Netherlands KIX Code

USPS 4CB/One Code/Intelligent Mail

To enable or disable USPS 4CB/One Code/Intelligent Mail, scan the appropriate bar code below.

Enable USPS 4CB/One Code/Intelligent Mail

*Disable USPS 4CB/One Code/Intelligent Mail

UPU FICS Postal

To enable or disable UPU FICS Postal, scan the appropriate bar code below.

Enable UPU FICS Postal

*Disable UPU FICS Postal

GS1 DataBar (formerly RSS, Reduced Space Symbology)

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

GS1 DataBar-14

.

*Enable GS1 DataBar-14

Disable GS1 DataBar-14

GS1 DataBar Limited

.

*Enable GS1 DataBar Limited

Disable GS1 DataBar Limited

GS1 DataBar Expanded

*Enable GS1 DataBar Expanded

Disable GS1 DataBar Expanded

Convert GS1 DataBar to UPC/EAN

This parameter only applies to GS1 DataBar-14 and GS1 DataBar Limited symbols not decoded as part of a Composite symbol. Enable this to strip the leading '010' from GS1 DataBar-14 and GS1 DataBar Limited symbols encoding a single zero as the first digit, and report the bar code as EAN-13.

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

Enable Convert GS1 DataBar to UPC/EAN

*Disable Convert GS1 DataBar to UPC/EAN

Composite

Composite CC-C

Scan a bar code below to enable or disable Composite bar codes of type CC-C.

Enable CC-C

***Disable CC-C**

Composite CC-A/B

Scan a bar code below to enable or disable Composite bar codes of type CC-A/B.

Enable CC-A/B

***Disable CC-A/B**

Composite TLC-39

Scan a bar code below to enable or disable Composite bar codes of type TLC-39.
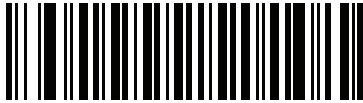
Enable TLC39
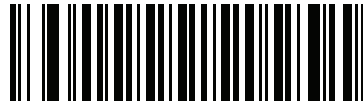
*Disable TLC39

UPC Composite Mode

UPC symbols can be "linked" with a 2D symbol during transmission as if they were one symbol. There are three options for these symbols:

- Select **UPC Never Linked** to transmit UPC bar codes regardless of whether a 2D symbol is detected.

- Select **UPC Always Linked** to transmit UPC bar codes and the 2D portion.
  If 2D is not present, the UPC bar code does not transmit.

- If Autodiscriminate UPC Composites is selected, the WDI4500 determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.
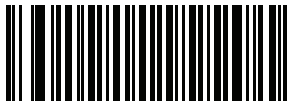
UPC Never Linked
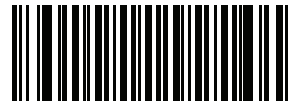
*UPC Always Linked

Autodiscriminate UPC Composites

Composite Beep Mode

To select the number of decode beeps when a composite bar code is decoded, scan the appropriate bar code.
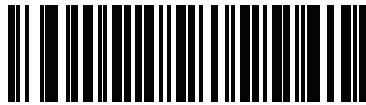
Single Beep after both are decoded

*Beep as each code type is decoded
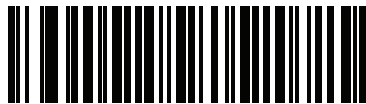
Double Beep after both are decoded

GS1-128 Emulation Mode for UCC/EAN Composite Codes

Select whether to enable or disable this mode.

**Enable GS1-128 Emulation Mode for
UCC/EAN Composite Codes**

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

2D Symbologies

Enable/Disable PDF417

To enable or disable PDF417, scan the appropriate bar code below.

*Enable PDF417

Disable PDF417

Enable/Disable MicroPDF417

To enable or disable MicroPDF417, scan the appropriate bar code below.

Enable MicroPDF417
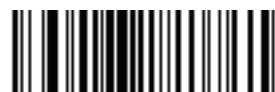
*Disable MicroPDF417

Code 128 Emulation

When this parameter is enabled, the scanner transmits data from certain MicroPDF417 symbols as if it was encoded in Code 128 symbols. Transmit AIM Symbology Identifiers must be enabled for this parameter to work.

If Code 128 Emulation is enabled, these MicroPDF417 symbols are transmitted 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

If disabled, they are transmitted with one of the following prefixes:

    ]L3   if the first codeword is 903-905

    ]L4   if the first codeword is 908 or 909

    ]L5   if the first codeword is 910 or 911

Scan a bar code below to enable or disable Code 128 Emulation.

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

Enable Code 128 Emulation

*Disable Code 128 Emulation

Data Matrix

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

*Enable Data Matrix

Disable Data Matrix

Data Matrix Inverse

This parameter sets the Data Matrix inverse decoder setting. Options are:

- **Regular Only** - the scanner decodes regular Data Matrix bar codes only.

- **Inverse Only** - the scanner decodes inverse Data Matrix bar codes only.

- **Inverse Autodetect** - the scanner decodes both regular and inverse Data Matrix bar codes.

***Regular**

Inverse Only

Inverse Autodetect

Decode Mirror Images (Data Matrix Only)

Select an option for decoding mirror image Data Matrix bar codes:

- Always - decode only Data Matrix bar codes that are mirror images

- Never - do not decode Data Matrix bar codes that are mirror images

- Auto - decode both mirrored and unmirrored Data Matrix bar codes.

*Never

Always

Auto

Maxicode

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

*Enable Maxicode

Disable Maxicode

QR Code

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

*Enable QR Code

Disable QR Code

QR Inverse

This parameter sets the QR inverse decoder setting. Options are:

- **Regular Only** - the scanner decodes regular QR bar codes only.
- **Inverse Only** - the scanner decodes inverse QR bar codes only.
- **Inverse Autodetect** - the scanner decodes both regular and inverse QR bar codes.

*Regular

Inverse Only

Inverse Autodetect

MicroQR

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

*Enable MicroQR

Disable MicroQR

Aztec

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

*Enable Aztec

Disable Aztec

Aztec Inverse

This parameter sets the Aztec inverse decoder setting. Options are:

- **Regular Only** - the scanner decodes regular Aztec bar codes only.

- **Inverse Only** - the scanner decodes inverse Aztec bar codes only.

