

Gryphon™ I GD4100

Linear Imager Barcode Reader



Product Reference Guide

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Patents

This product is covered by one or more of the following patents:

US Pat.: 6,512,218 B1; 6,808,114 B1; 6,877,664 B1; 6,997,385 B2; 7,053,954 B1; 7,102,116 B2; 7,282,688 B2; 7,387,246 B2.

European Pat.: 996,284 B1; 999,514 B1; 1,128,315 B1; 1,396,811 B1.

Additional patents pending.

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Chapter 1

Introduction

About this Guide

This Product Reference Guide (PRG) is provided for users seeking advanced technical information, including connection, programming, maintenance and specifications. The Quick Reference Guide (QRG) and other publications associated with this product are downloadable free of charge from the website listed on the back cover of this manual.

Typically, units are factory-programmed for the most common terminal and communications settings. If you need to modify any programmable settings, custom configuration can be accomplished by scanning the programming barcodes within this guide.

Programming can alternatively be performed using the Datalogic Aladdin™ Configuration application which is downloadable from the Datalogic website listed on the back cover of this manual. This multi-platform utility program allows device configuration using a PC. It communicates to the device using a serial or USB cable and can also create configuration barcodes to print.

Manual Overview

[Chapter 1, Introduction](#) provides a product overview, unpacking instructions, and cable connection information.

[Chapter 2, Getting Started](#) presents information about unpacking and setting up the reader.

[Chapter 3, Interfaces](#) consists of interface configuration barcodes and details.

[Chapter 4, General Features](#) includes programming barcodes for selecting common features for the reader and general use barcodes to customize how the data is transmitted to the host device.

[Chapter 5, RS-232 ONLY Interface](#) supplies information about setting up the reader for RS-232 operation.

[Chapter 6, RS-232/USB-Com Interfaces](#) features information about options involving both the RS-232 and USB-Com interfaces.

[Chapter 7, Keyboard Interface](#) discusses how to set up the reader for Keyboard Wedge operation.

[Chapter 8, USB-OEM Interface](#) explains how to set the reader up for USB operation.

[Chapter 9, IBM 46XX Interface](#) is a resource for setting up an IBM interface.

[Chapter 10, Wand Emulation Interface](#) explains how to set the reader up for Wand Emulation Interface.

[Chapter 11, Data Editing](#) offers advanced configuration options for customization of scanned data output.

[Chapter 12, Symbologies](#) defines options for all symbologies and provides the programming barcodes necessary for configuring these features.

[Appendix A, Technical Specifications](#) lists physical and performance characteristics, as well as environmental and regulatory specifications. It also provides standard cable pin-outs.

[Appendix B, LED and Beeper Indications](#) supplies tables containing descriptions of the functions and behaviors of the reader's LED and Beeper indicators.

[Appendix C, Standard Defaults](#) references common factory default settings for reader features and options.

[Appendix D, Sample Barcodes](#) offers sample barcodes of several common symbologies.

[Appendix E, Keypad](#) includes numeric barcodes to be scanned for certain parameter settings.

[Appendix F, Scancode Tables](#) lists control character emulation information for Wedge and USB Keyboard interfaces.

Manual Conventions

The following conventions are used in this document:

The symbols listed below are used in this manual to notify the reader of key issues or procedures that must be observed when using the reader:



NOTE

Notes contain information necessary for properly diagnosing, repairing and operating the reader.



CAUTION

The CAUTION symbol advises you of actions that could damage equipment or property.

References

Current versions of the Product Reference Guide (PRG), Quick Reference Guide (QRG), the Datalogic Aladdin™ Configuration application, and any other manuals, instruction sheets and utilities for this product can be downloaded from the website listed on the back cover of this manual. Alternatively, printed copies or product support CDs can be purchased through your Datalogic reseller.

Technical Support

Datalogic Website Support

The Datalogic website (www.scanning.datalogic.com) is the complete source for technical support and information for Datalogic products. The site offers product support, product registration, warranty information, product manuals, product tech notes, software updates, demos, and instructions for returning products for repair.

Reseller Technical Support

An excellent source for technical assistance and information is an authorized Datalogic reseller. A reseller is acquainted with specific types of businesses, application software, and computer systems and can provide individualized assistance.

Telephone Technical Support

If you do not have internet or email access, you may contact Datalogic technical support at (541) 349-8283 or check the back cover of your manual for more contact information.

NOTES

Chapter 2

Getting Started

About the Reader

Advancements in the LED technology used in this reader significantly improve the illumination of the target field of view, resulting in higher scan efficiency. Whether used in Single Trigger or Continuous Mode, the ergonomic design of the reader will help to promote comfortable handling during extended periods of use.

See "Interface Selection" on page 17 for a listing and descriptions of available interface sets by model type.

Unpacking

Check carefully to ensure the reader and any accessories ordered are present and undamaged. If any damage occurred during shipment, contact [Technical Support on page 9](#).

KEEP THE PACKAGING. Should the unit ever require service, it should be returned in its original shipping container.

Setting Up the Reader

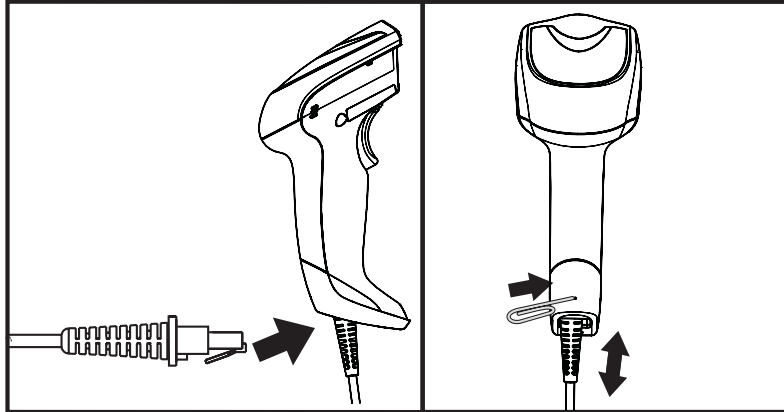
Follow the steps provided in this section to connect and get your reader up and communicating with its host.

1. [Install the Interface Cable](#)
2. [Select the Interface Type](#)
3. [Configure Interface Settings](#) (only if not using factory settings for that interface)
4. [Configure Other Features](#) (if modifications are needed from factory settings)

Install the Interface Cable

Connect the reader cable by inserting the cable into the handle as shown in [Figure 1](#). To remove it, insert a paper clip into the release aperture, then unplug the cable.

Figure 1. Connect/disconnect the cable



RS-232 Serial Connection



Turn off power to the terminal/PC and connect the reader to the terminal/PC serial port via the RS-232 cable as shown in [Figure 2](#). If the terminal will not support POT (Power Off the Terminal) to supply reader power, use the approved power supply (AC Adapter). Plug the AC Adapter barrel connector into the socket on the RS-232 cable connector and the AC Adapter plug into a standard power outlet.

Figure 2. RS-232 Connection

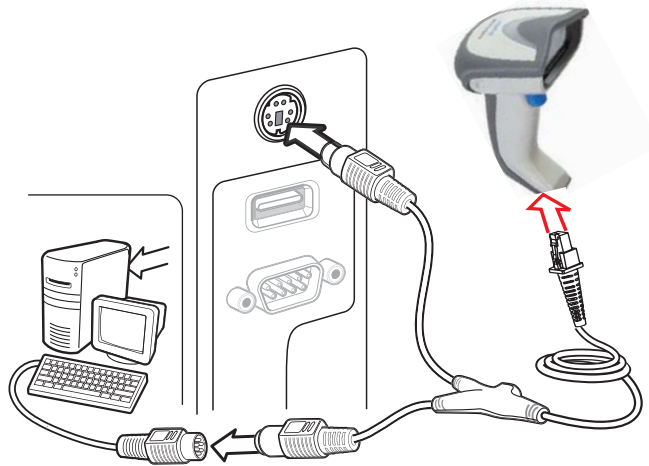


Keyboard Wedge Connection



The Keyboard Wedge cable has a 'Y' connection from the reader. Connect the female to the male end from the keyboard and the remaining end at the keyboard port at the terminal/PC. Reference [Figure 3](#).

Figure 3. Keyboard Wedge Interface connection

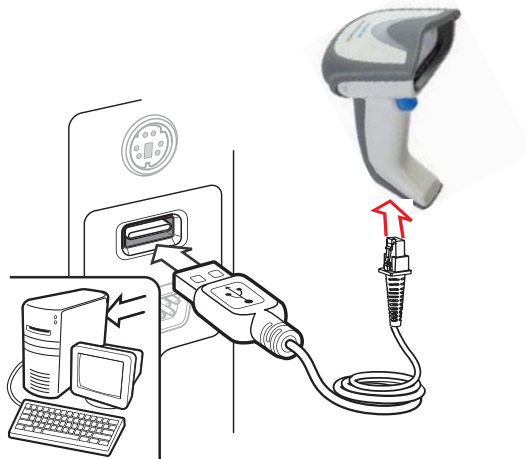


USB Connection

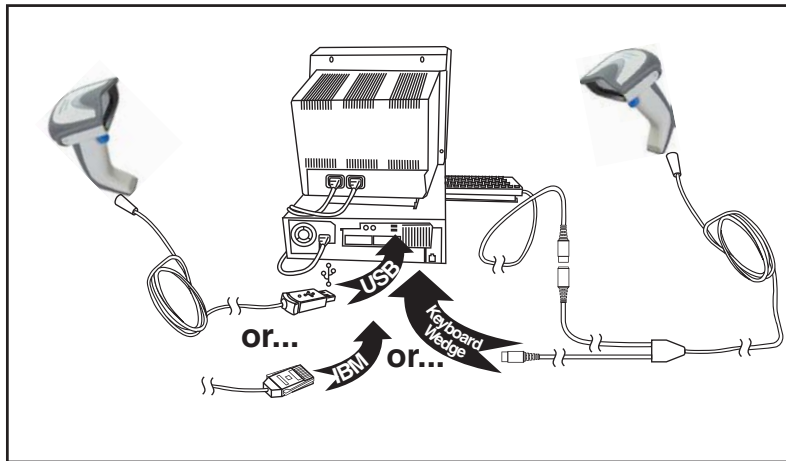


Connect the reader to a USB port on the terminal/PC using the correct USB cable for the interface type you ordered. Reference [Figure 4](#).

Figure 4. USB connection



Other connection types are described below and illustrated in [Figure 5](#).

Figure 5. Other Interface Connections**NOTE**

Specific cables are required for connection to different hosts. The connectors illustrated above are examples only. Actual connectors may vary from those illustrated, but the steps to connect the reader remain the same.

Programming

The reader is factory-configured with a set of default features standard. After scanning the interface barcode from the [Interfaces](#) section, you can select other options and customize your reader through use of the instructions and programming barcodes available in the corresponding features section for your interface, and also the Data Editing and Symbologies chapters of this manual.

Using the Programming Barcodes

This manual contains feature descriptions and barcodes which allow you to reconfigure your reader. Some programming barcode labels, like the "Standard Product Default Settings" on page 15, require only the scan of that single label to enact the change. Most of the programming labels in this manual, however, require the reader to be placed in Programming Mode prior to scanning them. Scan an ENTER/EXIT barcode once to enter Programming Mode. Once the reader is in Programming Mode, you can scan a number of parameter settings before scanning the ENTER/EXIT barcode a second time, which will then accept your changes, exit Programming Mode and return the reader to normal operation.

**NOTE**

There are some exceptions to the typical programming sequence described above. Please read the description and setting instructions carefully when configuring each programmable feature.

Select the Interface Type

Upon completing the physical connection between the reader and its host, proceed directly to "Interfaces" on page 17 for information and programming for the interface type the reader is connected to (for example: RS-232, Keyboard Wedge, USB, etc.) and scan the appropriate barcode in that section to select your system's correct interface type.

Configure Interface Settings

If after scanning the interface barcode from the [Interfaces](#) section, your installation requires you to select options to further customize your reader, turn to the appropriate section for your interface type as listed below:

- [RS-232 ONLY Interface, starting on page 51](#)
- [Keyboard Interface, starting on page 79](#)
- [USB-OEM Interface, starting on page 93](#)
- [IBM 46XX Interface, starting on page 95](#)
- [Wand Emulation Interface, starting on page 101](#)

Configure Other Features

If your installation requires different programming than the standard factory default settings, the following sections of this manual allow configuration of non-interface-specific settings you might require:

General Features. General Features includes programming for scanning, beeper and LED indicators and other such universal settings.

Symbologies. Includes options concerning the barcode label types (symbologies). These settings allow you to enable/disable symbologies, set label lengths, require check digit, etc.

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your reader, or you've changed some options and want the factory settings restored, scan the [Standard Product Default Settings](#) barcode below. This will copy the factory configuration for the currently active interface to the current configuration.



NOTE

Factory defaults are based on the interface type. Configure the reader for the correct interface before scanning this label.



Standard Product Default Settings

The programming section lists the factory default settings for each of the menu commands (indicated by shaded blocks and bold text) on the following pages.

NOTES

Chapter 3 Interfaces

Interface Selection

Each reader model will support one of the following sets of host interfaces:

General Purpose Models

RS-232

RS-232 OPOS

USB

Keyboard Wedge

Retail Point of Sale Models

RS-232

RS-232 OPOS

USB

IBM 46XX

Configuring the Interface

Scan the programming barcode from this section which selects the appropriate interface type matching the system the reader will be connected to. Next, proceed to the corresponding chapter in this manual (also listed in Table 1) to configure any desired settings and features associated with that interface.

Unlike some other programming features and options, interface selections require that you scan only one programming barcode label. DO NOT scan an ENTER/EXIT barcode prior to scanning an interface selection barcode.



NOTE

Some interfaces require the scanner to start in the disabled state when powered up. If additional scanner configuration is desired while in this state, pull the trigger and hold it for five seconds. The scanner will change to a state that allows programming with barcodes.

Table 1. Available Interfaces

RS-232		FEATURES
RS-232 standard interface	 Select RS232-STD	Set RS-232 Interface Features starting on page 51
 Select RS232-WN	RS-232 Wincor-Nixdorf	
RS-232 for use with OPOS/UPOS/JavaPOS	 Select RS-232 OPOS	
 Select USB-COM-STD ^a	USB Com to simulate RS-232 standard interface	
IBM		FEATURES
 Select IBM-P5B	IBM-46xx Port 5B reader interface	Set IBM Interface Features starting on page 95
IBM-46xx Port 9B reader interface	 Select IBM-P9B	
USB-OEM		FEATURES
 Select USB-OEM	USB-OEM (can be used for OPOS/UPOS/JavaPOS)	Set USB-OEM Interface Features starting on page 93

a. Download the correct USB Com driver from www.datalogic.com

KEYBOARD	FEATURES
<p>AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding</p>  <p>Select KBD-AT</p>	<p>Set KEYBOARD WEDGE Interface Features starting on page 79</p>
 <p>Select KBD-AT-NK</p> <p>Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard</p>	
<p>AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key</p>  <p>Select KBD-AT-ALT</p>	
 <p>Select KBD-AT-ALT-NK</p> <p>Keyboard Wedge for IBM AT PS2 with alternate key encoding but without external keyboard</p>	
<p>PC/XT w/Standard Key Encoding</p>  <p>Select KBD-XT</p>	
 <p>Select KBD-IBM-3153</p> <p>Keyboard Wedge for IBM Terminal 3153</p>	

KEYBOARD — cont.		FEATURES
<p>Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make only keyboard</p>	 Select KBD-IBM-M	<p>Set KEYBOARD WEDGE Interface Features starting on page 79</p>
 Select KBD-IBM-MB	<p>Keyboard Wedge for IBM Terminals 31xx, 32xx, 34xx, 37xx make break keyboard</p>	
<p>Keyboard Wedge for DIGITAL Terminals VT2xx, VT3xx, VT4xx</p>	 Select KBD-DIG-VT	
 Select USB Keyboard	<p>USB Keyboard with standard key encoding</p>	
<p>USB Keyboard with alternate key encoding</p>	 Select USB Alternate Keyboard	
 Select USB-KBD-APPLE	<p>USB Keyboard for Apple computers</p>	
WAND EMULATION		FEATURES
<p>Wand Emulation</p>	 Select WAND	<p>Set WAND Interface Features starting on page 99</p>

Global Interface Features

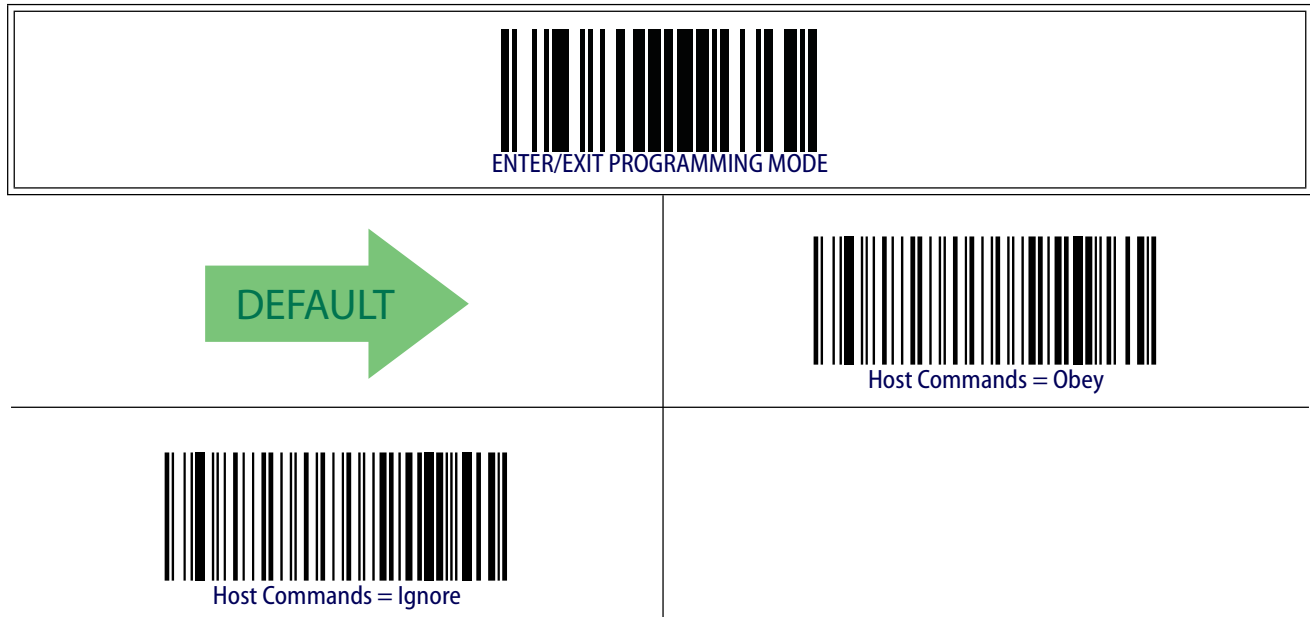
The following interface features are configurable by all interface types. To set features specific to your interface, turn to that section of this manual:

- [RS-232 ONLY Interface on page 51](#)
- [Keyboard Interface on page 79](#)
- [USB-OEM Interface on page 93](#)
- [IBM 46XX Interface on page 95](#)
- [Wand Emulation Interface on page 101](#)

Host Commands — Obey/Ignore

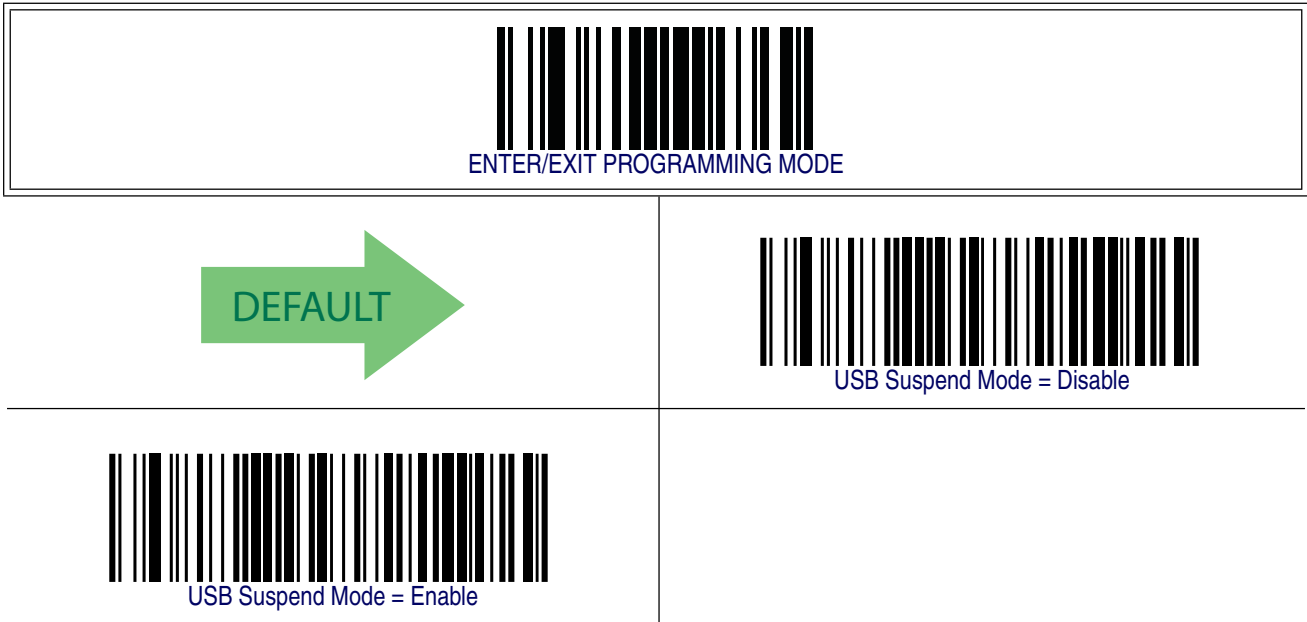
This option specifies whether the reader will obey or ignore host commands. When set to ignore, the reader will ignore all host commands except for those necessary for:

- service mode
- flash programming mode
- keeping the interface active
- transmission of labels.



USB Suspend Mode

This setting enables/disables the ability of USB interfaces to enter suspend mode.



Chapter 4

General Features

Double Read Timeout

To prevent a double read of the same label, the Double Read Timeout sets the minimum time allowed between reads of labels of the same symbology and data. If the unit reads a label and sees the same label again within the Double Read Timeout, the second read of the label will be ignored. Double Read Timeout does not apply to scan modes that require a trigger pull for each label that is read.

 ENTER/EXIT PROGRAMMING MODE	
	 Double Read Timeout = 0.1 Second
 Double Read Timeout = 0.2 Second	
	 Double Read Timeout = 0.3 Second
 Double Read Timeout = 0.4 Second	

Double Read Timeout — continued

 ENTER/EXIT PROGRAMMING MODE	
	 Double Read Timeout = 0.5 Second
 Double Read Timeout = 0.6 Second	
	 Double Read Timeout = 0.7 Second
 Double Read Timeout = 0.8 Second	
	 Double Read Timeout = 0.9 Second
 Double Read Timeout = 1 Second	

Label Gone Timeout

This feature sets the time after the last label segment is seen before the reader prepares for a new label. The timeout can be set within a range of 10 milliseconds to 2,550 milliseconds (2.55 seconds) in 10ms increments. Label Gone Timeout does not apply to scan modes that require a trigger pull for each label that is read

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT LABEL GONE TIMEOUT SETTING.
5. Scan the appropriate three alpha-numeric characters from the keypad in [Appendix E, Keypad](#) representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

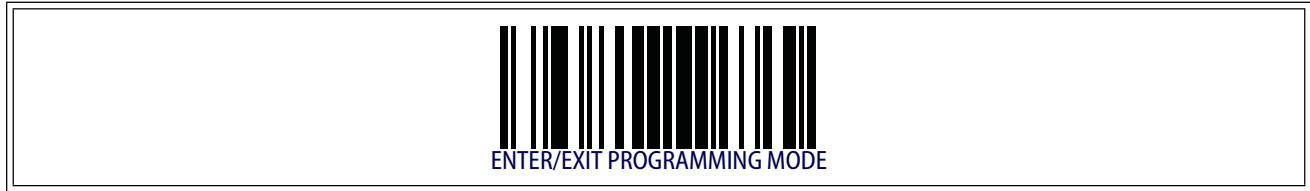
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 2](#) for some examples of how to set this feature.

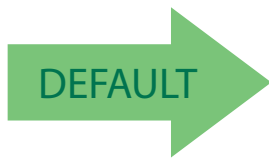
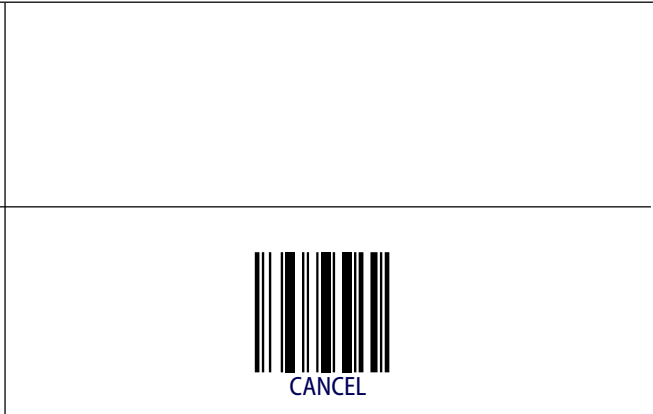
Table 2. Timeout Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	1800ms (1.8 sec.)	2550ms (2.55 sec.)
2	Divide by 10 (and pad with leading zeroes)	005	015	180	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT LABEL GONE TIMEOUT SETTING				
5	Scan Three Characters From Appendix E, Keypad	'0', '0' and '5'	'0', '1' and '5'	'1', '8' and '0'	"2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Label Gone Timeout — cont.



Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.










016 = Timeout of 160 ms

Sleep Mode Timeout

Specifies the timeout value for the reader to enter low power Sleep Mode. When Sleep Mode is enabled the reader cannot receive commands from the Host or base station.

In order for the reader to enter Sleep Mode, the following conditions must be met:

RS-232 interface and trigger single, trigger multiple or trigger pulse.

 ENTER/EXIT PROGRAMMING MODE	
 Sleep Mode Timeout = Disable	
	 Sleep Mode Timeout = 1 Second
 Sleep Mode Timeout = 2 Seconds	
	 Sleep Mode Timeout = 3 Seconds
 Sleep Mode Timeout = 4 Seconds	





Sleep Mode Timeout — continued

 ENTER/EXIT PROGRAMMING MODE	
	 Sleep Mode Timeout = 5 Seconds
 Sleep Mode Timeout = 6 Seconds	
	 Sleep Mode Timeout = 7 Seconds
 Sleep Mode Timeout = 8 Seconds	
	 Sleep Mode Timeout = 9 Seconds
 Sleep Mode Timeout = 10 Seconds max.	

LED and Beeper Indicators

Power On Alert

Disables or enables the indication (from the Beeper) that the reader is receiving power.

 ENTER/EXIT PROGRAMMING MODE	
	 Power On Alert = Disable (No Audible Indication)
 Power On Alert = Four Beeps	

Good Read: When to Indicate

This feature specifies when the reader will provide indication (beep and/or flash its green LED) upon successfully reading a barcode. Choices are:

- Good Read = Indicate after decode
- Good Read = Indicate after transmit
- Good Read = Indicate after CTS goes inactive, then active.



This option, which uses CTS, is only valid for RS-232 interfaces.

NOTE

 ENTER/EXIT PROGRAMMING MODE	
 DEFAULT	 Indicate Good Read = After Decode
 Indicate Good Read = After Transmit	
	 Indicate Good Read = After CTS Goes Inactive, Then Active

Good Read Beep Type

Specifies whether the good read beep has a mono or bitonal beep sound.



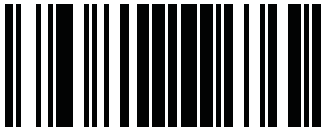
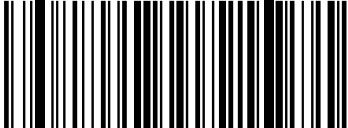
Good Read Beep Frequency

Adjusts the good read beep to sound at a selectable low, medium or high frequency, selectable from the list below. (Controls the beeper's pitch/tone.)

 ENTER/EXIT PROGRAMMING MODE	
	 Good Read Beep Frequency = Low
 Good Read Beep Frequency = Medium	
 DEFAULT	 Good Read Beep Frequency = High

Good Read Beep Length

Specifies the duration of a good read beep.

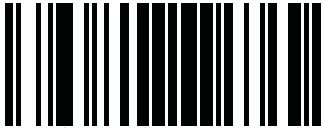
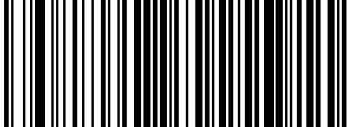




 ENTER/EXIT PROGRAMMING MODE	
	 Good Read Beep Length = 60 msec

Good Read Beep Length — continued

 ENTER/EXIT PROGRAMMING MODE	
 Good Read Beep Length = 80 msec	
	 Good Read Beep Length = 100 msec
 Good Read Beep Length = 120 msec	
	 Good Read Beep Length = 140 msec
 Good Read Beep Length = 160 msec	
	 Good Read Beep Length = 180 msec
 Good Read Beep Length = 200 msec	

Good Read Beep Volume

Selects the beeper volume (loudness) upon a good read beep. There are three selectable volume levels.

 ENTER/EXIT PROGRAMMING MODE	
	 Good Read Beep Volume = Beeper Off
 Good Read Beep Volume = Low	
	 Good Read Beep Volume = Medium
 Good Read Beep Volume = High	 DEFAULT

Good Read LED Duration

This feature specifies the amount of time that the Good Read LED remains on following a good read. The good read LED on time can be set within a range of 10 milliseconds to 2,550 milliseconds (0.001 to 2.55 seconds) in 10ms increments.

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds. A setting of 0 means that the good read LED stays on until the next time the trigger is pulled.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 000, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT GOOD READ LED DURATION SETTING.
5. Scan the appropriate three digits from the keypad in [Appendix E, Keypad](#) representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

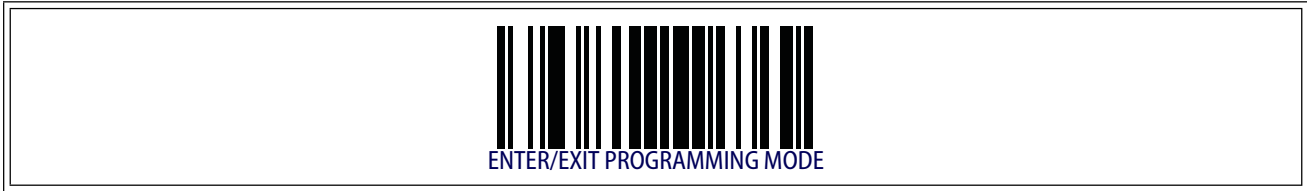
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 3](#) for some examples of how to set this feature.

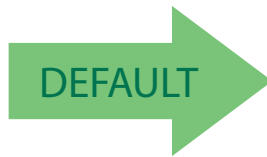
Table 3. Good Read LED Duration Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	Good Read LED stays on until next trigger pull (00)	20ms	150ms	2550ms (2.55 sec.)
2	Divide by 10 (and pad with leading zeroes)	000	002	015	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT LABEL GONE TIMEOUT SETTING				
5	Scan Three Characters From Appendix E, Keypad	'0', '0' and '0'	'0', '0' and '2'	'0', '1' and '5'	'2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Good Read LED Duration — cont.



Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.



020 = Good Read LED stays on for 2 seconds.



Indicators are dimmed during sleep.

NOTE

Scanning Features

Scan Mode

Selects the scan operating mode for the reader. Selections are:

Trigger Single. When the trigger is pulled, scanning is activated until one of the following occurs:

- **Scanning Active Time** has elapsed
- a label has been read
- the trigger is released

This mode is associated with typical handheld reader operation: when the trigger is pulled, scanning starts and the product scans until the trigger is released, or a label is read, or the maximum **Scanning Active Time** has elapsed.

Trigger Hold Multiple . When the trigger is pulled, scanning starts and the product scans until the trigger is released or **Scanning Active Time** has elapsed. Reading a label does not disable scanning. **Double Read Timeout** prevents undesired multiple reads of the same label while in this mode.

Trigger Pulse Multiple. When the trigger is pulled, continuous scanning is activated until **Scanning Active Time** has elapsed or the trigger has been released and pulled again. **Double Read Timeout1** prevents undesired multiple reads of the same label while in this mode.

Flashing. The reader flashes¹ on and off regardless of the trigger status. Flash rate is controlled by **Flash On Time** and **Flash Off Time**. When Flash is ON the imager reads continuously; when Flash is OFF scanning is deactivated.

Always On. No trigger pull is required to read a barcode. Scanning is continually on. If the trigger is pulled, the reader acts as if it is in **Trigger Single** Mode. **Double Read Timeout1** prevents undesired multiple reads of the same label while in this mode.

Stand Mode. No trigger pull is required to read a barcode. Scanning is turned on automatically when an item is placed in the reader's field of view. If the trigger is pulled, the reader acts as if it is in single read mode. **Double Read Timeout1** prevents undesired multiple reads while in this mode.

Trigger Object Sense. This mode is similar to Stand Mode, except that a trigger pull is required to activate the decoder.

1. Controlled by **Flash On Time**.

Scan Mode — continued

 ENTER/EXIT PROGRAMMING MODE	
 Scan Mode = Trigger Single	
	 Scan Mode = Trigger Hold Multiple
 Scan Mode = Trigger Pulse Multiple	
	 Scan Mode = Flashing
 Scan Mode = Always On	
	 Scan Mode = Stand Mode
 Scan Mode = Trigger Object Sense	

Stand Mode Triggered Timeout

This feature specifies the time to remain in **Trigger Single** mode after the trigger is pulled while in **Stand Mode**.



This timeout is only used when the Scan Mode is configured as Stand Mode.

NOTE

 ENTER/EXIT PROGRAMMING MODE	
 Stand Mode Triggered Timeout = 0.5 Seconds	
 Stand Mode Triggered Timeout = 1.5 Seconds	
 Stand Mode Triggered Timeout = 2 Seconds	
 Stand Mode Triggered Timeout = 3 Seconds	
 Stand Mode Triggered Timeout = 4 Seconds	

Stand Mode Triggered Timeout — continued

 ENTER/EXIT PROGRAMMING MODE	
	 Stand Mode Triggered Timeout = 6 Seconds
 Stand Mode Triggered Timeout = 8 Seconds	
	 Stand Mode Triggered Timeout = Switch back to Trigger Single on trigger pull

Stand Detection

Specifies the behavior of the scanner when placed in a stand that contains autorecognition hardware.

 ENTER/EXIT PROGRAMMING MODE		
 Stand Detection = Ignore Autorecognition	 DEFAULT	
 Stand Detection = Switch to object sense		
 Stand Detection = Switch to always on		
 Stand Detection = Switch to flashing		

Scanning Active Time

This setting specifies the amount of time that the reader stays in scan ON state once the state is entered. The range for this setting is from 1 to 255 seconds in 1-second increments.

Follow these instructions to set this feature:

1. Determine the desired setting.
2. Pad the result with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT SCANNING ACTIVE TIME SETTING.
5. Scan the appropriate three digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

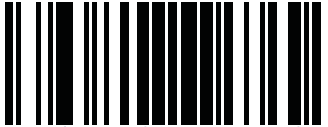

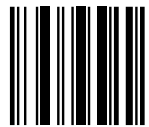
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 4 for some examples of how to set this feature.

Table 4. Scanning Active Time Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	1 Second	90 Sec. (1.5 min.)	180 Sec. (3 min.)	255 Seconds (4.25 min.)
2	Pad leading zero(es)	001	090	180	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT SCANNING ACTIVE TIME SETTING				
5	Scan Three Characters From Appendix E, Keypad	'0', '0' and '1'	'0', '9' and '0'	'1', '8' and '0'	'2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Scanning Active Time — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Scanning Active Time Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL


 005 = Scanning is active for 5 Seconds

Flash On Time

This feature specifies the ON time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments.