- **Inverse Autodetect** - the scanner decodes both regular and inverse Aztec bar codes.

*Regular

Inverse Only

Inverse Autodetect

Redundancy Level

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

Select the redundancy level appropriate for the bar code quality.

Redundancy Level 1

The following code types must be successfully read twice before being decoded:

Code Type	Code Length
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 following code types must be successfully read twice before being decoded:

Code Type	Code Length
All	All

Redundancy Level 3

Code types other than the following must be successfully read twice before being decoded. The following codes must be read three times:

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

Redundancy Level 4

The following code types must be successfully read three times before being decoded:

Code Type	Code Length
All	All

Redundancy Level (continued)

*Redundancy Level 1

Redundancy Level 2

Redundancy Level 3

Redundancy Level 4

Security Level

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

- **Security Level 0:** This setting allows the decoder to operate in its most aggressive state, while providing sufficient security in decoding most "in-spec" bar codes.

- **Security Level 1:** Select this option if misdecodes occur. This default setting should eliminate most misdecodes.

- **Security Level 2:** Select this option if Security level 1 fails to eliminate misdecodes.

- **Security Level 3**: If Security Level 2 was selected and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the decoder. If this level of security is necessary, try to improve the quality of the bar codes.
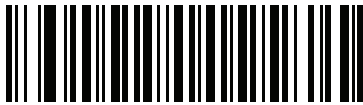
Security Level 0

*Security Level 1

Security Level 2

Security Level 3

Intercharacter Gap Size

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

*Normal Intercharacter Gaps

Large Intercharacter Gaps

Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The decoder can decode symbols that are encoded with this feature, and can store more than 64 kb of decoded data stored in up to 50 Macro PDF symbols.

> ⚠️ *CAUTION* When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning Macro PDF sequences, scan the entire Macro PDF sequence without interruption.

Macro PDF User Indications

In this mode the decoder provides the following feedback.

Table 5-2 *Macro PDF User Indications*

User Scans	Passthrough All Symbols		Transmit Any Symbol in Set		Buffer All Symbols	
	Beep	**T**	**Beep**	**T**	**Beep**	**T**
Last Macro PDF in set	Decode Beep	Y	Decode Beep	Y	Decode Beep	Y
Any Macro PDF in set except last	Decode Beep	Y	Decode Beep	Y	2 Short Low	N
Macro PDF is not in current Set	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Invalid formatted Macro PDF	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Macro PDF from a set has already been scanned	Decode Beep	Y	4 Long Low	N	4 Long Low	N
Out of Macro PDF memory	N/A	-	3 Long Low	N	3 Long Low	N
Any non-Macro PDF scanned during a set	N/A	-	4 Long Low	N	4 Long Low	N
Flush Macro PDF	Low Hi	N	5 Long Low	N	5 Long Low	Y
Abort Macro PDF	High Low High Low	N	High Low High Low	N	High Low High Low	N

Notes:
1. The beep only sounds if the *BEEPER_ON signal is connected.
2. The column marked T indicates whether the symbol is transmitted to the host. N = No transmission.

Macro PDF Transmit / Decode Mode Symbols

Select one of the options below for handling Macro PDF decoding. In *Buffer All Symbols* the decoder can handle sets of up to 50 maximum-sized Macro PDF symbols. In all other modes there is no limit to the size of the Macro PDF set.

- **Buffer All Symbols / Transmit Macro PDF When Complete:** This transmits all decode data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. Use the beeper and LED signals provided with the WDI4500 when using this mode to ensure proper user feedback.
  If the decode data exceeds the limit of 50 symbols, there is no transmission because the entire sequence was not scanned. Use the parameter *Flush Macro Buffer on page 5-87* to purge the buffer.

- **Transmit Any Symbol in Set / No Particular Order**: This transmits data from each Macro PDF symbol as decoded, regardless of the sequence (although some error handling is performed; see *Table 5-2*).
  When selecting this mode, enable *Transmit Macro PDF Control Header on page 5-86*. Also use the beeper and LED signals provided with the WDI4500 to ensure proper user feedback.

- **Passthrough All Symbols**: This transmits and decodes all Macro PDF symbols and performs no processing. In this mode the host is responsible for detecting and parsing the Macro PDF sequences.

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

Buffer All Symbols / Transmit Macro PDF When Complete

Transmit Any Symbol in Set / No Particular Order

*Passthrough All Symbols

Transmit Macro PDF Control Header

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

Enable this when selecting *Transmit Any Symbol in Set / No Particular Order* for the *Macro PDF Transmit / Decode Mode Symbols on page 5-85*, and disable this when selecting *Buffer All Symbols / Transmit Macro PDF When Complete*. This parameter has no effect when *Passthrough All Symbols* is selected.

Enable Macro PDF Control Header Transmit

*Disable Macro PDF Control Header Transmit

Escape Characters

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

GLI Protocol

*None

Flush Macro Buffer

This 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 clears all currently-stored Macro PDF data in the buffer without transmission and aborts from Macro PDF mode.

Abort Macro PDF Entry

Chapter 6 - Miscellaneous Options

Introduction

This chapter includes commonly used bar codes to customize how data is transmitted to the host device.

The decoder ships with the settings shown in the *Miscellaneous Options Default Table on page 6-2*. If the default values suit requirements, programming is not necessary.

There are two ways to change a parameter value:

- Scan the appropriate bar codes in this guide. These new values replace the standard default values in memory. .

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

To return all features to default values, scan the *Set Default Parameter on page 2-4*. Throughout the programming bar code menus, default values are indicated with asterisks (*).

* Indicates Default ——— ***Disable No Read** ——— Feature/Option

Scanning Sequence Examples

In most cases, scan one bar code to set a specific parameter value. Other parameters, such as **Prefix Value**, require scanning several bar codes. See each parameter for descriptions of this procedure.

Errors While Scanning

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

Miscellaneous Parameter Defaults

Table 6-1 lists the defaults for miscellaneous options parameters. To change any option, scan the appropriate bar code(s) provided in the *Miscellaneous Parameters on page 6-3*.

Table 6-1   *Miscellaneous Options Default Table*

Parameter	Default	Page Number
Transmit Code ID Character	None	*6-3*
SSI Prefix Value	<CR>	*6-4*
SSI Suffix 1 Value SSI Suffix 2 Value	<CR> <CR>	*6-4*
Non-SSI Prefix Value	<CR><LF>	*6-4*
Non-SSI Suffix 1 Value Non-SSI Suffix 2 Value	<CR><LF> <CR><LF>	*6-4*
Scan Data Transmission Format	Data as is	*6-5*
FN1 Substitution Values	Set	*6-6*
Transmit "No Read" Message	Disable	*6-7*
Report Version		*6-7*

Miscellaneous Parameters

Transmit Code ID Character

A Code ID character identifies the code type of a scanned bar code. This is useful when the decoder is decoding more than one code type. In addition to any single character prefix already 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.
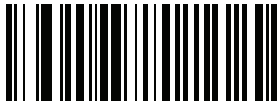
Symbol Code ID Character

AIM Code ID Character

***None**

Prefix/Suffix Values

A prefix and/or one or two suffixes can be appended to scan data for use in data editing. To set a value for a prefix or suffix, scan the prefix or suffix bar code below, then scan a four-digit number (i.e., four bar codes from *Appendix A, Numeric Barcodes*) that corresponds to that value. The first digit defines the key category (type of character to send) and is stored in the key category parameter. The remaining three digits define the value of the character and are stored in the decimal value parameter. Be sure to use both key category and decimal value parameters to define the prefix/suffix value.

To correct an error or change a selection, scan *Cancel Barcode on page A-3*.

✓ *NOTE* When using the decoder with an SSI or SNAPI host, only a key category value of 1 is valid. All other values are ignored.

To send a Prefix or Suffix with bar code data, first enable the format in which they are sent by setting the *Scan Data Transmission Format on page 6-5*.

Scan Prefix

Scan Suffix 1

Scan Suffix 2

Scan Data Transmission Format

To change the scan data format, scan one of the following eight bar codes corresponding to the desired format.

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

To set values for the prefix and/or suffix, see .

*Data As Is

<DATA> <SUFFIX 1>

<DATA> <SUFFIX 2>

<DATA> <SUFFIX 1> <SUFFIX 2>

<PREFIX> <DATA >

Scan Data Transmission Format (continued)

<PREFIX> <DATA> <SUFFIX 1>

<PREFIX> <DATA> <SUFFIX 2>

<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>

FN1 Substitution Values

The Wedge and USB HID Keyboard hosts support a FN1 Substitution feature. When enabled any FN1 character (0x1b) in an EAN128 bar code is substituted with a value. This value defaults to 7013 (Enter Key).

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

To select a FN1 substitution value via bar code menus:

1. Scan the bar code below.

Set FN1 Substitution Value

2. Look up the keystroke desired for FN1 Substitution in the ASCII Character Set table for the currently installed host interface. Enter the 4-digit ASCII Value by scanning each digit in *Appendix A, 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** bar code on *page 6-6*.

Transmit "No Read" Message

Scan a bar code below to select whether or not to transmit a No Read message. When enabled, the characters NR are transmitted when a bar code is not decoded. When disabled, if a symbol does not decode, nothing is sent to the host.
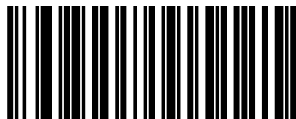
Enable No Read

***Disable No Read**

Report Version

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

Report Software Version

Chapter 7 - Advanced Data Formatting

Introduction

Advanced Data Formatting (ADF) is a means of customizing data before transmission to the host device. This enables editing scan data to suit the particular requirements.

To implement ADF, scan a related series of bar codes which begin on that allows programming the decoder with ADF rules.

Avoid using ADF formatting with bar codes containing more than 60 characters. To add a prefix or suffix value for such bar codes, use . Using ADF with longer bar codes transmits the bar code in segments of length 252 or less (depending on the host), and applies the rule to each segment.

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

Rules: Criteria Linked to Actions

ADF uses **rules** to customize data. These rules perform detailed actions when the data meets certain criteria. One rule may consist of single or multiple criteria applied to single or multiple actions.

For instance, a data formatting rule could be:

Criteria*:* *When scan data is Code 39, length 12, and data at the start position is the string "129",*

Actions*:* *pad all sends with zeros to length 8, send all data up to X, send a space.*

Scanning a Code 39 bar code of 1299X1559828 transmits: 00001299<space>. If you scan a Code 39 bar code of 1299X15598, this rule is ignored because the bar code didn't meet the length criteria.

The rule specifies the editing conditions and requirements before data transmission occurs.

Using ADF Bar Codes

When programming a rule, make sure the rule is logically correct. Plan ahead before scanning.

To program each data formatting rule:

- **Start the Rule**. Scan the *Begin New Rule bar code on page 7-8*.

- **Specify Criteria**. Scan the bar codes for all pertinent criteria. Criteria can include code type (e.g., Code 128), code length, or data that contains a specific character string (e.g., the digits "129"). See *Criteria on page 7-11*.

- **Select Actions**. Scan all actions related to, or affecting, these criteria. The actions of a rule specify how to format the data for transmission. See *Actions on page 7-26*.

- **Save the Rule**. Scan the *Save Rule bar code on page 7-8*. This places the rule in the "top" position in the rule buffer.

- Use special-purpose bar codes to correct errors during this process. Erase criteria, actions, and entire rules by scanning the appropriate bar code on *page 7-9*.

ADF Bar Code Menu Example

This section provides an example of how to enter ADF rules for scan data.

An auto parts distribution center wants to encode manufacturer ID, part number, and destination code into their own Code 128 bar codes. The distribution center also has products that carry UPC bar codes, placed there by the manufacturer. The Code 128 bar codes have the following format:

MMMMMPPPPPDD

Where: M = Manufacturer ID
              P = Part Number
              D = Destination Code

The distribution center uses a PC with dedicated control characters for manufacturer ID <CTRL M>, part number <CTRL P>, and destination code <CTRL D>. The center treats the UPC data as a manufacturer ID code.

The following rules must be entered:

When scanning data of code type Code 128, send the next 5 characters, send the manufacturer ID key <CTRL M>, send the next 5 characters, send the part number key <CTRL P>, send the next 2 characters, send the destination code key <CTRL D>.

When scanning data of code type UPC/EAN, send all data, send the manufacturer ID key <CTRL M>.