Follow these instructions to set this feature.

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 100 (setting is in 100ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT FLASH ON TIME SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#) representing the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

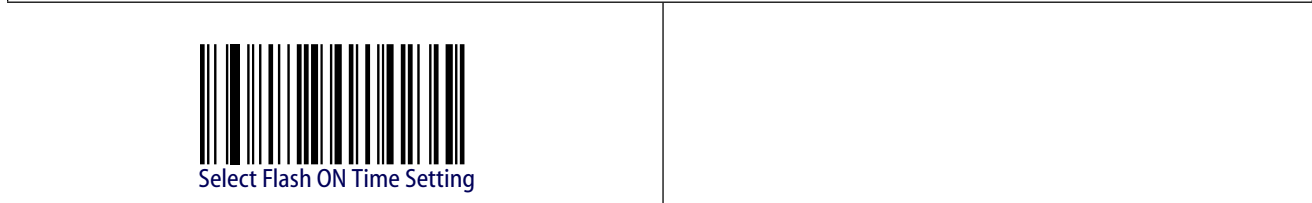
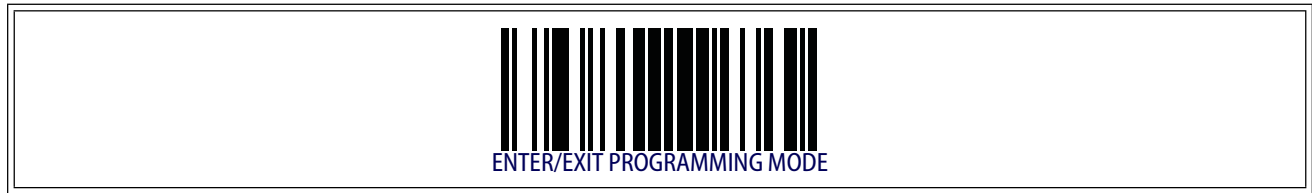
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 5 for some examples of how to set this feature.

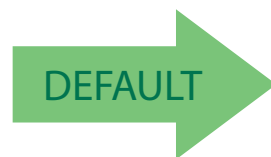
Table 5. Flash On Time Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	500ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	9,900ms (9.9 sec.)
2	Divide by 100 (and pad with leading zeroes to yield two digits)	05	10	52	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT FLASH OFF TIME SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '5'	'1' and '0'	'5' and '2'	'9' and '9'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Flash On Time — cont.



Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.



10 = Flash is ON for 1 Second

Flash Off Time

This feature specifies the OFF time for the indicator LED while in Flash Mode. The selectable range is 100 to 9,900 milliseconds (0.1 to 9.9 seconds), in 100 millisecond increments.

Follow these instructions to set this feature.

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 100 (setting is in 100ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT FLASH OFF TIME SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

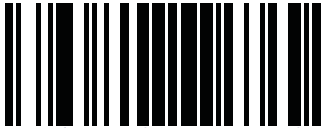
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.


This completes the procedure. See Table 6 for some examples of how to set this feature.


Table 6. Flash Off Time Setting Examples

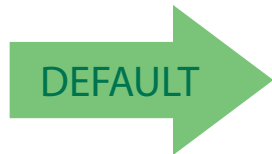
STEP	ACTION	EXAMPLES			
1	Desired Setting	500ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	9,900ms (9.9 sec.)
2	Divide by 100 (and pad with leading zeroes to yield two digits)	05	10	52	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT FLASH OFF TIME SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '5'	'1' and '0'	'5' and '2'	'9' and '9'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Flash Off Time — cont.

 <p>ENTER/EXIT PROGRAMMING MODE</p>	
----------------------------------------------------------------------------------------------------------------------	--

 <p>Select Flash OFF Time Setting</p>	
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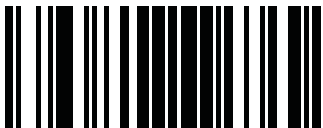
<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	 <p>CANCEL</p>
-----------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------






06 = Flash is OFF for 600ms


Stand Mode Sensitivity

Sets the sensitivity level for stand mode wakeup. Choices are low, medium and high.

 <p>ENTER/EXIT PROGRAMMING MODE</p>	
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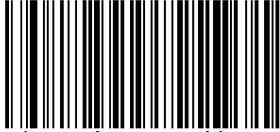
	 <p>Stand Mode Sensitivity = Low</p>
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 <p>Stand Mode Sensitivity = Medium</p>	
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

	 <p>Stand Mode Sensitivity = High</p>
--	---------------------------------------------------------------------------------------------------------------------------

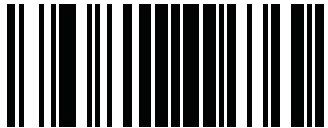
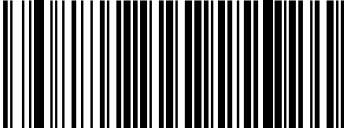




Stand Detection

Specifies the behavior of the scanner when placed in a stand that contains autorecognition hardware.

 ENTER/EXIT PROGRAMMING MODE	
	 Ignore Autorecognition
 Switch to Object Sense	 DEFAULT
	 Switch to Always On
 Switch to Flashing	

Green Spot Duration

Specifies the duration of the good read pointer beam after a good read.

 ENTER/EXIT PROGRAMMING MODE	
	 Green Spot Duration = Disable (Green Spot is Off)
 Green Spot Duration = Short (300 msec)	
	 Green Spot Duration = Medium (500 msec)
 Green Spot Duration = Long (800 msec)	

NOTES

Chapter 5

RS-232 ONLY Interface

Introduction

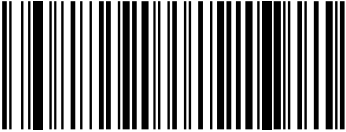
Use the programming barcodes in this chapter if modifications to the standard RS-232 interface settings are necessary to meet your system's requirements. Additional settings which apply to both the RS-232 and USB interfaces are available in [Chapter 6, RS-232/USB-Com Interfaces](#).

RS-232 Standard Factory Settings

Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

Baud Rate

Baud rate is the number of bits of data transmitted per second. Set the reader's baud rate to match the baud rate setting of the host device. With an improper baud rate setting, data may not reach the host correctly.

 ENTER/EXIT PROGRAMMING MODE	
	 Baud Rate = 1200
 Baud Rate = 2400	
	 Baud Rate = 4800

Baud Rate — continued

 ENTER/EXIT PROGRAMMING MODE	
 Baud Rate = 9600	
	 Baud Rate = 19,200
 Baud Rate = 38,400	
	 Baud Rate = 57,600
 Baud Rate = 115,200	

Data Bits

This parameter allows the reader to interface with devices requiring a 7-bit or 8-bit ASCII protocol for sending and receiving data.



Stop Bits

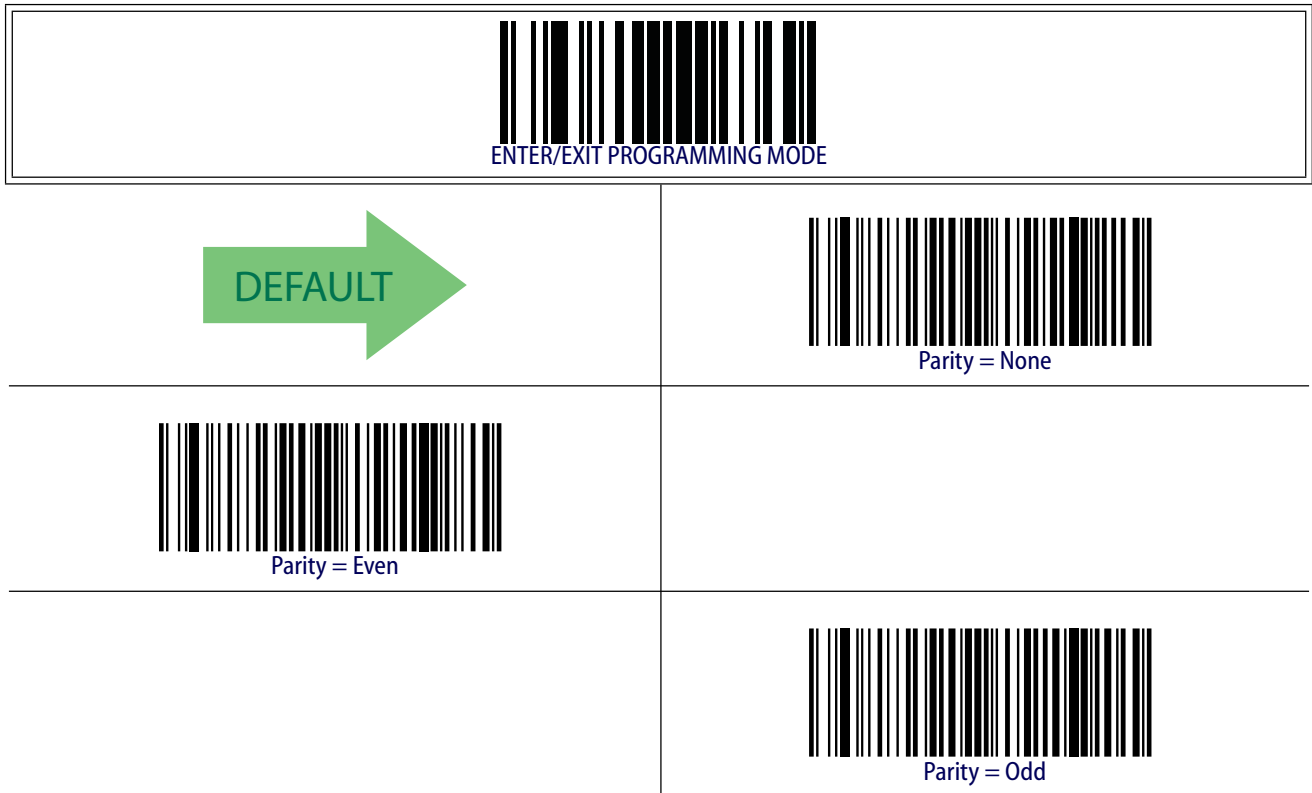
The stop bit(s) at the end of each transmitted character marks the end of transmission of one character and prepares the receiving device for the next character in the serial data stream. The number of stop bits selected (one or two) depends on the number the receiving terminal is programmed to accommodate.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



Parity

This feature specifies parity required for sending and receiving data. A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

- Select None when no parity bit is required.
- Select Odd parity and the parity bit value is set to 0 or 1, based on data, to ensure that an odd number of 1 bits are contained in the coded character.
- Select Even parity and the parity bit value is set to 0 or 1, based on data, to ensure that an even number of 1 bits are contained in the coded character.



Handshaking Control

The data interface consists of an RS-232 port designed to operate either with or without the hardware handshaking lines, *Request to Send* (RTS), and *Clear to Send* (CTS). Handshaking Control includes the following options:

- RTS — RTS is asserted during transmissions. CTS is ignored.
- RTS/CTS — RTS is asserted during transmissions. CTS gates transmissions.
- RTS/XON/XOFF — RTS is asserted during transmissions. CTS is ignored. XON and XOFF gate transmissions.
- RTS On/CTS — RTS is always asserted. CTS gates transmissions.
- RTS/CTS Scan Control — RTS is asserted during transmissions. CTS gates transmissions and controls enable and disable state of scanner.



NOTES

Chapter 6

RS-232/USB-Com Interfaces

Introduction

The programming barcodes in this chapter allow modifications to the standard RS-232 and USB-Com interfaces.

Standard Factory Settings

Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

Intercharacter Delay

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.

To set the delay:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCHARACTER DELAY SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

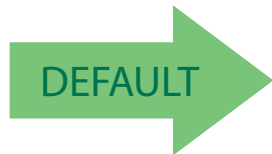
This completes the procedure. See [Table 7](#) for some examples of how to set this feature.

Table 7. Intercharacter Delay Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes to yield two-digits)	05	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCHARACTER DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '5'	'5' and '0'	0' and '0'	'8' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Intercharacter Delay — cont.


 ENTER/EXIT PROGRAMMING MODE	
	 Intercharacter Delay = No Delay
 Select Intercharacter Delay Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL



00 = No Intercharacter Delay

Beep On ASCII BEL

When this parameter is enabled, the reader issues a beep when a <BEL> character is detected on the RS-232 serial line. <BEL> is issued to gain a user's attention to an illegal entry or other important event.

 ENTER/EXIT PROGRAMMING MODE	
 Beep On ASCII BEL = Disable	 DEFAULT
 Beep On ASCII BEL = Enable	

Beep On Not on File

This option enables/disables the action of the reader to sound a three beep sequence upon receiving a Not-On-File (NOF) host command.

 ENTER/EXIT PROGRAMMING MODE	
 Beep On Not On File = Disable	 DEFAULT
 Beep On Not On File = Enable	

ACK NAK Options

This enables/disables the ability of the reader to support the RS-232 ACK/NAK protocol. When configured, the reader and/or host sends an “ACK” when it receives data properly, and sends “NAK” when the data is in error.

Options are:

- Disable
- Enable for label transmission — The reader expects an ACK/NAK response from the host when a label is sent.
- Enable for host-command acknowledge — The reader will respond with ACK/NAK when the host sends a command.
- Enable for label transmission and host-command acknowledge

 ENTER/EXIT PROGRAMMING MODE	
 DEFAULT	 ACK/NAK Protocol = Disable ACK/NAK
 ACK/NAK Protocol = Enable for label transmission	
	 ACK/NAK Protocol = Enable for host-command acknowledge
 ACK/NAK Protocol = Enable for label transmission and host-com- mand acknowledge	

ACK Character

This setting specifies an ASCII character or hex value to be used as the ACK character. ASCII characters or any hex value from 0 to 0xFF can be selected.



NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option [Data Bits](#) has been set as 7 Data Bits.

To set this feature:

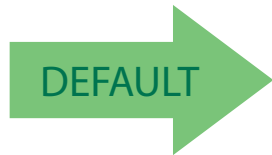
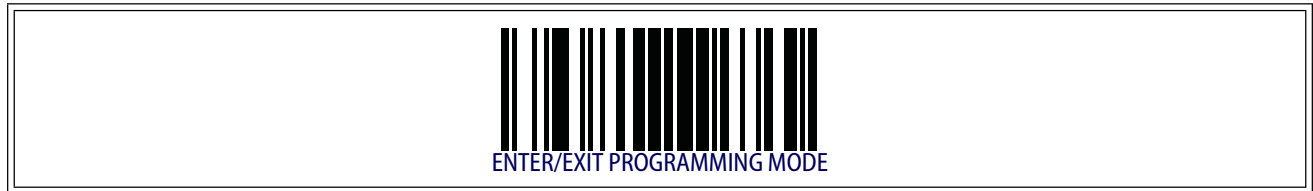
1. Determine the desired character or value.
2. Use the [ASCII Chart](#) on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in [Appendix E, Keypad](#), that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 8](#) for some examples of how to set this feature.

Table 8. ACK Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Character/Value	ACK	\$	@	>
2	Hex equivalent	0x06	0x24	0x40	0x3E
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT ACK CHARACTER SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '6'	'2' and '4'	'4' and '0'	'3' AND 'E'
6	Scan ENTER/EXIT PROGRAMMING MODE				

ACK Character — cont.



0x06 'ACK' Character

NAK Character

This setting specifies an ASCII character or hex value to be used as the NAK character. ASCII characters or any hex value from 0 to 0xFF can be selected.



NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option [Data Bits](#) has been set as 7 Data Bits.

To set this feature:

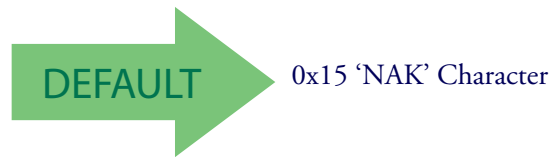
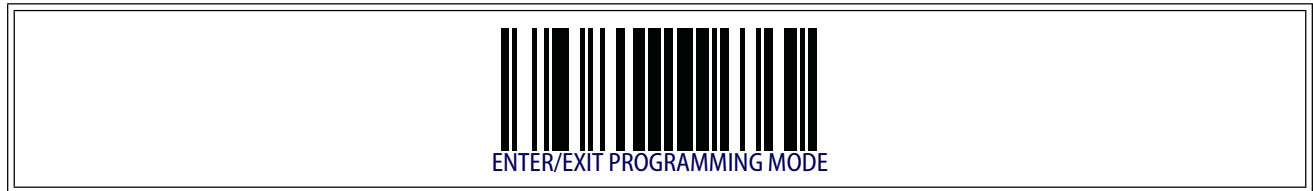
1. Determine the desired character or value.
2. Use the [ASCII Chart](#) on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT NAK CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in [Appendix E, Keypad](#), that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 9](#) for some examples of how to set this feature.

Table 9. NAK Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Character/Value	NAK	\$	@	>
2	Hex equivalent	0x15	0x24	0x40	0x3E
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT ACK CHARACTER SETTING				
5	Scan Two Characters From Appendix E, Keypad	'1' and '5'	'2' and '4'	'4' and '0'	'3' AND 'E'
6	Scan ENTER/EXIT PROGRAMMING MODE				

NAK Character — cont.



ACK NAK Timeout Value

This option specifies the amount of time the reader waits for an ACK character from the host following label transmission. The selectable timeout range is 200 milliseconds to 15,000ms (15 seconds) in 200ms increments. A selection of 0 disables the timeout.

To set this value:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 200 (setting is in 200ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK NAK TIMEOUT VALUE SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE




6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 10](#) for some examples of how to set this feature.

Table 10. ACK NAK Timeout Value Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	200ms	1,000ms (1 sec.)	5200ms (5.2 sec.)	15,000ms (1 sec.)
2	Divide by 200	01	05	26	75
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT ACK NAK TIMEOUT VALUE SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'0' and '5'	'2' and '6'	'7' and '5'
7	Scan ENTER/EXIT PROGRAMMING MODE				

ACK NAK Timeout Value — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select ACK NAK Timeout Value Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL


DEFAULT

01 ACK NAK Timeout value is 200ms

ACK NAK Retry Count

This feature specifies the number of times the reader retries a label transmission due to a retry condition. The selectable range is from 1 to 254 retries. A selection of 0 disables the count, and a selection of 255 specifies unlimited retries.