To enter these rules, use the following steps:

Rule 1: The Code 128 Scanning Rule

Step	Bar Code	On Page	Beep Indication
1	Begin New Rule	*7-8*	High High
2	Code 128	*7-11*	High High
3	Send next 5 characters	*7-28*	High High
4	Send <CTRL M>	*7-49*	High High
5	Send next 5 characters	*7-28*	High High
6	Send <CTRL P>	*7-49*	High High
7	Send next 2 characters	*7-27*	High High
8	Send <CTRL D>	*7-48*	High High
9	Save Rule	*7-8*	High Low High Low

Rule 2: The UPC Scanning Rule

Step	Bar Code	On Page	Beep Indication
1	Begin New Rule	*7-8*	High High
2	UPC/EAN	*7-13*	High High
3	Send all remaining data	*7-27*	High High
4	Send <CTRL M>	*7-49*	High High
5	Save Rule	*7-8*	High Low High Low

If you make errors entering this rule, scan the *Quit Entering Rules bar code on page 7-9*. If you already saved the rule, scan the *Erase Previously Saved Rule bar code on page 7-9*.

Alternate Rule Sets

Group ADF rules into one of four alternate sets which you can turn on and off when needed. This is useful to format the same message in different ways. For example, a Code 128 bar code contains the following information:

Class (2 digits), Stock Number (8) digits, Price (5 digits)

The bar code might look like this:

245671243701500

where:

Class = 24
Stock Number = 56712437
Price = 01500

Ordinarily, data transmits as follows:

24 (class key)
56712437 (stock key)
01500 (enter key)

But, when there is a sale, send only the following:

24 (class key)
56712437 (stock key)

and the cashier keys the price manually.

To implement this, first enter an ADF rule that applies to the normal situation, such as:

> Scan Rule Belongs to Set 1. When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key, send the data that remains, send the Enter key.

The "sale" rule may look like this:

> Scan Rule Belongs to Set 2. When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key.

To switch between the two sets of rules, program a "switching rule" to specify the type of bar code to scan to switch between the rule sets. For example, in the case of the "sale" rule above, the rule programmer wants the cashier to scan the bar code "M" before a sale. To do this, enter the following rule:

> When scanning a bar code of length 1 that begins with "M", select rule set number 1.

Program another rule to switch back:

> When scanning a bar code of length 1 that begins with "N", turn off rule set number 1.

Or include the switching back rules in the "sale" rule:

> When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key, turn off rule set 1.

Motorola recommends scanning the *Disable All Rule Sets bar code on page 7-10* after programming a rule belonging to an alternate rule set.

In addition to enabling and disabling rule sets within the rules, enable or disable them by scanning the appropriate bar codes on *page 7-10*.

Rules Hierarchy (in Bar Codes)

The order of programming individual rules is important. Program the most general rule first.

All programmed rules are stored in a buffer. As they are programmed, they are stored at the "top" of a rules list. If you created three rules, the list is configured as follows:

> Third Rule
> Second Rule
> First Rule

When you scan data, the rules list is checked from top to bottom to determine if the criteria matches (and therefore, if the actions occur). Input is modified into the data format specified by the first matching set of criteria it finds. Be sure to program the most general rule first.

For example, if the THIRD rule states:

> When scanning a bar code of any length, send all data, then send the ENTER key.

And the SECOND rule states:

> When scanning a Code 128 bar code of length 12, send the first four characters, then send the ENTER key, then send all remaining data.

and you scan a Code 128 bar code of length 12, the THIRD rule applies, and the SECOND rule does not function.

Note also that using standard data editing functions also creates ADF rules. Scan options are entered as ADF rules, and the previous hierarchy also applies to them. For the decoder, this applies to prefix/suffix programming in the parameter *Scan Data Transmission Format on page 6-5*.

These rules reside in the same "rule list" as ADF rules, so the order of their creation is also important.

Default Rules

Every unit has a default rule to send all scan data. Units with custom software may have one or more default rules burned in. The rules hierarchy checks user programmable rules first, then the default rules. To disable default rules enter the following general rule in the user programmable buffer:

When receiving scan data, send all data.

Since this rule always applies, ADF never enters the default rules.

ADF Bar Codes

Table 7-1 lists the bar codes available through ADF.

Table 7-1   *ADF Bar Codes*

Table 7-1   *ADF Bar Codes (Continued)*

Table 7-1   *ADF Bar Codes (Continued)*

Parameter	Page Number
End of Message	*7-100*
a - z	*7-100*
{ - ~	*7-104*

Special Commands

Pause Duration

This parameter, along with the Send Pause parameter on *page 7-32,* inserts a pause in the data transmission. Set the pause by scanning a two-digit number (i.e., two bar codes) representing a 0.1 second interval in the range of 0.1 to 9.9. For example, scanning bar codes **0** and **1** inserts a 0.1 second pause; **0** and **5** gives a 0.5 second delay. The default is 1 second. See *Appendix A, Numeric Barcodes*. To correct an error or change a selection, scan *Cancel Barcode on page A-3*.

Pause Duration

Begin New Rule

Scan the bar code below to start entering a new rule

.

Begin New Rule

Save Rule

Scan the bar code below to save the rule.

Save Rule

Erase

Use these bar codes to erase criteria, actions, or rules.

Erase Criteria And Start Again

Erase Actions And Start Again

Erase Previously Saved Rule

Erase All Rules

Quit Entering Rules

Scan the bar code below to quit entering rules.

Quit Entering Rules

Disable Rule Set

Use these bar codes to disable rule sets.

Disable Rule Set 1

Disable Rule Set 2

Disable Rule Set 3

Disable Rule Set 4

Disable All Rule Sets

Criteria

Code Types

Select all code types to be affected by the rule. Scan all desired codes in succession, before selecting other criteria. *Do not select a code type to apply the rule to all code types*.

Code 39

Codabar

GS1 DataBar-14

GS1 DataBar Limited

GS1 DataBar Expanded

Code 128

D 2 OF 5

Code Types (continued)

IATA 2 OF 5

I 2 OF 5

Code 93

UPC-A

UPC-E

EAN-8

EAN-13

ISSN

Code Types (continued)

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

MSI

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

GS1-128

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

UPC-E1

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Bookland EAN

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Trioptic Code 39

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖
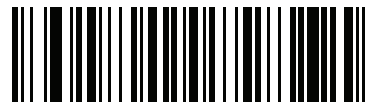
Code 11

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

Code 32

Code Types (continued)

ISBT 128

Coupon Code

Chinese 2 of 5
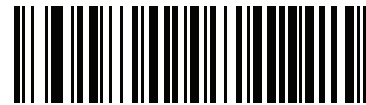
Matrix 2 of 5

US Postnet

US Planet

UK Postal

Code Types (continued)

Japan Postal

Australian Postal

Netherlands KIX Code

USPS 4CB/One Code/Intelligent Mail

UPU FICS Postal

PDF417

MicroPDF

Code Types (continued)

Macro PDF

Macro MicroPDF

MaxiCode

Datamatrix

QR Code

MicroQR

TLC 39

Code Types (continued)

UPC/EAN Composites

GS1 DataBar and EAN128 Composites

Aztec

Aztec Rune

NOTE When selecting composite bar codes, enable AIM IDs if parsing UPC or EAN composite data, or data from an application that uses symbol separators.

Code Lengths

Define the number of characters the selected code type must contain. *Do not select any code length to select code types of any length*.

Scan these bar codes to define the number of characters the selected code types must contain. Select one length per rule only.

1 Character

2 Characters

3 Characters

4 Characters

5 Characters

6 Characters

Code Lengths (continued)

7 Characters

8 Characters

9 Characters

10 Characters

11 Characters

12 Characters

13 Characters

Code Lengths (continued)

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

14 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

15 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

16 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

17 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

18 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

19 Characters

‖‖‖‖‖‖‖‖‖‖‖‖‖‖

20 Characters

Code Lengths (continued)

21 Characters

22 Characters

23 Characters

24 Characters

25 Characters

26 Characters

27 Characters

Code Lengths (continued)

28 Characters

29 Characters

30 Characters

Message Containing A Specific Data String

Use this feature to select whether the formatting affects data that begins with a specific character or data string, or contains a specific character or data string.

There are 5 features:

- Specific String at Start
- Specific String, Any Location
- Specific String Search
- Any Message OK
- Rule Belongs to Set

Specific String at Start

1. Scan the following bar code.

2. Scan the bar codes representing the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard on page 7-91*.

3. Scan *End of Message bar code on page 7-100*.

Specific String At Start

Specific String, Any Location

1. Scan the following bar code.

2. Enter a location by scanning a two-digit number representing the *position* (use a leading "zero" if necessary) using the *Numeric Keypad on page 7-24*.

3. Scan the bar codes representing the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard on page 7-91*.

4. Scan *End of Message bar code on page 7-100*.

Specific String Any Location

Specific String Search

1. Scan the following bar code.

2. Scan the bar codes representing the desired character or characters (up to a total of 10) using the *Alphanumeric Keyboard on page 7-91*.

3. Scan *End of Message bar code on page 7-100*.

Specific String Search

Any Message OK

Do not scan any **Specific String** bar codes to format all selected code types, regardless of information contained.

Numeric Keypad

Do not confuse bar codes on this page with those on the alphanumeric keyboard.

0

1

2

3

4

5

6

Numeric Keypad (continued)

7

8

9

Cancel

Rule Belongs To Set

Select the set to which a rule belongs. There are four possible rule sets. See *Alternate Rule Sets on page 7-3* for more information.

Rule Belongs To Set 1

Rule Belongs To Set 2

Rule Belongs To Set 3

Rule Belongs To Set 4

Actions

Select how to format the data for transmission.

Send Data

Send all data that follows, send all data up to a specific character selected from the *Alphanumeric Keyboard on page 7-91*, or send the next *X* characters. Note that only bar codes for **Send Next 1** to **20** appear here, and can be

scanned multiple times to send values greater then 20. For instance, to send the next 28 characters, scan **Send Next 20 Characters**, then **Send Next 8 Characters**.

Send Data Up To Character

Send All Data That Remains

Send Next Character

Send Next 2 Characters

Send Next 3 Characters

Send Next 4 Characters

Send Data (continued)

Send Next 5 Characters

Send Next 6 Characters

Send Next 7 Characters

Send Next 8 Characters

Send Next 9 Characters

Send Next 10 Characters

Send Next 11 Characters

Send Data (continued)

Send Next 12 Characters

Send Next 13 Characters

Send Next 14 Characters

Send Next 15 Characters

Send Next 16 Characters

Send Next 17 Characters

Send Next 18 Characters

Send Data (continued)

[barcode]

Send Next 19 Characters

[barcode]

Send Next 20 Characters

Setup Field(s)

Table 7-2   *Setup Field(s) Definitions*

Parameter	Description	Page
Move Cursor		
Move Cursor To a Character	Scan the *Move Cursor To Character*, then any printable ASCII character from the *Alphanumeric Keyboard on page 7-91*. This moves the cursor to the position after the matching character. If the character is not there, the rule fails and ADF tries the next rule.	*7-31*
Move Cursor to Start of Data	Scan this bar code to move the cursor to the beginning of the data.	*7-31*
Move Cursor Past a Character	This action moves the cursor past all sequential occurrences of a selected character. For example, if the selected character is 'A', the cursor moves past 'A', 'AA', 'AAA', etc. Scan the *Move Cursor Past Character*, then select a character from the *Alphanumeric Keyboard*. If the character is not there, the cursor does not move (i.e., has no effect).	*7-32*
Move Cursor Past a Specific String	This action moves the cursor past the first occurrence of a selected string. Scan *Move Cursor Past Specific String*, then select the character(s) (up to 10) using the *Alphanumeric Keyboard*. Scan the *End of Message bar code on page 7-100*.	*7-32*
Move Cursor to Specific String and Replace	This action moves the cursor to the first occurrence of a selected string and replaces the string with another user-defined string. Scan *Move Cursor to Specific String and Replace*, then enter an alphanumeric string representing the character(s) (up to 10) to match and delete using the *Alphanumeric Keyboard*. Scan the *End of Message bar code on page 7-100*. Enter another alphanumeric string representing the character(s) (up to 10) to insert using the *Alphanumeric Keyboard*. Scan *End of Message*.	*7-32*