To set this feature:

1. Determine the desired setting.
2. Pad the number with leading zeroes to yield three digits. For example: 0 = 000, 5 = 005, 20 = 020, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ACK NAK RETRY COUNT SETTING.
5. Scan the appropriate three digits from the keypad in [Appendix E, Keypad](#), that represent the number which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

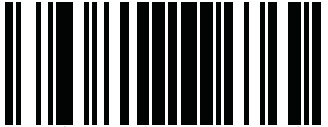


6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See Table 11 for some examples of how to set this feature.

Table 11. ACK NAK Retry Count Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	Disable Retry Count	3 Retries	54 Retries	Unlimited Retries
2	Pad with leading zero(es)	000	003	054	255
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT ACK NAK RETRY COUNT SETTING				
5	Scan Three Characters From Appendix E, Keypad	'0', '0' and '0'	'0', '0' and '3'	'0', '5' and '4'	'2', '5' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

ACK NAK Retry Count — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select ACK NAK Retry Count Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL

 **DEFAULT** 003 = 3 Retries

ACK NAK Error Handling

This feature specifies the method the reader uses to handle receive errors detected while waiting for an ACK character from the host.

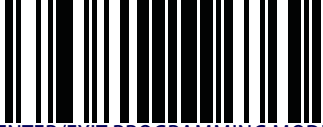
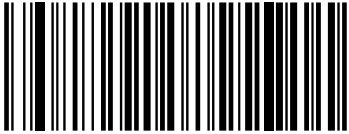


Options are:

- Ignore errors detected
- Process error as valid ACK character
- Process error as valid NAK character



Indicate Transmission Failure

This option enables/disables the reader's ability to sound an error beep to indicate a transmission failure while in ACK/NAK mode.

 ENTER/EXIT PROGRAMMING MODE	
	 Indicate Transmission Failure = Disable Indication
 Indicate Transmission Failure = Enable Indication	

Disable Character

Specifies the value of the RS-232 host command used to disable the reader.

ASCII characters or any hex value from 0 to 0xFF can be selected.



NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option Data Bits has been set as 7 Data Bits.

To set the value:

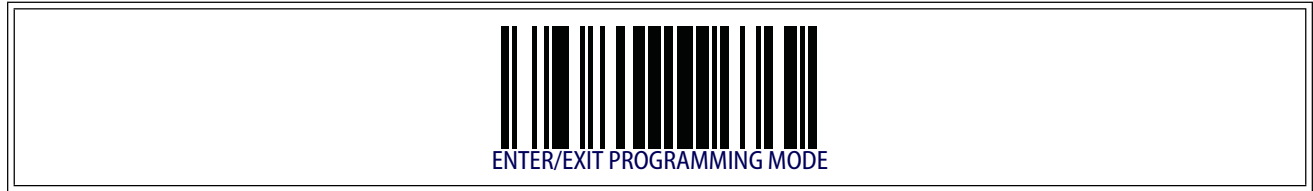
1. Determine the desired character or value. A setting of 0xFF indicates the Disable Character is not used (not available).
2. Use the [ASCII Chart](#) on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT DISABLE CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in [Appendix E, Keypad](#), that represent the desired character/value in step 1 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 12](#) for some examples of how to set this feature.

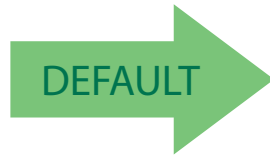
Table 12. Disable Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired character/value	'd'	'j'	'D'	Disable Command Not Used
2	Hex equivalent	0x64	0x7D	0x44	0xFF
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT DISABLE CHARACTER VALUE SETTING				
5	Scan Two Characters From Appendix E, Keypad	'6' and '4'	'7' and 'D'	'4' and '4'	'F' AND 'F'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Disable Character — cont.



Select Disable Character Setting



0x44 = Disable Character is 'D'

Enable Character

Specifies the value of the RS-232 host command used to enable the reader.

ASCII characters or any hex value from 0 to 0xFF can be selected.



NOTE

Setting to previously defined characters such as XON, XOFF, or host commands conflicts with normal operation of these characters. 8-bit data is not recognized when the option [Data Bits](#) has been set as 7 Data Bits.

To set this feature:

Determine the desired character or value. A setting of 0xFF indicates the Enable Character is not used (not available).

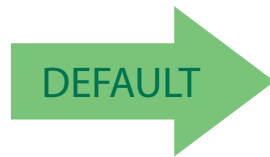
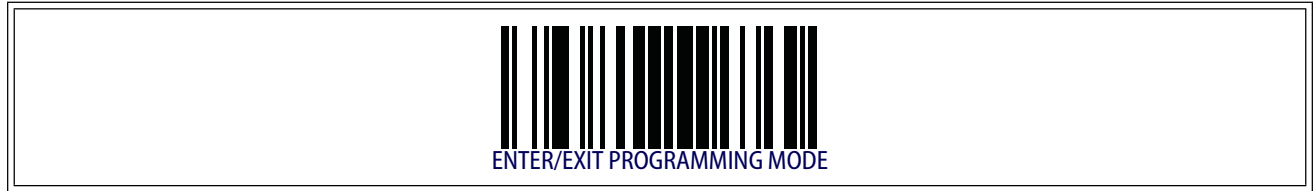
1. Determine the desired character or value.
2. Use the [ASCII Chart](#) on the inside back cover of this manual to find the hex equivalent for the desired character/value.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT ENABLE CHARACTER SETTING.
5. Scan the appropriate two alpha-numeric characters from the keypad in [Appendix E, Keypad](#), that represent the desired character/value in step 2 above. The second character will cause a two-beep indication.
6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

This completes the procedure. See [Table 13](#) for some examples of how to set this feature.

Table 13. Enable Character Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired character/value	'e'	'j'	'E'	Enable Command Not Used
2	Hex equivalent	0x65	0x7D	0x45	0xFF
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT DISABLE CHARACTER VALUE SETTING				
5	Scan Two Characters From Appendix E, Keypad	'6' and '5'	'7' and 'D'	'4' and '5'	'F' AND 'F'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Enable Character — cont.



0x45 = Enable Character is 'E'

NOTES

Chapter 7

Keyboard Interface

Introduction

Use the programming barcodes in this chapter to select options for USB Keyboard and Wedge Interfaces.

Standard Factory Settings

Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

Scancode Tables

Information about control character emulation which applies to keyboard interfaces is listed in [Appendix F, Scancode Tables](#).

Country Mode

This feature specifies the country/language supported by the keyboard.

Only the following interfaces support ALL Country Modes.

- USB Keyboard (without alternate key encoding)
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Std Key Encoding
- Keyboard Wedge for IBM AT PS2 with standard key encoding but without external keyboard
- AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 without Alternate Key
- Keyboard Wedge for IBM AT PS2 without alternate key encoding but without external keyboard

All other interfaces support ONLY the following Country Modes: U.S., Belgium, Britain, France, Germany, Italy, Spain, Sweden.

 ENTER/EXIT PROGRAMMING MODE	
	 Country Mode = U.S.
 Country Mode = Belgium	
	 Country Mode = Britain
 Country Mode = Croatia	Supports only the interfaces listed in the Country Mode feature description.
Supports only the interfaces listed in the Country Mode feature description.	 Country Mode = Czechoslovakia

Country Mode — continued

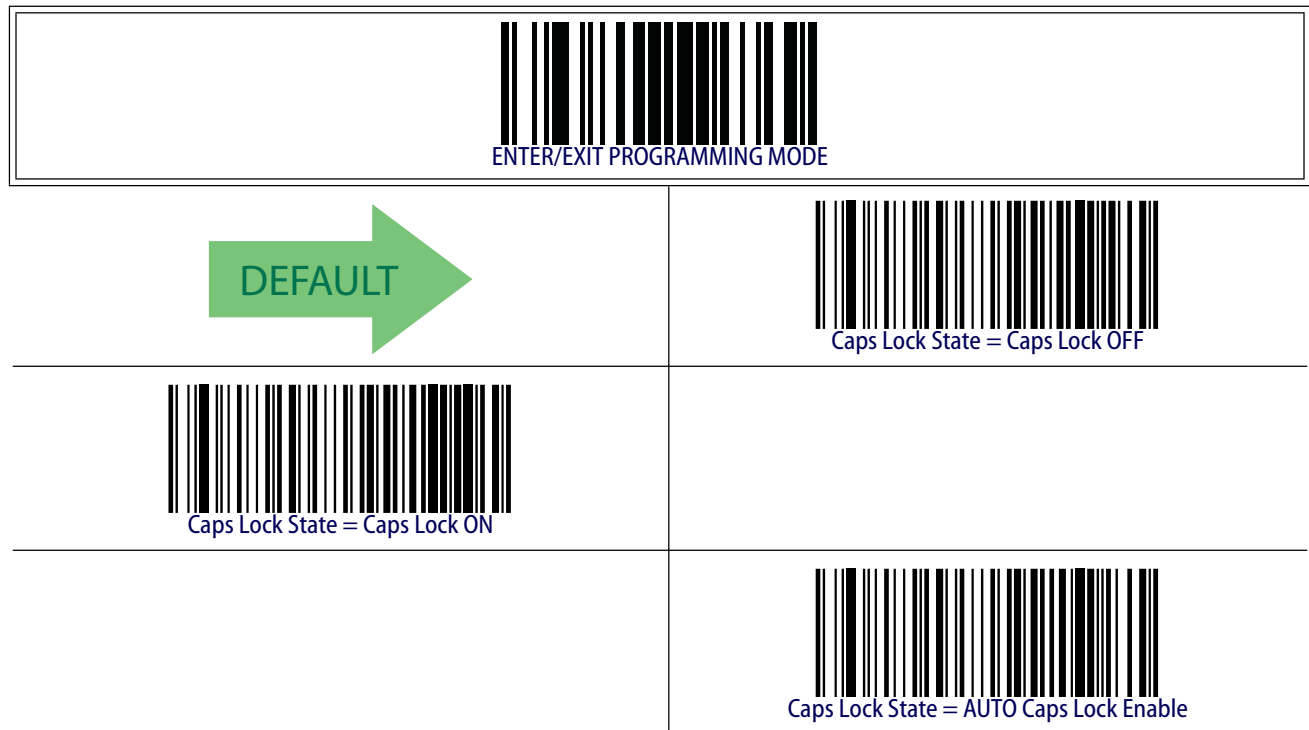
 ENTER/EXIT PROGRAMMING MODE	
 Country Mode = Denmark	Supports only the interfaces listed in the Country Mode feature description.
	 Country Mode = France
 Country Mode = Germany	
Supports only the interfaces listed in the Country Mode feature description.	 Country Mode = Hungary
 Country Mode = Italy	
Supports only the interfaces listed in the Country Mode feature description.	 Country Mode = Japanese 106-key
 Country Mode = Norway	Supports only the interfaces listed in the Country Mode feature description.

Country Mode — continued

 ENTER/EXIT PROGRAMMING MODE	
 Country Mode = Poland	Supports only the interfaces listed in the Country Mode feature description.
Supports only the interfaces listed in the Country Mode feature description.	 Country Mode = Portugal
 Country Mode = Romania	Supports only the interfaces listed in the Country Mode feature description.
Supports only the interfaces listed in the Country Mode feature description.	 Country Mode = Slovakia
 Country Mode = Spain	
	 Country Mode = Sweden
 Country Mode = Switzerland	Supports only the interfaces listed in the Country Mode feature description.

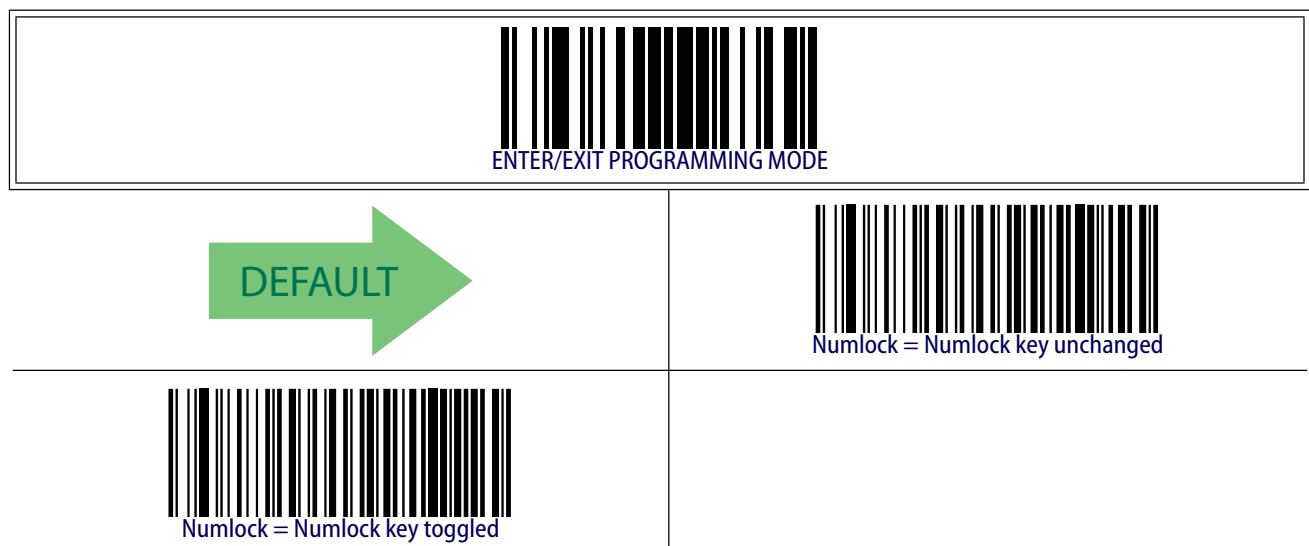
Caps Lock State

This option specifies the format in which the reader sends character data. This applies to keyboard wedge interfaces. This does not apply when an alternate key encoding keyboard is selected.



Numlock

This option specifies the setting of the Numbers Lock (Numlock) key while in keyboard wedge interface. This only applies to alternate key encoding interfaces. It does not apply to USB keyboard.



Send Control Characters

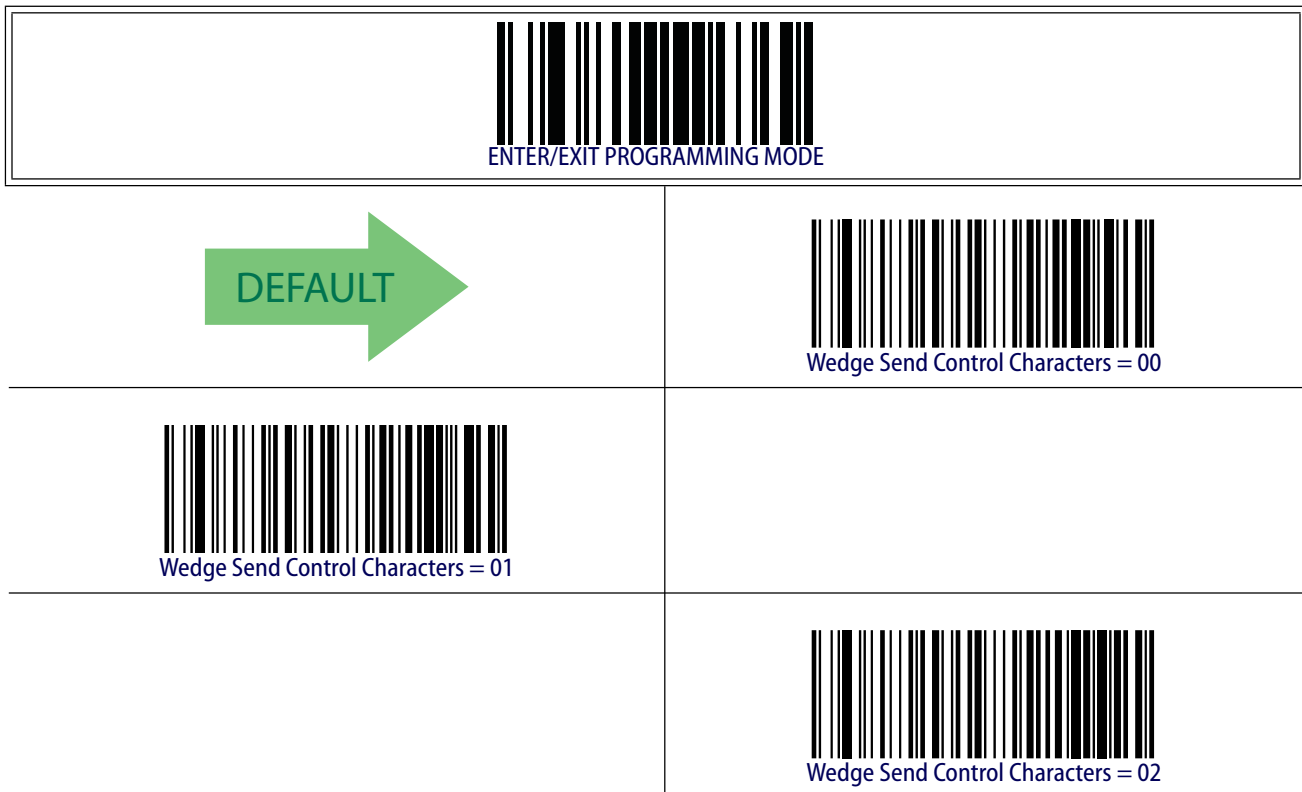
This feature Specifies how the reader transmits ASCII control characters to the host. Reference [Appendix F, Scancode Tables](#) for more information about control characters.

Options are as follows:

Control Character 00 . Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

Control Character 01 . Characters from 00 to 0x1F are sent as control character Ctrl+Capital Key, special keys are located from 0x80 to 0xA1.

Control Character 02 . Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table (Microsoft Windows Codepage 1252 — see "Microsoft Windows Codepage 1252" on page 316).



Wedge Quiet Interval

This option specifies the amount of time to look for keyboard activity before the reader breaks the keyboard connection in order to transmit data to host. The selectable range for this feature is from 0 to 990ms in 10ms increments.