Table 7-2   *Setup Field(s) Definitions (Continued)*

Parameter	Description	Page
Move Cursor to Last Occurrence of String and Replace All	This action replaces all occurrences of a selected string with another user-defined string, and moves the cursor to the beginning of the last occurrence. Scan *Move Cursor to Last Occurrence of String and Replace All*, then enter an alphanumeric string representing the character(s) (up to 10) to match and delete using the *Alphanumeric Keyboard*. Scan the *End of Message*. Enter another alphanumeric string representing the character(s) (up to 10) to insert using the *Alphanumeric Keyboard*. Scan *End of Message*.	*7-32*
Skip to End	Scan *Skip to End* to move the cursor to the end of the data.	*7-32*
Skip Ahead "N" Characters	Scan one of these bar codes to select the number of positions ahead to move the cursor.	*7-33*
Skip Back "N" Characters	Scan one of these bar codes to select the number of positions back to move the cursor.	*7-34*
Send Preset Value	Send Values 1 through 6 by scanning the appropriate bar code. To set these values use the prefix/suffix values in *Table on page 6-4*. Value 1 = Scan Suffix Value 2 = Scan Prefix Values 3-6 are not applicable	*7-34*

Move Cursor

Scan a bar code below to move the cursor in relation to a specified character. Then enter a character by scanning a bar code from the *Alphanumeric Keyboard on page 7-91*.

✓ *NOTE* If there is no match when the rule is interpreted and the rule fails, the next rule is checked.

Move Cursor To Character

Move Cursor To Start

Move Cursor (continued)

Move Cursor Past Character
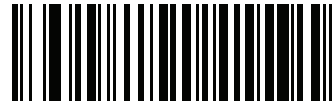
Move Cursor Past Specific String
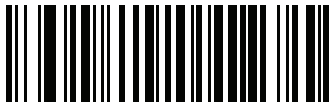
**Move Cursor to
Specific String and Replace**

**Move Cursor to Last Occurrence
of String and Replace All**

Skip to End

Send Pause

Scan the bar code below to insert a pause in the transmission of data. Use *Pause Duration on page 7-8* to set the length of this pause.

Send Pause

Skip Ahead

Use the following bar codes to skip ahead characters.

Skip Ahead 1 Character

Skip Ahead 2 Characters

Skip Ahead 3 Characters

Skip Ahead 4 Characters

Skip Ahead 5 Characters

Skip Ahead 6 Characters

Skip Ahead 7 Characters

Skip Ahead (continued)

Skip Ahead 8 Characters

Skip Ahead 9 Characters

Skip Ahead 10 Characters

Skip Back

Use the following bar codes to skip back characters.

Skip Back 1 Character

Skip Back 2 Characters

Skip Back 3 Characters

Skip Back (continued)

Skip Back 4 Characters

Skip Back 5 Characters

Skip Back 6 Characters

Skip Back 7 Characters

Skip Back 8 Characters

Skip Back 9 Characters

Skip Back 10 Characters

Send Preset Value

Use these bar codes to send preset values. Use the Scan Prefix and Scan Suffix bar codes on *page 6-4* to set these values.
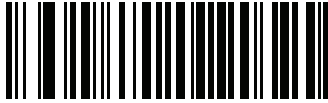
Send Prefix
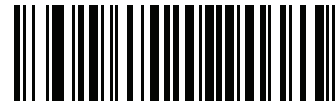
Send Suffix

Modify Data

Modify data in the ways listed. The following actions work for all send commands that follow it within a rule. Programming *pad zeros to length 6, send next 3 characters, stop padding, send next 5 characters,* adds three zeros to the first send, and the next send is unaffected by the padding. These options do not apply to the **Send Keystroke** or **Send Preset Value** options.

Remove All Spaces

To remove all spaces in the send commands that follow, scan the bar code below.

Remove All Spaces

Crunch All Spaces

To leave one space between words, scan the bar code below. This also removes all leading and trailing spaces.

Crunch All Spaces

Stop Space Removal

Scan the bar code below to disable space removal.

Stop Space Removal

Remove Leading Zeros

Scan the bar code below to remove all leading zeros.

Remove Leading Zeros

Stop Zero Removal

Scan the bar code below to disable the removal of zeros.

Stop Zero Removal

Pad Data with Spaces

To pad data to the left, scan the bar code containing the desired number of spaces. Use **Send** commands to activate this parameter.

Pad Spaces To Length 1

Pad Spaces To Length 2

Pad Spaces To Length 3

Pad Spaces To Length 4

Pad Spaces To Length 5

Pad Spaces To Length 6

Pad Spaces To Length 7

Pad Data with Spaces (continued)

Pad Spaces To Length 8

Pad Spaces To Length 9

Pad Spaces To Length 10

Pad Spaces To Length 11

Pad Spaces To Length 12

Pad Spaces To Length 13

Pad Spaces To Length 14

Pad Data with Spaces (continued)

Pad Spaces To Length 15

Pad Spaces To Length 16

Pad Spaces To Length 17

Pad Spaces To Length 18

Pad Spaces To Length 19

Pad Spaces To Length 20

Pad Spaces To Length 21

Pad Data with Spaces (continued)

Pad Spaces To Length 22

Pad Spaces To Length 23

Pad Spaces To Length 24

Pad Spaces To Length 25

Pad Spaces To Length 26

Pad Spaces To Length 27

Pad Spaces To Length 28

Pad Data with Spaces (continued)

Pad Spaces To Length 29

Pad Spaces To Length 30

Stop Pad Spaces

Pad Data with Zeros

To pad data to the left, scan the bar code containing the desired number of zeros. Use **Send** commands to activate this parameter.

Pad Zeros To Length 1

Pad Zeros To Length 2

Pad Zeros To Length 3

Pad Data with Zeros (continued)

Pad Zeros To Length 4

Pad Zeros To Length 5

Pad Zeros To Length 6

Pad Zeros To Length 7

Pad Zeros To Length 8

Pad Zeros To Length 9

Pad Zeros To Length 10

Pad Data with Zeros (continued)

Pad Zeros To Length 11

Pad Zeros To Length 12

Pad Zeros To Length 13

Pad Zeros To Length 14

Pad Zeros To Length 15

Pad Zeros To Length 16

Pad Zeros To Length 17

Pad Data with Zeros (continued)

Pad Zeros To Length 18

Pad Zeros To Length 19

Pad Zeros To Length 20

Pad Zeros To Length 21

Pad Zeros To Length 22

Pad Zeros To Length 23

Pad Zeros To Length 24

Pad Data with Zeros (continued)

Pad Zeros To Length 25

Pad Zeros To Length 26

Pad Zeros To Length 27

Pad Zeros To Length 28

Pad Zeros To Length 29

Pad Zeros To Length 30

Stop Pad Zeros

Beeps

Select a beep sequence for each ADF rule.