This feature applies ONLY to the Keyboard Wedge interface.

NOTE

Follow these instructions to set this feature:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT WEDGE QUIET INTERVAL SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

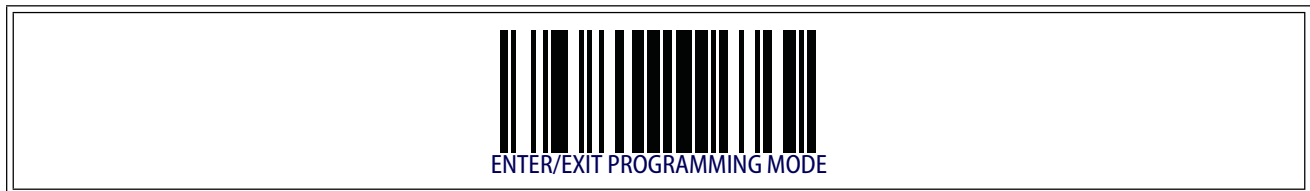
This completes the procedure to set the Wedge Quiet Interval. See [Table 14](#) for some examples of how to set this feature.

Table 14. Timeout Setting Examples

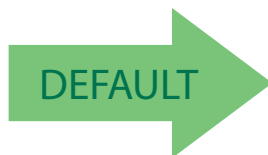
STEP	ACTION	EXAMPLES			
1	Desired Setting	10ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes)	01	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT WEDGE QUIET INTERVAL SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'1' and '5'	'6' and '0'	'8' and '5'

STEP	ACTION	EXAMPLES			
1	Desired Setting	10ms	150ms	600ms	850ms
6	Scan ENTER/EXIT PROGRAMMING MODE				

Wedge Quiet Interval — cont.



Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.



10 = Quiet Interval of 100 ms

Intercharacter Delay

This parameter specifies the intercharacter delay between the end of one character and the beginning of the next. The delay can be set within a range of zero (0) to 990 milliseconds in 10ms increments. A setting of zero specifies no delay.



This feature applies ONLY to the Keyboard Wedge interface.

NOTE

To set the delay:

1. Determine the desired setting in milliseconds.
2. Divide the desired setting by 10 (setting is in 10ms increments). Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCHARACTER DELAY SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

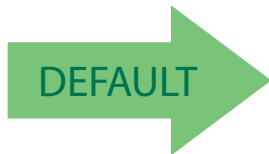
This completes the procedure. See [Table 14](#) for some examples of how to set this feature.

Table 15. Intercharacter Delay Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	50ms	150ms	600ms	850ms
2	Divide by 10 (and pad with leading zeroes to yield two-digits)	05	15	60	85
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCHARACTER DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '5'	'1' and '5'	'6' and '0'	'8' and '5'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Intercharacter Delay — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Intercharacter Delay = No Delay
 Select Intercharacter Delay Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL



00 = No Intercharacter Delay

Intercode Delay

Specifies the delay between labels transmitted to the host for this interface. The selectable range for this feature is from 0 to 99 seconds.

Follow these instructions to set this feature:

1. Determine the desired setting.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT INTERCODE DELAY SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the duration which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE


6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.


This completes the procedure. See [Table 16](#) for some examples of how to set this feature.


Table 16. Wedge Intercode Delay Examples

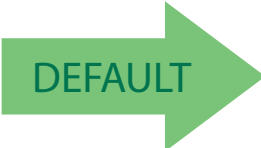
STEP	ACTION	EXAMPLES			
1	Desired Setting	No Delay	5 Seconds	60 Seconds	99 Seconds
2	Pad with leading zero(es)	00	05	60	99
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT INTERCODE DELAY SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '5'	'6' and '0'	'9' AND '9'
7	Scan ENTER/EXIT PROGRAMMING MODE				

Intercode Delay — cont.

 ENTER/EXIT PROGRAMMING MODE

 Set Intercode Delay	
----------------------------------------------------------------------------------------------------------	--

<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	 CANCEL
-----------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 00 = No Wedge Intercode Delay

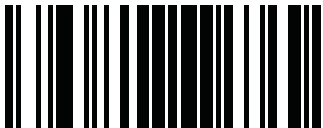
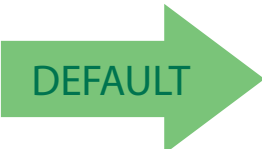

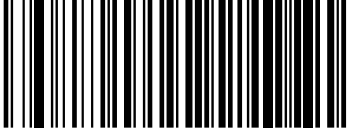
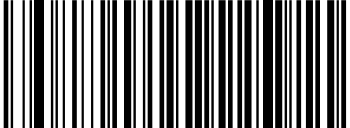
USB Keyboard Speed

This option specifies the USB poll rate for a USB keyboard.



This feature applies ONLY to the USB Keyboard interface.

NOTE

 ENTER/EXIT PROGRAMMING MODE	
	 USB Keyboard Speed = 1ms
 USB Keyboard Speed = 2ms	
	 USB Keyboard Speed = 3ms
 USB Keyboard Speed = 4ms	
	 USB Keyboard Speed = 5ms

USB Keyboard Speed — continued

 ENTER/EXIT PROGRAMMING MODE	
 USB Keyboard Speed = 6ms	
	 USB Keyboard Speed = 7ms
 USB Keyboard Speed = 8ms	
	 USB Keyboard Speed = 9ms
 USB Keyboard Speed = 10ms	

Chapter 8

USB-OEM Interface

Introduction

Feature settings for USB interfaces differ depending upon which host type the reader will be connected with. Use the feature settings in this chapter and [Chapter 9, IBM 46XX Interface](#) to specifically configure for the USB-OEM interface. Other USB interfaces are included in the appropriate chapter for their host type.

Standard Factory Settings

Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

USB-OEM Device Usage

The USB-OEM protocol allows for the reader to be identified as one of two different types of barcode scanners. Depending on what other scanners you may already have connected to a USB-OEM POS, you may need to change this setting to enable all devices to communicate.

Options are:

- Table Top Scanner
- Handheld Scanner



It may be necessary to switch device usage when connecting two readers/scanners of the same type to a POS system.

NOTE

 ENTER/EXIT PROGRAMMING MODE	
	 USB-OEM Device Usage = Table Top Scanner
 USB-OEM Device Usage = Handheld Scanner	 DEFAULT

Chapter 9

IBM 46XX Interface

Introduction

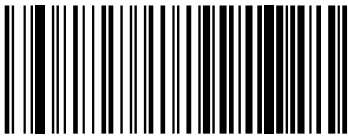
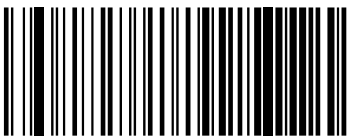

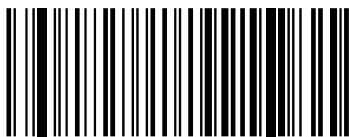
Use the barcodes in this section to configure programmable features for available IBM 46XX interfaces.

IBM Standard Factory Settings

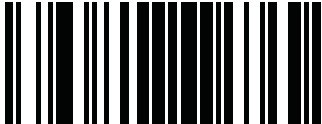



Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

46xx Number of Host Resets

Specifies how many consecutive resets are processed before the reader starts a five-second period to allow the user to enter Programming Mode and configure the reader. The configurable range for this feature is 1 to 15 resets.

 ENTER/EXIT PROGRAMMING MODE	
	 46xx Number of Host Resets = 1
 46xx Number of Host Resets = 2	
	 46xx Number of Host Resets = 3
 46xx Number of Host Resets = 4	
	 46xx Number of Host Resets = 5
 46xx Number of Host Resets = 6	

46xx Number of Host Resets — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 46xx Number of Host Resets = 7
 46xx Number of Host Resets = 8	
	 46xx Number of Host Resets = 9
 46xx Number of Host Resets = 10	
	 46xx Number of Host Resets = 11
 46xx Number of Host Resets = 12	

46xx Number of Host Resets — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 46xx Number of Host Resets = 13
 46xx Number of Host Resets = 14	
	 46xx Number of Host Resets = 15

Transmit Labels in Code 39 Format

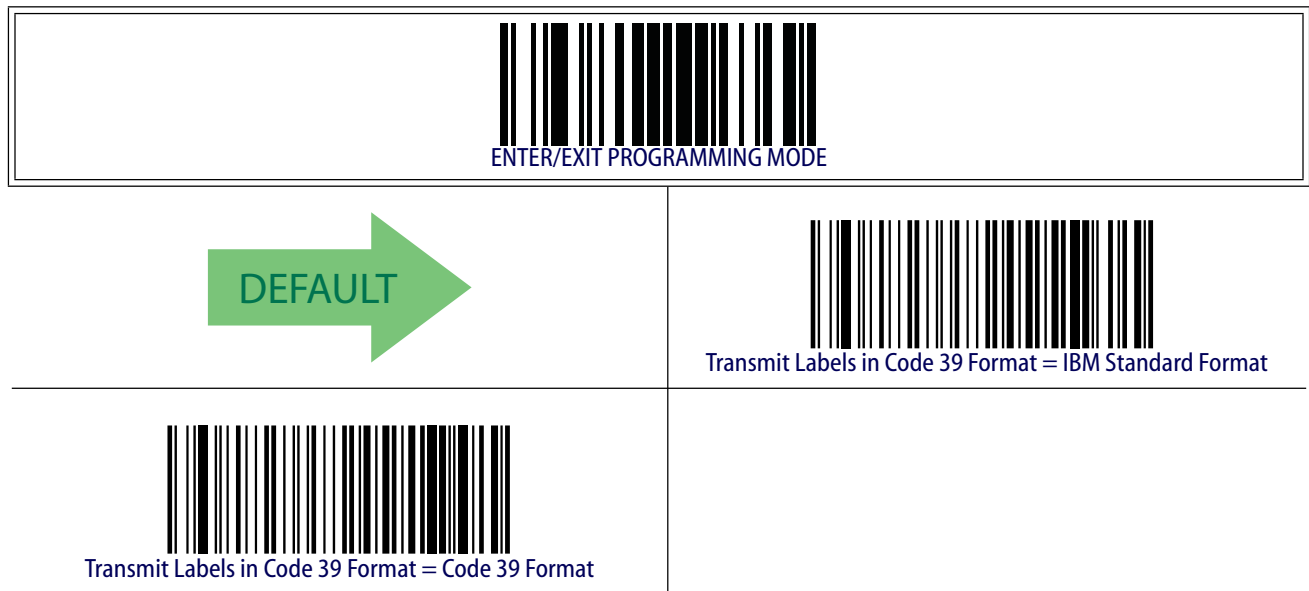
This feature enable/disables translation to Code 39 before transmitting label data to an IBM-46XX or a USB-OEM host. Only the symbology identifier is modified for the translation. The data is not converted to Code 39 or verified to be valid for Code 39.

Options are:

IBM Standard Format. Send labels in standard IBM format.

Code 39 Format. Translate the following symbologies to Code 39:

- USB-OEM: Code128, Code 93, and Codabar
- IBM-Port 5B: Code 128, Code 93, and Codabar
- IBM-Port 9B: Code 93 and Codabar



NOTES

Chapter 10

Wand Emulation Interface

Introduction

This chapter provides feature/settings configuration for the Wand Emulation interface.

Wand Emulation Standard Factory Settings

Reference [Appendix C, Standard Defaults](#) for a listing of standard factory settings.

Wand Idle State

This feature specifies the level of the Wand output signal when the reader is idle.



NOTE

TTL logic levels:
0V <= Low <= 0.7V
2.4V <= High <= 5.25V



Wand Polarity

This option specifies the polarity of the Wand output signal. Choices are:

- Quiet zones and spaces are high, bars are low
- Quiet zones and spaces are low, bars are high



NOTE

TTL logic levels:
0V <= Low <= 0.7V
2.4V <= High <= 5.25V



Wand Signal Speed

This feature specifies the speed of the Wand output signal per nominal bar or space. Choices are:

- 330 microseconds
- 660 microseconds



NOTE

TTL logic levels:
0V <= Low <= 0.7V
2.4V <= High <= 5.25V

 ENTER/EXIT PROGRAMMING MODE	
	 Wand Signal Speed = 330ms
 Wand Signal Speed = 660ms	 DEFAULT

Label Symbology Conversion

When this feature is enabled for the Wand Emulation interface, all barcode labels are converted to a single symbology.

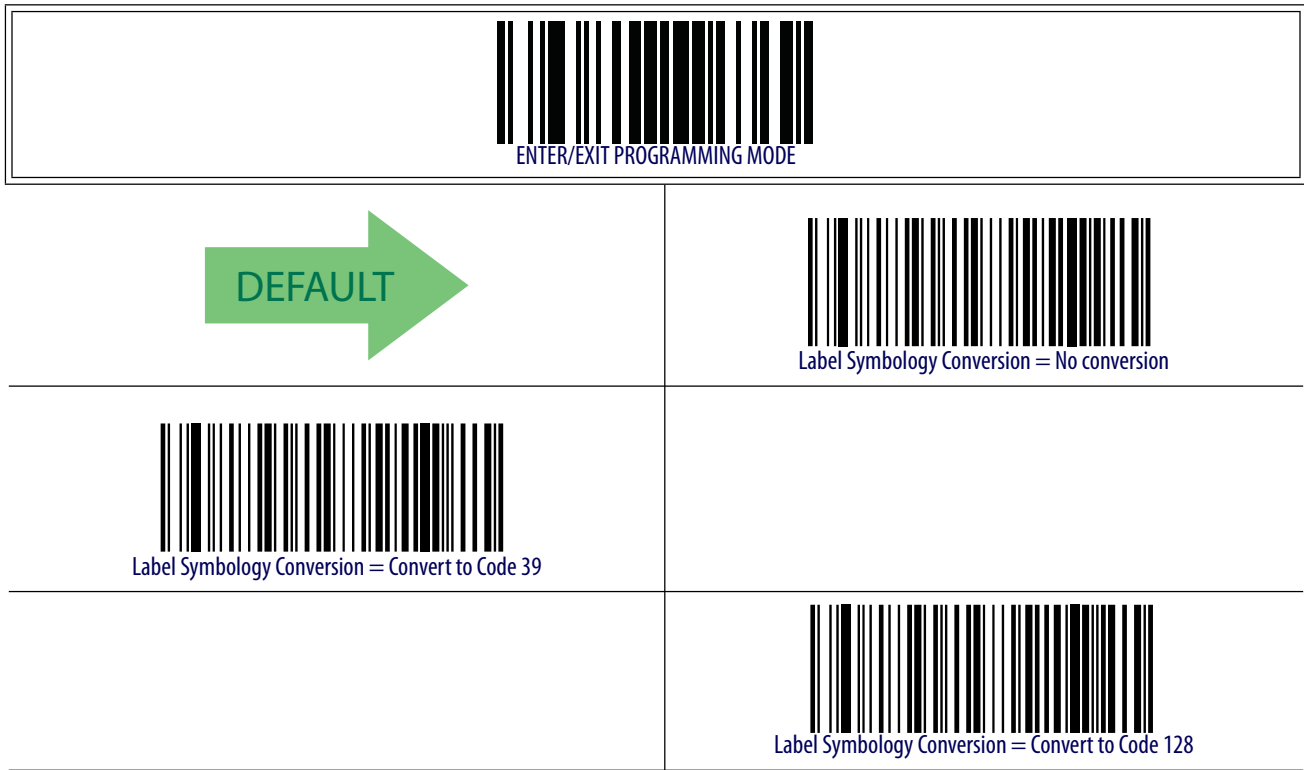
Options are:

- No conversion
- Convert to Code 39 symbology
- Convert to Code 128 symbology



NOTE

In the Wand Emulation interface, the full ASCII Code39 encoding scheme is selected by enabling the Code 39 Full ASCII configuration item.



Transmit Noise

This option specifies the leading/trailing noise for the Wand interface.
 Choices are:

- Disable (no leading/trailing noise)
- Enable leading noise
- Enable trailing noise
- Enable leading and trailing noise



In the Wand Emulation interface, the full ASCII Code39 encoding scheme is selected by enabling the Code 39 Full ASCII configuration item.

NOTE



NOTES

Chapter 11

Data Editing

Data Editing Overview



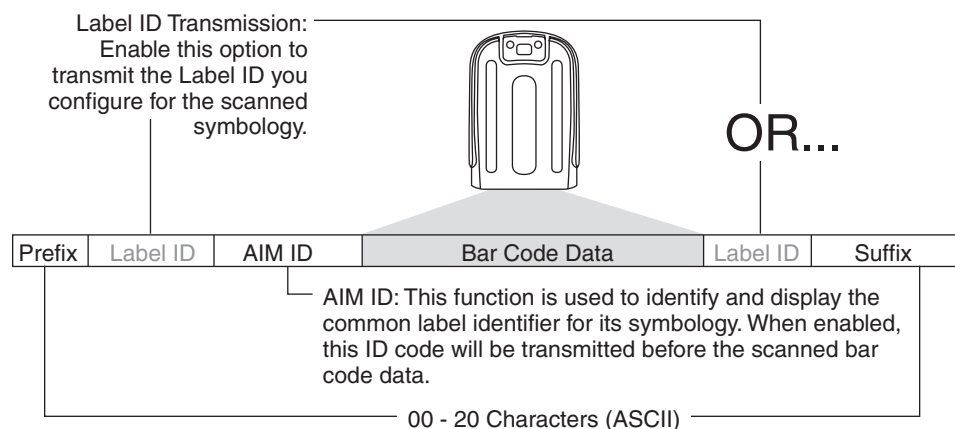
It is not recommended to use these features with IBM interfaces.

CAUTION

When a barcode is scanned, additional information can be sent to the host computer along with the barcode data. This combination of barcode data and supplementary user-defined data is called a “message string.” The features in this chapter can be used to build specific user-defined data into a message string.

There are several types of selectable data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. [Figure 6](#) shows the available elements you can add to a message string:

Figure 6. Breakdown of a Message String



Additional advanced editing is available. See Contact Technical Support on page 9 for more information.

NOTE

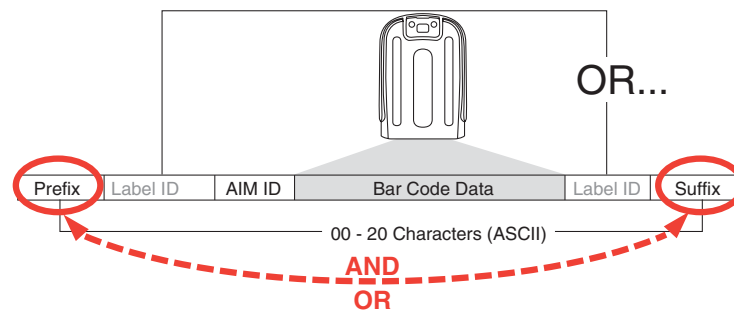
Please Keep In Mind...

- Modifying a message string is not a mandatory requirement. Data editing is sophisticated feature allowing highly customizable output for advanced users. Factory default settings for data editing is typically set to NONE.
- A prefix or suffix may be applied (reference the [Symbologies](#) chapter for these settings) across all symbologies (set via the Global features in this chapter).
- You can add any character from the [ASCII Chart](#) (from 00-FF) on the inside back cover of this manual as a prefix, suffix or Label ID.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

Global Prefix/Suffix

Up to 20 ASCII characters may be added as a prefix (in a position before the barcode data) and/or as a suffix (in a position following the barcode data) as indicated in [Figure 7](#).

Figure 7. Prefix and Suffix Positions



Example: Setting a Prefix

In this example, we'll set a prefix for all symbologies.

1. Determine which ASCII character(s) are to be added to scanned barcode data. In this example, we'll add a dollar sign ('\$') as a prefix.
2. Scan the ENTER/EXIT barcode.
3. Scan the SET GLOBAL PREFIX barcode.
4. Reference the ASCII Chart on the inside back cover of this manual, to find the hex value assigned to the desired character. The corresponding hex number for the '\$' character is 24. To enter this selection code, scan the '2' and '4' barcodes from [Appendix E, Keypad](#).



NOTE

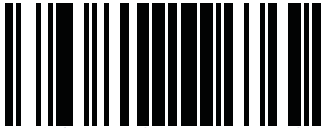
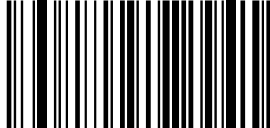


If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

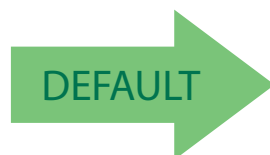
5. If less than the expected string of 20 characters are selected, scan the ENTER/EXIT barcode to terminate the string.
6. Scan the ENTER/EXIT barcode once again to exit Programming Mode.
7. The resulting message string would appear as follows:

Scanned barcode data:12345

Resulting message string output: \$12345

This option sets up to 20 characters each from the set of ASCII characters or any hex value from 00 to FF. To configure this feature, scan the ENTER/EXIT barcode to place the unit in Programming Mode, then the “Set Global Prefix” or “Set Global Suffix,” barcode followed by the digits (in hex) from the Alphanumeric characters in [Appendix E, Keypad](#) representing your desired character(s). If less than the expected string of 20 characters are selected, scan the ENTER/EXIT barcode to terminate the string. Reference the section, "Example: Setting a Prefix" on page [108](#), for more information. Exit programming mode by scanning the ENTER/EXIT barcode once again.

 ENTER/EXIT PROGRAMMING MODE	
	 Set Global Prefix
 Set Global Suffix	
<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	
 CANCEL	



No Global Prefix
Global Suffix = 0x0D

Global AIM ID



This feature enables/disables addition of AIM IDs for all symbology types.

NOTE

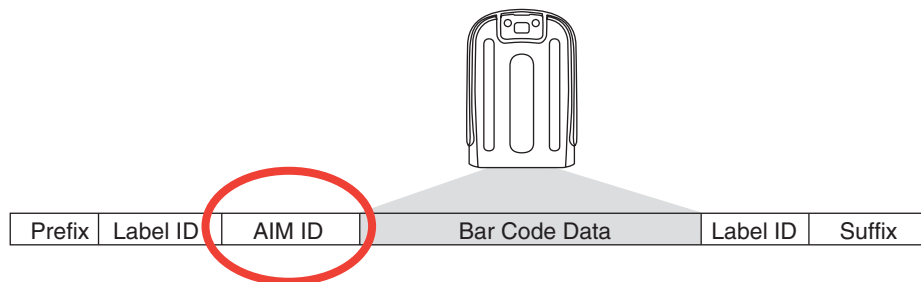
AIM label identifiers (as opposed to custom characters you select yourself as with label identifiers) can be included with scanned barcode data. AIM label identifiers consist of three characters as follows:

- A close brace character (ASCII '['), followed by...
- A code character (see the table below), followed by...
- A modifier character (the modifier character is symbol dependent).

SYMBOLOGY	CHAR	SYMBOLOGY	CHAR
UPC/EAN	E ^a	Code 128/GS1-128	C
Code 39 and Code 32	A	DataBar Omnidirectional, DataBar Expanded	e
Codabar	F	Standard 2 of 5	S
Interleaved 2 of 5	I	ISBN	X ^b
Code 93	G	Code 11	H

- UPC-A and UPC-E labels are converted to EAN 13 when adding AIM IDs.
- ISBN (X with a 0 modifier character)

Figure 8. AIM ID



Global AIM ID — continued



GS1-128 AIM ID

If Global AIM ID is disabled, the AIM ID for GS1-128 can be enabled/disabled independently. The AIM ID for GS1-128 is a]C1,]C2 or]C3.

AIM IDs for other symbologies can be enabled/disabled independently as well. Contact Customer Support for assistance

If Global AIM ID is disabled, the AIM ID for GS1-128 can be enabled/disabled independently. The AIM ID for GS1-128 is a]C1,]C2 or]C3.

AIM IDs for other symbologies can be enabled/disabled independently as well. Contact Customer Support for assistance.



Label ID

A Label ID is a customizable code of up to three ASCII characters (each can be one of hex 0x01-0xFF), used to identify a barcode (symbology) type. It can be appended previous to or following the transmitted barcode data depending upon how this option is enabled. This feature provides options for configuring custom Label IDs as a pre-loaded set (see "Label ID: Pre-loaded Sets" on page 113) or individually per symbology (see "Label ID: Set Individually Per Symbology" on page 115). If you wish to program the reader to always include an industry standard label identifier for ALL symbology types, see the previous feature "Global AIM ID" on page 110.

Label ID: Pre-loaded Sets

The reader supports two pre-loaded sets of Label IDs. Table 17 shows the default set and alternate set.



CAUTION

When changing from one Label ID set to another, all other reader configuration settings, including the host interface type, will be erased and set to the standard factory defaults. Any customized configuration will be lost.

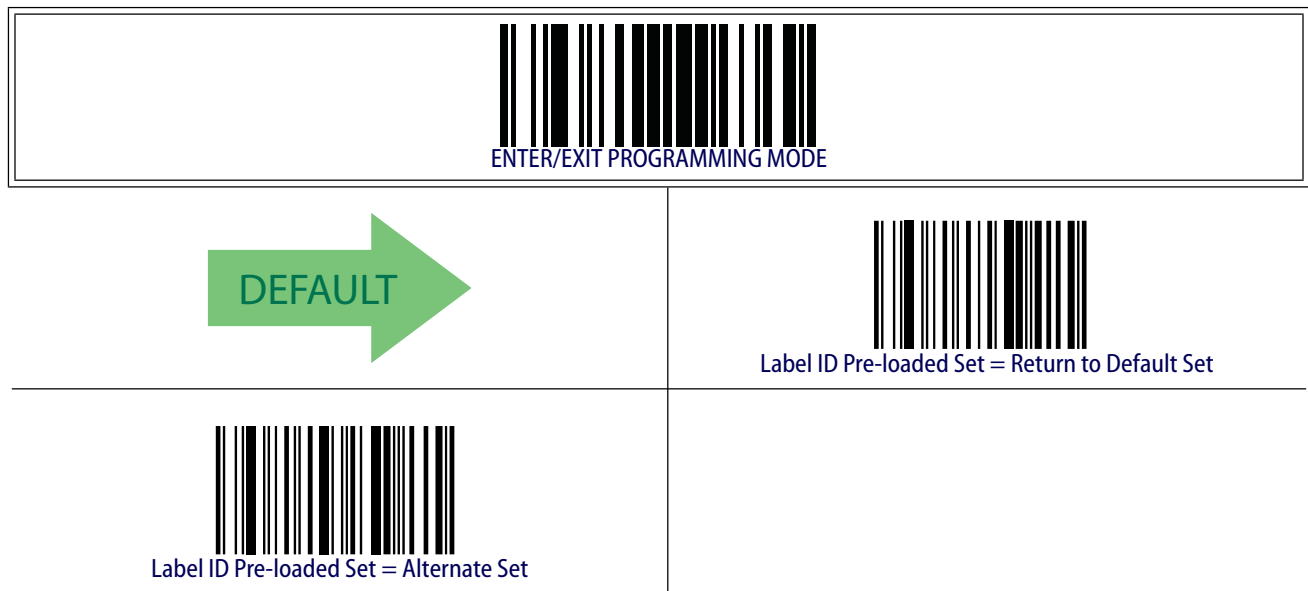


Table 17. Label ID Pre-loaded Sets

Symbology	Default Label ID set		Alternate Label ID set	
	ASCII character	Hexidecimal value	ASCII character	Hexidecimal value
CODABAR	%	250000	R	520000
CODE11	CE	434500	b	620000
CODE128	#	230000	T	540000

Symbology	Default Label ID set		Alternate Label ID set	
CODE39	*	2A0000	V	560000
CODE4	4	340000	4	340000
CODE5	j	6A0000	j	6A0000
CODE93	&	260000	U	550000
GS1 DATABAR OMNIDIRECTIONAL	R4	523400	u	750000
GS1 DATABAR EXPANDED	RX	525800	t	740000
GS1 DATABAR LIMITED	RL	524C00	v	760000
DATALOGIC 2OF5	s	730000	s	730000
GS1-128		000000	k	6B0000
EAN13	F	460000	B	420000
EAN13 P2	F	460000	L	4C0000
EAN13 P5	F	460000	M	4D0000
EAN13 P8	F	460000	#	230000
EAN8	FF	464600	A	410000
EAN8 P2	FF	464600	J	4A0000
EAN8 P5	FF	464600	K	4B0000
EAN8 P8	FF	464600	*	2A0000
FOLLETT 2OF5	O	4F0000	O	4F0000
GTIN	G	470000	\$A	244100
GTIN2	G2	473200	\$B	244200
GTIN5	G5	473500	\$C	244300
GTIN8	G8	473800	\$D	244400
I2OF5	i	690000	N	4E0000
ISBN	l	490000	@	400000
ISBT128	f	660000	f	660000
CODE32	A	410000	X	580000
S25	s	730000	P	500000
UPCA	A	410000	C	430000
UPCA P2	A	410000	F	460000
UPCA P5	A	410000	G	470000
UPCA P8	A	410000	Q	510000

Label ID: Set Individually Per Symbology

To configure a Label ID individually for a single symbology:

1. Scan the ENTER/EXIT barcode.
2. Select Label ID position as either BEFORE (Enable as Prefix) or AFTER (Enable as suffix) by scanning the appropriate barcode in the section "Label ID Control" on page 117. Reference [Figure 9](#) for Label ID positioning options if multiple identification features are enabled.
3. Scan a barcode to select the symbology for which you wish to configure a custom Label ID from the section [Label ID Symbology Selection, starting on page 118](#).
4. Determine the desired character(s) (you may choose up to three) which will represent the Label ID for the selected symbology.
5. Turn to the [ASCII Chart](#) on the inside back cover of this manual and find the equivalent hex digits associated with your choice of Label ID. For example, if you wish to select an equal sign (=) as a Label ID, the chart indicates its associated hex characters as 3D. Turn to [Keypad, starting on page 301](#) and scan the barcodes representing the hex characters determined. For the example given, the characters '3' and 'D' would be scanned. More examples of Label ID settings are provided in [Table 18](#).



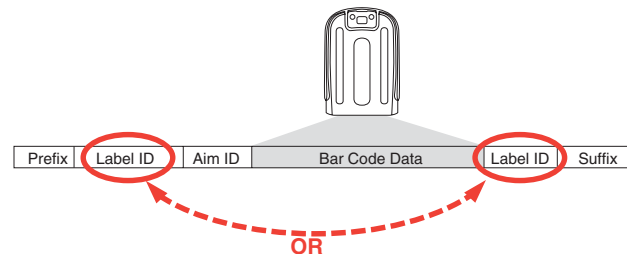
If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT barcode to exit Label ID entry.
7. Scan the ENTER/EXIT barcode once again to exit Programming Mode.

This completes the steps to configure a Label ID for a given symbology.

Figure 9. Label ID Position Options



Label ID — continued

Table 18. Label ID Examples

STEP	ACTION	EXAMPLES			
1.	Scan the ENTER/EXIT barcode	(Scanner enters Programming Mode)			
2.	Determine placement of the Label ID characters BEFORE or AFTER with regard to scanned data using Label ID Control, starting on page 117	Enable as Prefix	Enable as Suffix	Enable as Prefix	Enable as Suffix
3.	Scan the barcode selecting the symbology type you wish to designate label ID characters for using Label ID Symbology Selection, starting on page 118.	DataBar Omnidirectional	Code 39	Interleaved 2 of 5	Code 32
4.	Custom Label ID example (desired characters):	D B *	= C 3	+	P H
5.	Find hex equivalents from the ASCII table (inside back cover), then scan in these digits/characters using the barcodes in the section: Keypad, starting on page 301. If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	44 42 2A	3D 43 33	2B	50 48
6.	Scan the ENTER/EXIT barcode	(Scanner exits Label ID entry)			
7.	Scan the ENTER/EXIT barcode once again	(Scanner exits Programming Mode)			
	Result:	DB*[barcode data]	[barcode data]=C3	+ [barcode data]	[barcode data]PH

Label ID — continued

Label ID Control

This option controls whether a Label ID is disabled, or sent as a prefix or suffix for a given symbology type.

 ENTER/EXIT PROGRAMMING MODE	
 DEFAULT	 Label ID Transmission = Disable
 Label ID Transmission = Enable as Prefix	
	 Label ID Transmission = Enable as Suffix
 CANCEL	Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

Label ID — continued

Label ID Symbology Selection

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
	 Set UPC-A Label ID Character(s)
 Set UPC-A/P2 Label ID Character(s)	
	 Set UPC-A/P5 Label ID Character(s)
 Set UPC-A/GS1-128 Label ID Character(s)	
	 Set UPC-E Label ID Character(s)
 Set UPC-E/P2 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
	 Set UPC-E/P5 Label ID Character(s)
 Set UPC-E/GS1-128 Label ID Character(s)	
	 Set EAN 13 Label ID Character(s)
 Set EAN 13/P2 Label ID Character(s)	
	 Set EAN 13/P5 Label ID Character(s)
 Set EAN 13/GS1-128 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
	 Set EAN 8 Label ID Character(s)
 Set EAN 8/P2 Label ID Character(s)	
	 Set EAN 8/P5 Label ID Character(s)
 Set EAN 8/GS1-128 Label ID Character(s)	
	 Set GTIN Label ID Character(s)
 Set GTIN/P2 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
	 Set GTIN/P5 Label ID Character(s)
 Set GTIN/GS1-128 Label ID Character(s)	
	 Set DataBar Omnidirectional Label ID Character(s)
 Set DataBar Expanded Label ID Character(s)	
	 Set DataBar Limited Label ID Character(s)
 Set Code 39 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
 Set Code 32 Label ID Character(s)	
	 Set Code 128 Label ID Character(s)
 Set ISBT 128 Label ID Character(s)	
	 Set GS1-128 Label ID Character(s)
 Set Interleaved 2 of 5 Label ID Character(s)	
	 Set Codabar Label ID Character(s)
 Set Code 11 Label ID Character(s)	

Label ID — continued

Label ID Symbology Selection — continued

This option selects the symbology for which a Label ID is to be configured. See "Label ID" on page 113 for full instructions.

 ENTER/EXIT PROGRAMMING MODE	
 Set Standard 2 of 5 Label ID Character(s)	
	 Set Code 4 Label ID Character(s)
 Set Code 5 Label ID Character(s)	
	 Set Follett 2 of 5 Label ID Character(s)

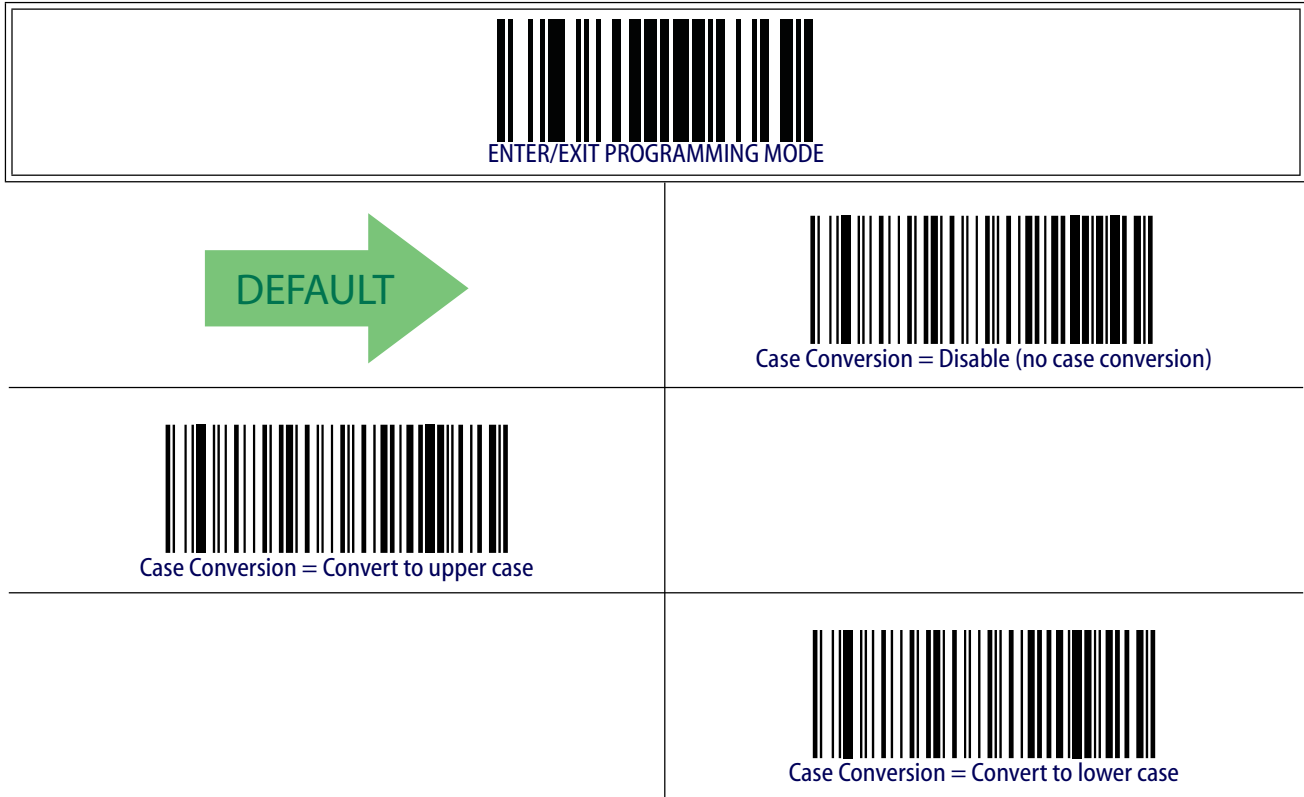
Case Conversion

This feature allows conversion of the case of all alphabetic characters to upper or lower case.