Beep Once

Beep Twice

Beep Three Times

Send Keystroke (Control Characters and Keyboard Characters)

Control Characters

Scan the "Send __" bar code for the keystroke to send

Send Control 2

Send Control A

Send Control B

Control Characters (continued)

Send Control C

Send Control D

Send Control E

Send Control F

Send Control G

Send Control H

Send Control I

Control Characters (continued)

Send Control J

Send Control K

Send Control L

Send Control M

Send Control N

Send Control O

Send Control P

Control Characters (continued)

Send Control Q

Send Control R

Send Control S

Send Control T

Send Control U

Send Control V

Send Control W

Control Characters (continued)

Send Control X

Send Control Y

Send Control Z

Send Control [

**Send Control **

Send Control]

Control Characters (continued)

Send Control 6

Send Control -

Keyboard Characters

Scan the "Send __" bar code for the keyboard characters to send.

Send Space

Send !

Send "

Send #

Keyboard Characters (continued)

‖‖‖‖‖‖‖‖‖‖‖‖

Send $

‖‖‖‖‖‖‖‖‖‖‖‖

Send %

‖‖‖‖‖‖‖‖‖‖‖‖

Send &

‖‖‖‖‖‖‖‖‖‖‖‖

Send '

‖‖‖‖‖‖‖‖‖‖‖‖

Send (

‖‖‖‖‖‖‖‖‖‖‖‖

Send)

‖‖‖‖‖‖‖‖‖‖‖‖

Send *

Keyboard Characters (continued)

||||||||||||||||||||||||||||

Send +

||||||||||||||||||||||||||||

Send ,

||||||||||||||||||||||||||||

Send -

||||||||||||||||||||||||||||

Send .

||||||||||||||||||||||||||||

Send /

||||||||||||||||||||||||||||

Send 0

||||||||||||||||||||||||||||

Send 1

Keyboard Characters (continued)

Send 2

Send 3

Send 4

Send 5

Send 6

Send 7

Send 8

Keyboard Characters (continued)

Send 9

Send :

Send ;

Send <

Send =

Send >

Send ?

Keyboard Characters (continued)

Send @

Send A

Send B

Send C

Send D

Send E

Send F

Keyboard Characters (continued)

Send G

Send H

Send I

Send J

Send K

Send L

Send M

Keyboard Characters (continued)

Send N

Send O

Send P

Send Q

Send R

Send S

Send T

Keyboard Characters (continued)

Send U

Send V

Send W

Send X

Send Y

Send Z

Send [

Keyboard Characters (continued)

**Send **

Send]

Send ^

Send _

Send `

Send a

Send b

Keyboard Characters (continued)

Send c

Send d

Send e

Send f

Send g

Send h

Send i

Keyboard Characters (continued)

Send j

Send k

Send l

Send m

Send n

Send o

Send p

Keyboard Characters (continued)

‖‖‖‖‖‖‖‖‖‖‖
Send q

‖‖‖‖‖‖‖‖‖‖‖
Send r

‖‖‖‖‖‖‖‖‖‖‖
Send s

‖‖‖‖‖‖‖‖‖‖‖
Send t

‖‖‖‖‖‖‖‖‖‖‖
Send u

‖‖‖‖‖‖‖‖‖‖‖
Send v

‖‖‖‖‖‖‖‖‖‖‖
Send w

Keyboard Characters (continued)

Send x

Send y

Send z

Send {

Send |

Send }

Send ~

Send ALT Characters

Send Alt 2

Send Alt A

Send Alt B

Send Alt C

Send Alt D

Send Alt E

Send Alt F

Send ALT Characters (continued)

Send Alt G

Send Alt H

Send Alt I

Send Alt J

Send Alt K

Send Alt L

Send Alt M

Send ALT Characters (continued)

Send Alt N

Send Alt O

Send Alt P

Send Alt Q

Send Alt R

Send Alt S

Send Alt T

Send ALT Characters (continued)

Send Alt U

Send Alt V

Send Alt W

Send Alt X

Send Alt Y

Send Alt Z

Send Alt [

Send ALT Characters (continued)

**Send Alt **

Send Alt]

Send Keypad Characters

Send Keypad *

Send Keypad +

Send Keypad -

Send Keypad .

Send Keypad /

Send Keypad 0

Send Keypad 1

Send Keypad Characters (continued)

Send Keypad 2

Send Keypad 3

Send Keypad 4

Send Keypad 5

Send Keypad 6

Send Keypad 7

Send Keypad 8

Send Keypad Characters (continued)

Send Keypad 9

Send Keypad Enter

Send Keypad Numlock

Send Break Key

Send Delete Key

Send Page Up Key

Send End Key

Send Keypad Characters (continued)

Send Page Down Key

Send Pause Key

Send Scroll Lock Key

Send Backspace Key

Send Tab Key

Send Print Screen Key

Send Insert Key

Send Keypad Characters (continued)

Send Home Key

Send Enter Key

Send Escape Key

Send Up Arrow Key

Send Down Arrow Key

Send Left Arrow Key

Send Right Arrow Key

Send Function Key

Send F1 Key

Send F2 Key

Send F3 Key

Send F4 Key

Send F5 Key

Send F6 Key

Send F7 Key

Send Function Key (continued)

|||||||||||||||||||||||||||

Send F8 Key

|||||||||||||||||||||||||||

Send F9 Key

|||||||||||||||||||||||||||

Send F10 Key

|||||||||||||||||||||||||||

Send F11 Key

|||||||||||||||||||||||||||

Send F12 Key

|||||||||||||||||||||||||||

Send F13 Key

|||||||||||||||||||||||||||

Send F14 Key

Send Function Key (continued)

Send F15 Key

Send F16 Key

Send F17 Key

Send F18 Key

Send F19 Key

Send F20 Key

Send F21 Key

Send Function Key (continued)

Send F22 Key

Send F23 Key

Send F24 Key

Send PF1 Key

Send PF2 Key

Send PF3 Key

Send PF4 Key

Send Function Key (continued)