NOTE

Case conversion affects ONLY scanned barcode data, and does not affect Label ID, Prefix, Suffix, or other appended data.



Character Conversion

Character conversion is an eight byte configuration item. The eight bytes are 4 character pairs represented in hexadecimal ASCII values. The first character in the pair is the character that will be converted. The second character in the pair is the character to convert to. If the character to convert in a pair is FF, then no conversion is done.

For example, if you have the character conversion configuration item set to the following:
41423132FFFFFFFF

The first pair is 4142 or AB (41 hex is an ASCII capital A, 42 hex is an ASCII capital B) and the second pair is 3132 or 12 (31 hex is an ASCII 1, 32 is an ASCII 2). The other two pairs are FFFF and FFFF.

With the label, AB12BA21, it would look as follows after the character conversion: BB22BB22.

The A characters were converted to B characters and the 1 characters were converted to 2 characters. Nothing is done with the last two character pairs, since they are all FF.

To set Character Conversion:

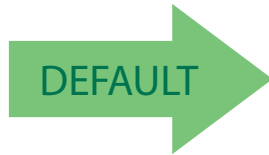
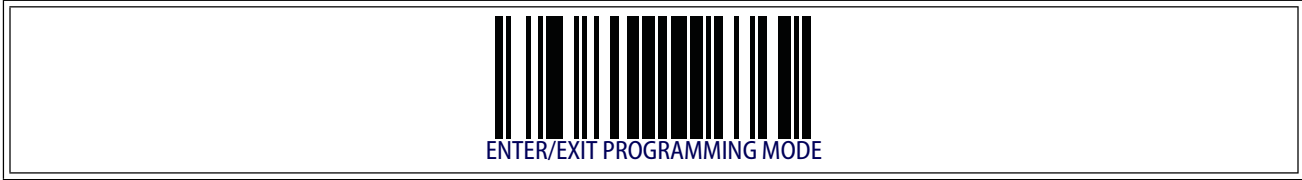
1. Scan the ENTER/EXIT barcode.
2. Scan the “Configure Character Conversion” barcode.
3. Determine the desired string. Sixteen positions must be determined as in the above example. Next, turn to the ASCII Chart on the inside back cover of this manual and find the equivalent hex digits needed to fulfill the string.
4. Turn to [Appendix E, Keypad](#) and scan the barcodes representing the hex characters determined in the previous step.
5. Scan the ENTER/EXIT barcode to exit Programming Mode.



NOTE

If less than the expected string of 16 characters are selected, scan the ENTER/EXIT barcode twice to accept the selections and exit Programming Mode.

Character Conversion — continued



0xFFFFFFFFFFFFFFFF

Chapter 12

Symbologies

Introduction

The reader supports the following symbologies (barcode types). Options for each symbology are included in this chapter.

1D Symbologies

- UPC-A
- UPC-E
- EAN 13 (JAN 13)
- EAN 8 (JAN 8)
- GS1 DataBar™ Omnidirectional
- GS1 DataBar™ Expanded
- GS1 DataBar™ Limited
- Code 39
- Code 32
- GS1-128
- Interleaved 2 of 5 (I 2 of 5)
- Datalogic 2 of 5
- Codabar
- Code 11
- Standard 2 of 5
- ISBT 128
- Code 4
- Code 5

Standard Factory Settings for Symbologies

Default settings are indicated at each feature/option with a green arrow. Also reference [Appendix C, Standard Defaults](#) for a listing of the most widely used set of standard factory settings. That section also provides space to record any custom settings needed or implemented for your system.

Coupon Control

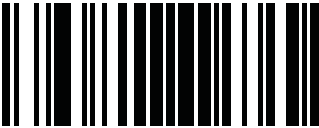
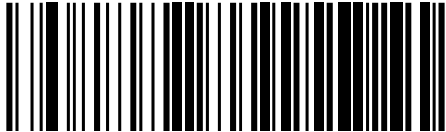



This feature is used to control the reader's method of processing coupon labels.

Options are:

- Disable coupon decoding
- Enable UPC/EAN coupon decoding
- Enable GS1 DataBar coupon decoding

To set this feature:

1. Scan the SWITCH bar code.
2. Scan either the enable or disable barcode below. You'll need to cover any unused barcodes on this and the facing page to ensure that the reader sees only the barcode you intend to scan.
3. Complete the programming sequence by scanning the SWITCH barcode.

 ENTER/EXIT PROGRAMMING MODE	
	 Coupon Control = Disable
 Coupon Control = Enable UPC/EAN coupon decoding	
	 Coupon Control = Enable GS1 DataBar coupon decoding

UPC-A

The following options apply to the UPC-A symbology.

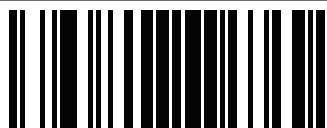

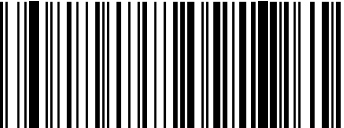

UPC-A Enable/Disable

When disabled, the reader will not read UPC-A barcodes.

 ENTER/EXIT PROGRAMMING MODE	
	 UPC-A = Disable
 UPC-A = Enable	 DEFAULT

UPC-A Check Character Transmission

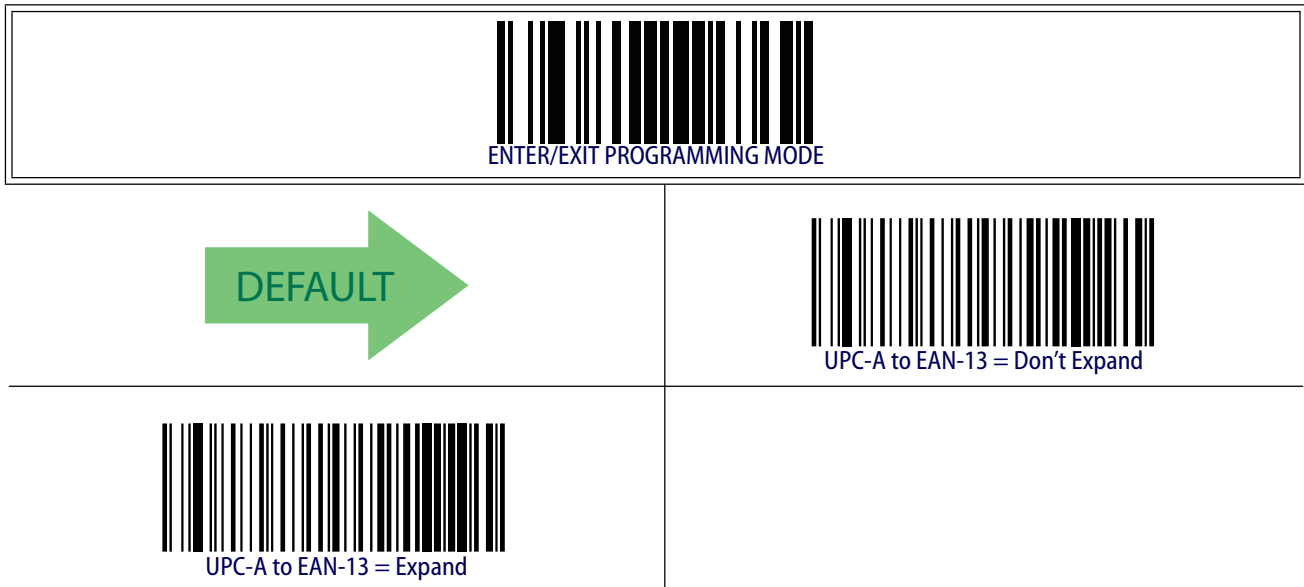
Enable this option to transmit the check character along with UPC-A barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 UPC-A Check Character Transmission = Don't Send
 UPC-A Check Character Transmission = Send	 DEFAULT

UPC-A — cont.

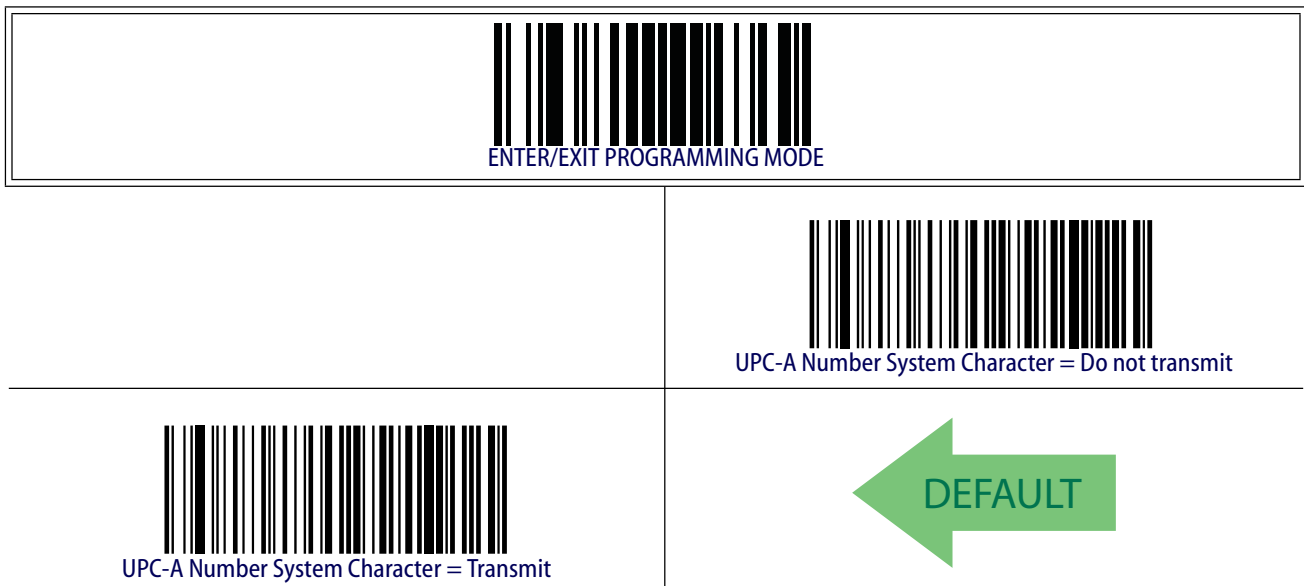
Expand UPC-A to EAN-13

Expands UPC-A data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.



UPC-A Number System Character Transmission

This feature enables/disables transmission of the UPC-A number system character.



UPC-A — cont.

UPC-A Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-A label must be decoded before it is accepted as good read.

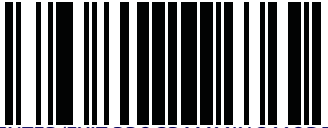
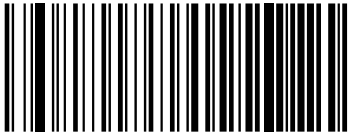




UPC-E

The following options apply to the UPC-E symbology.

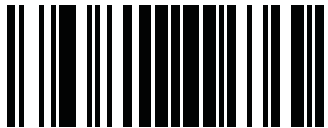
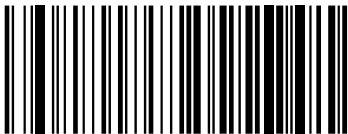
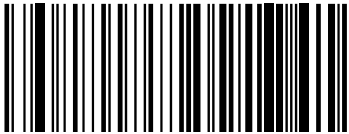

UPC-E Enable/Disable

When disabled, the reader will not read UPC-E barcodes.

 ENTER/EXIT PROGRAMMING MODE	
	 UPC-E = Disable
 UPC-E = Enable	 DEFAULT

UPC-E Check Character Transmission

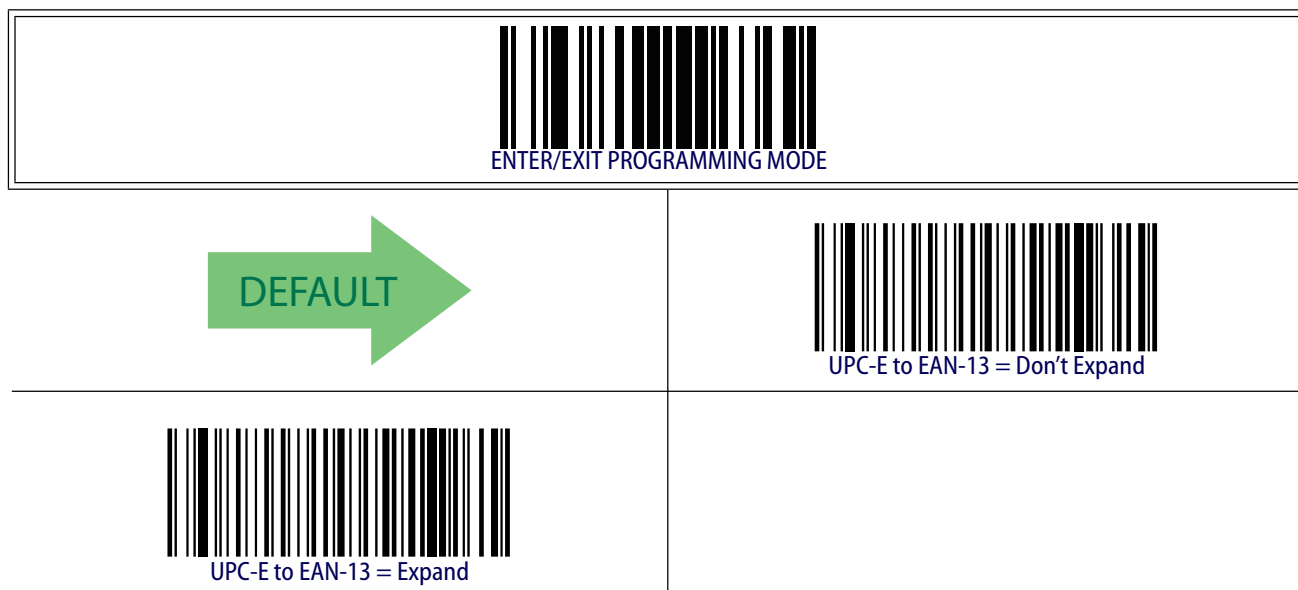
Enable this option to transmit the check character along with UPC-E barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 UPC-E Check Character Transmission = Don't Send
 UPC-E Check Character Transmission = Send	 DEFAULT

UPC-E — cont.

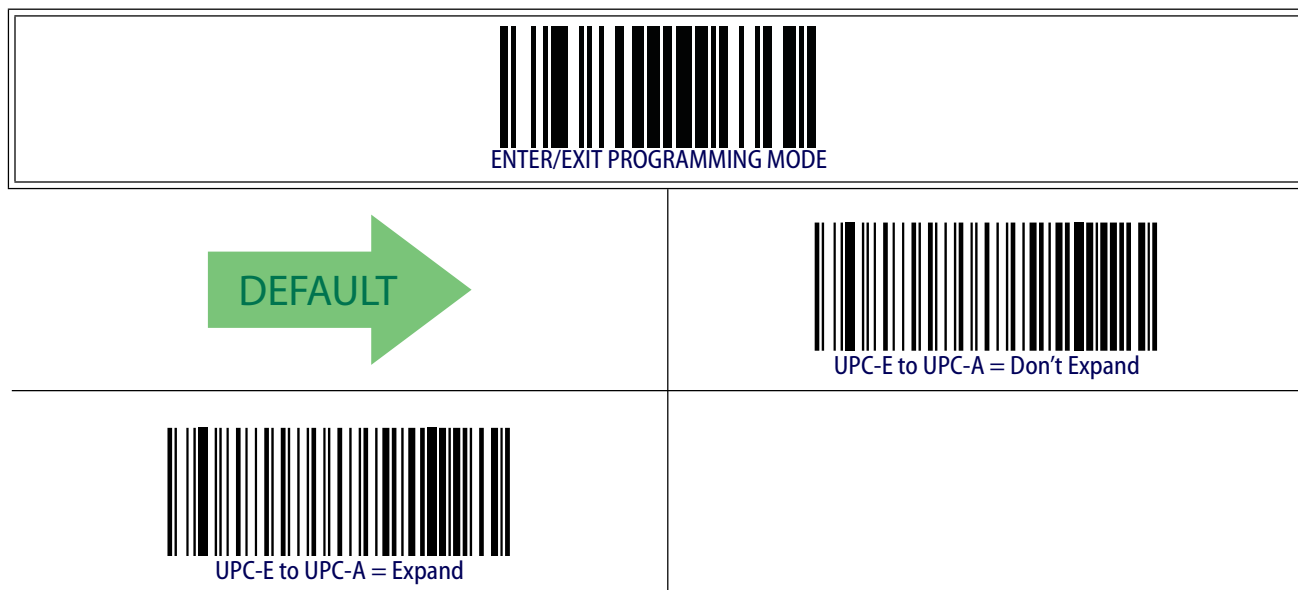
Expand UPC-E to EAN-13

Expands UPC-E data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.