Send PF5 Key

Send PF6 Key

Send PF7 Key

Send PF8 Key

Send PF9 Key

Send PF10 Key

Send PF11 Key

Send Function Key (continued)

Send PF12 Key

Send PF13 Key

Send PF14 Key

Send PF15 Key

Send PF16 Key

Send PF17 Key

Send PF18 Key

Send Function Key (continued)

Send PF19 Key

Send PF20 Key

Send PF21 Key

Send PF22 Key

Send PF23 Key

**Send PF24 Key**

Send PF25 Key

Send Function Key (continued)

![Send PF26 Key barcode]

Send PF26 Key

![Send PF27 Key barcode]

Send PF27 Key

![Send PF28 Key barcode]

Send PF28 Key

![Send PF29 Key barcode]

Send PF29 Key

![Send PF30 Key barcode]

Send PF30 Key

Send Right Control Key

The "Send Right Control Key" action will send a tap (press and release) of the Right Control Key.
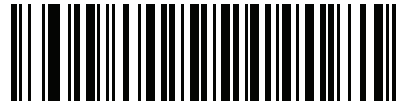
![Send Right Control Key barcode]

Send Right Control Key
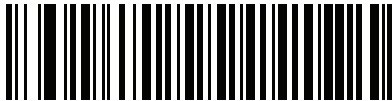
Send Graphic User Interface (GUI) Characters

The "Send Graphic User Interface Character" actions will tap the specified key while holding the System Dependent Graphic User Interface (GUI) Key. The definition of the Graphic User Interface key is dependant upon the attached system:
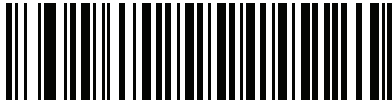
Send GUI 0

Send GUI 1

Send GUI 2
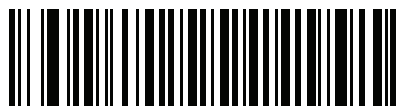
Send GUI 3

Send GUI 4

Send GUI 5

Send Graphic User Interface (GUI) Characters (continued)

Send GUI 6

Send GUI 7
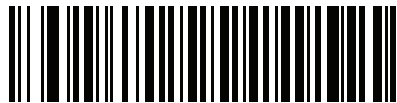
Send GUI 8

Send GUI 9

Send GUI A

Send GUI B

Send GUI C

Send Graphic User Interface (GUI) Characters (continued)

Send GUI D

Send GUI E

Send GUI F

Send GUI G

Send GUI H
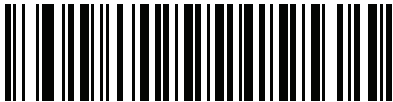
Send GUI I

Send GUI J

Send Graphic User Interface (GUI) Characters (continued)

Send GUI K
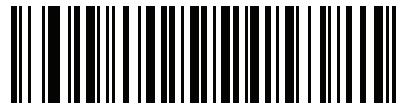
Send GUI L
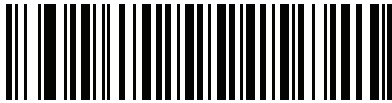
Send GUI M

Send GUI N

Send GUI O

Send GUI P

Send GUI Q

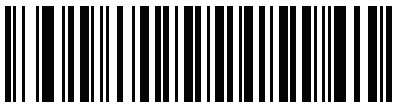## Send Graphic User Interface (GUI) Characters (continued)
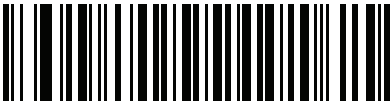
Send GUI R

Send GUI S
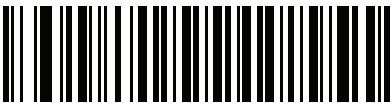
Send GUI T

Send GUI U

Send GUI V

Send GUI W

Send GUI X

Send Graphic User Interface (GUI) Characters (continued)

Send GUI Y

Send GUI Z

Turn On/Off Rule Sets

Use these bar codes to turn rule sets on and off.

Turn On Rule Set 1

Turn On Rule Set 2

Turn On Rule Set 3

Turn On Rule Set 4

Turn On/Off Rule Sets (continued)

Use these bar codes to turn rule sets on and off.

Turn Off Rule Set 1

Turn Off Rule Set 2

Turn Off Rule Set 3

Turn Off Rule Set 4

Alphanumeric Keyboard

Space

#

$

%

'
(Single Close Quote)

+

-
(Dash)

Alphanumeric Keyboard (continued)

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**,
(Comma)**

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**'
(Single Open Quote)**

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(

Alphanumeric Keyboard (continued)

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Alphanumeric Keyboard (continued)

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]

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_
(Underscore)

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Alphanumeric Keyboard (continued)

✓ *NOTE* Numeric bar codes below should not be confused with those on the numeric keypad

0

1

2

3

4

5

Alphanumeric Keyboard (continued)

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6

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7

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9

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A

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B

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C

Alphanumeric Keyboard (continued)

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D

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E

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F

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G

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H

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I

‖‖‖‖‖‖‖‖‖

J

Alphanumeric Keyboard (continued)

K

L

M

N

O

P

Q

Alphanumeric Keyboard (continued)

||||||||||||||||||

R

||||||||||||||||||

S

||||||||||||||||||

T

||||||||||||||||||

U

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V

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W

||||||||||||||||||

X

Alphanumeric Keyboard (continued)

Y

Z

Cancel

End of Message

a

b

c

Alphanumeric Keyboard (continued)

|||||||||||||||||||||

d

|||||||||||||||||||||

e

|||||||||||||||||||||

f

|||||||||||||||||||||

g

|||||||||||||||||||||

h

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i

|||||||||||||||||||||

j

Alphanumeric Keyboard (continued)

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k

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l

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m

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n

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o

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p

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q

Alphanumeric Keyboard (continued)

r

s

t

u

v

w

x

Alphanumeric Keyboard (continued)

‖‖‖‖‖‖‖‖‖

y

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Appendix A Numeric Barcodes

Numeric Barcodes

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

0

1

2

3

Numeric Barcodes (continued)

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

||||| ||| ||||||
4

||| ||| |||||
5

||| || ||||||
6

||| ||| |||||
7

||| || ||||||
8

||| ||| |||||
9

Cancel Barcode

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

Cancel