Expand UPC-E to UPC-A

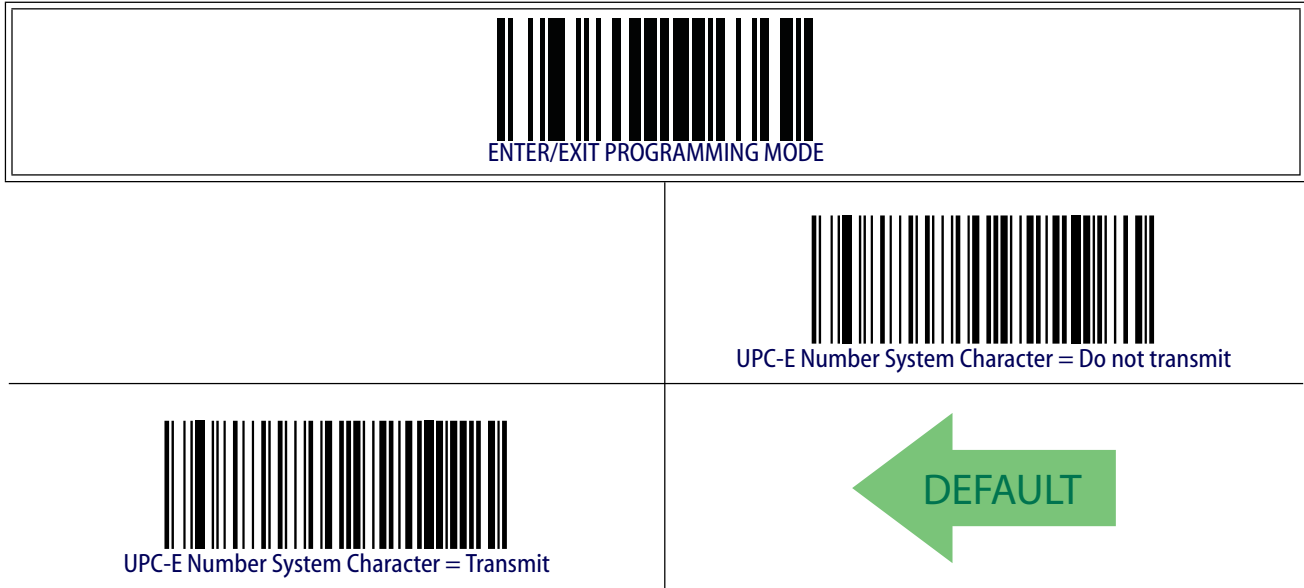
Expands UPC-E data to the UPC-A data format.



UPC-E — cont.

UPC-E Number System Character Transmission

This feature enables/disables transmission of the UPC-E system number character.



UPC-E — cont.

UPC-E Minimum Reads

This feature specifies the minimum number of consecutive times a UPC-E label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
	 UPC-E Minimum Reads = 1
 UPC-E Minimum Reads = 2	 DEFAULT
	 UPC-E Minimum Reads = 3
 UPC-E Minimum Reads = 4	

GTIN Formatting

This feature enables/disables the ability to convert UPC-E, UPC-A, EAN 8, and EAN 13 labels into the GTIN 14-character format.



NOTE

If add-on information is present on the base label prior to the conversion taking place, the add-on information will be appended to the converted GTIN label.



EAN 13

The following options apply to the EAN 13 (Jan 13) symbology.

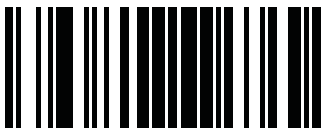
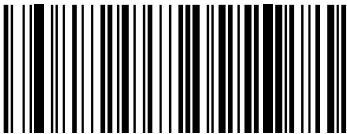
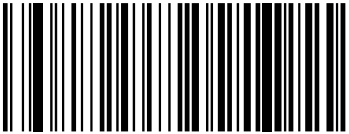

EAN 13 Enable/Disable

When disabled, the reader will not read EAN 13/JAN 13 barcodes.

 ENTER/EXIT PROGRAMMING MODE	
	 EAN 13 = Disable
 EAN 13 = Enable	 DEFAULT

EAN 13 Check Character Transmission

Enable this option to transmit the check character along with EAN 13 barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 EAN 13 Check Character Transmission = Don't Send
 EAN 13 Check Character Transmission = Send	 DEFAULT

EAN 13 — cont.

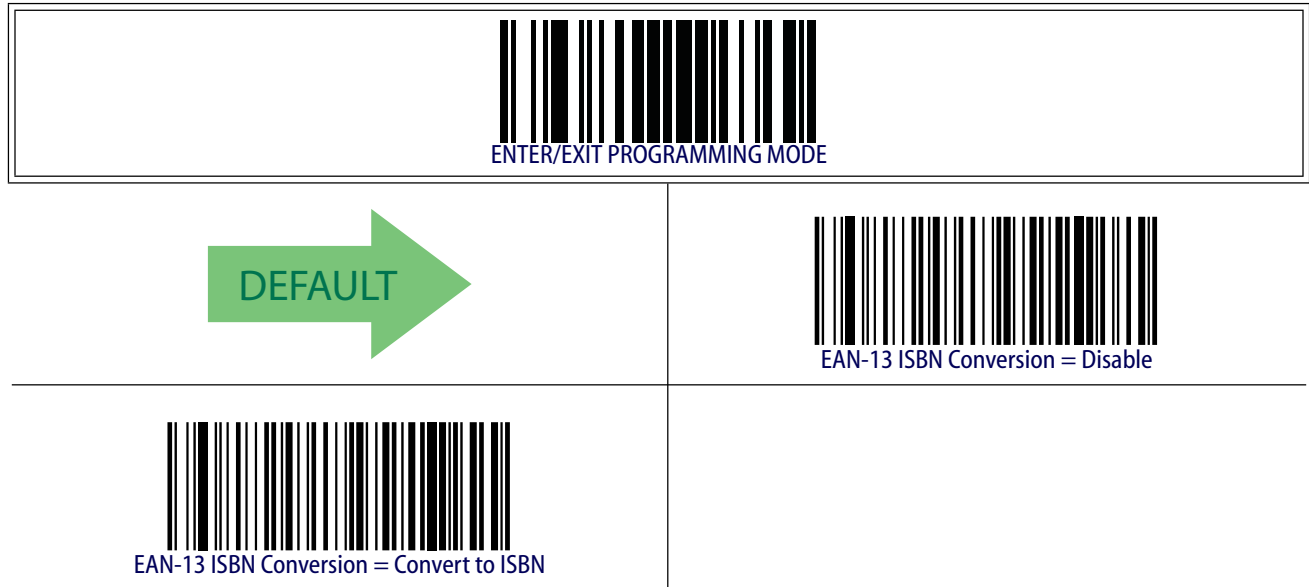
EAN-13 Flag 1 Character

Enables/disables transmission of an EAN/JAN13 Flag1 character. The Flag 1 character is the first character of the label.



EAN-13 ISBN Conversion

This option enables/disables conversion of EAN 13/JAN 13 Bookland labels starting with 978 to ISBN labels.



EAN 13 — cont.

EAN 13 Minimum Reads

This feature specifies the minimum number of consecutive times an EAN 13 label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
	 EAN 13 Minimum Reads = 1
 EAN 13 Minimum Reads = 2	
	 EAN 13 Minimum Reads = 3
 EAN 13 Minimum Reads = 4	

EAN 8

The following options apply to the EAN 8 (Jan 8) symbology.

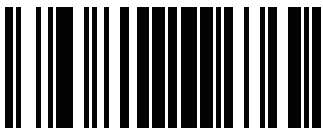



EAN 8 Enable/Disable

When disabled, the reader will not read EAN 8/JAN 8 barcodes.

 ENTER/EXIT PROGRAMMING MODE	
	 EAN 8 = Disable
 EAN 8 = Enable	 DEFAULT

EAN 8 Check Character Transmission

Enable this option to transmit the check character along with EAN 8 barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 EAN 8 Check Character Transmission = Don't Send
 EAN 8 Check Character Transmission = Send	 DEFAULT

EAN 8 — cont.

Expand EAN 8 to EAN 13

Enable this option to expand EAN 8/JAN 8 labels to EAN 13/JAN 13.



EAN 8 — cont.

EAN 8 Minimum Reads

This feature specifies the minimum number of consecutive times an EAN 8 (Jan 8) label must be decoded before it is accepted as good read.



UPC/EAN Global Settings

This section provides configuration settings for UPC-A, UPC-E, EAN 13 and EAN 8 symbologies, and affects all of these unless otherwise marked for each feature description.

UPC/EAN Decoding Level

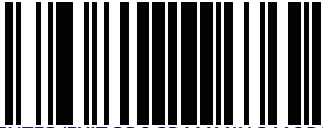

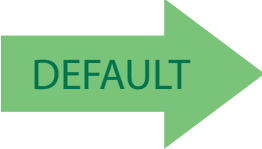

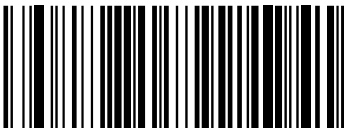


Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

UPC/EAN Global Settings — cont.

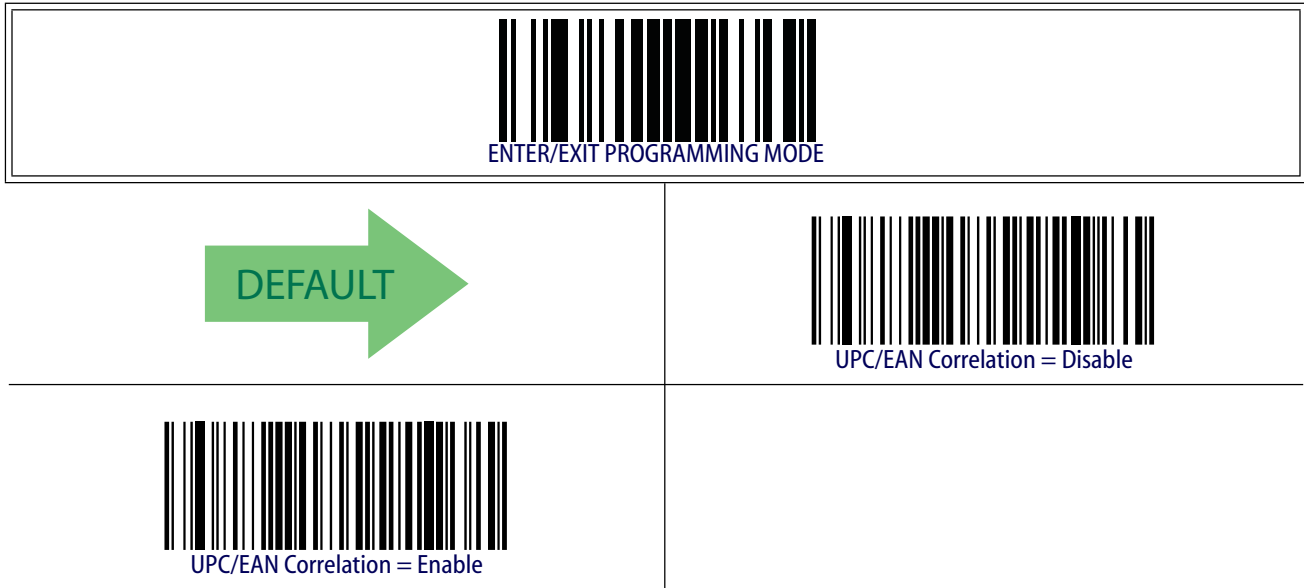
UPC/EAN Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 UPC/EAN Decoding Level = 1	
 DEFAULT	 UPC/EAN Decoding Level = 2
 UPC/EAN Decoding Level = 3	
	 UPC/EAN Decoding Level = 4
 UPC/EAN Decoding Level = 5	

UPC/EAN Global Settings — cont.

UPC/EAN Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



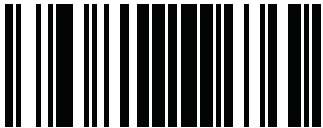
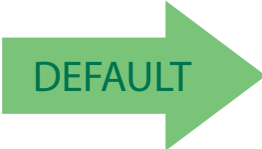
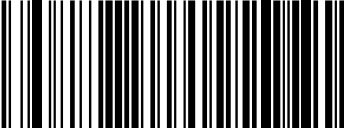

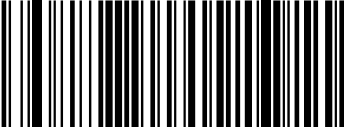


UPC/EAN Global Settings — cont.

UPC/EAN Price Weight Check

This feature enables/disables calculation and verification of price/weight check digits.

Options are

- Disabled
- Enable 4-digit price-weight check-digit calculation
- Enable 5-digit price-weight check-digit calculation
- Enable European 4-digit price-weight check-digit calculation
- Enable European 5-digit price-weight check-digit calculation

 ENTER/EXIT PROGRAMMING MODE	
	 Price Weight Check = Disabled
 Price Weight Check = 4-digit price-weight check	
	 Price Weight Check = 5-digit price-weight check
 Price Weight Check = European 4-digit price-weight check	
	 Price Weight Check = European 5-digit price-weight check

UPC/EAN Global Settings — cont.

In-Store Minimum Reads

This feature specifies the minimum number of consecutive times an in-store label must be decoded before it is accepted as good read.

In-store labels are defined as UPC-A labels with a number-system character of 2 or 4 as well as EAN 8 and EAN 13 labels with a Flag1 character of 2 or an EAN 13 label starting with the three characters '980'.

 ENTER/EXIT PROGRAMMING MODE	
	 In-Store Minimum Reads = 1
 In-Store Minimum Reads = 2	
	 In-Store Minimum Reads = 3
 In-Store Minimum Reads = 4	

Add-Ons

The following features apply to optional add-ons.



NOTE

Contact Customer Support for advanced programming of optional and conditional add-ons.

Optional Add-ons

The reader can be enabled to optionally read the following add-ons (supplementals):

- P2
- P5
- GS1-128



NOTE

If a UPC/EAN base label and a an add-on are both decoded, the reader will transmit the base label and add-on. If a UPC/EAN base label is decoded without an add-on, the base label will be transmitted without an add-on.

Conditional add-on settings (if enabled) are considered by the reader before optional add-on settings.



Add-Ons — cont.

Optional Add-ons — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Optional Add-Ons = Enable P5	
 DEFAULT	 Optional Add-Ons = Disable GS1-128
 Optional Add-Ons = Enable GS1-128	

Add-Ons — cont.

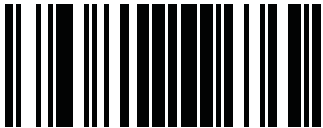
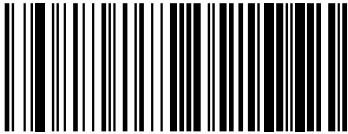
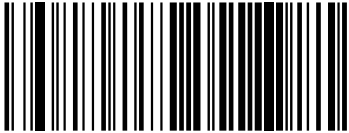

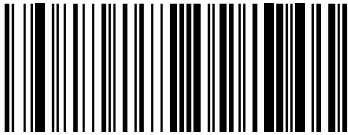
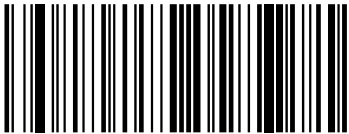
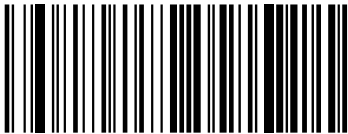
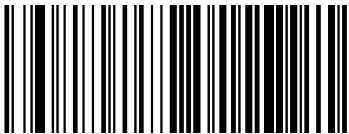
Optional Add-On Timer

This option sets the time the reader will look for an add-on when an add-on fragment has been seen and optional add-ons are enabled. (Also see "Optional GS1-128 Add-On Timer" on page 154.)

 ENTER/EXIT PROGRAMMING MODE	
 Optional Add-on Timer = 10ms	
	 Optional Add-on Timer = 20ms
 Optional Add-on Timer = 30ms	
	 Optional Add-on Timer = 40ms
 Optional Add-on Timer = 50ms	

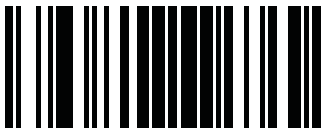

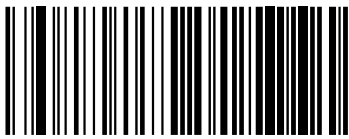

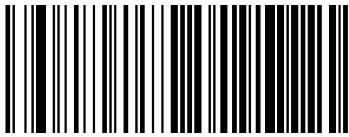
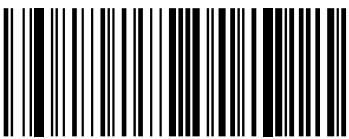

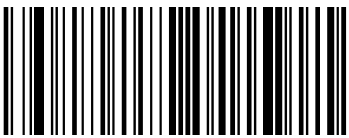
Add-Ons — cont.

Optional Add-On Timer — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Optional Add-on Timer = 60ms
 Optional Add-on Timer = 70ms	
	 Optional Add-on Timer = 100ms
 Optional Add-on Timer = 120ms	
	 Optional Add-on Timer = 140ms
 Optional Add-on Timer = 160ms	

Add-Ons — cont.

Optional Add-On Timer — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Optional Add-on Timer = 180ms
 Optional Add-on Timer = 200ms	
	 Optional Add-on Timer = 220ms
 Optional Add-on Timer = 240ms	
	 Optional Add-on Timer = 260ms
 Optional Add-on Timer = 280ms	
	 Optional Add-on Timer = 300ms

Add-Ons — cont.

Optional GS1-128 Add-On Timer

This option sets the timer expiration value to read the added part after reading the linear EAN/UPC part. For UPC/EAN add-ons other than those of that type, see "Optional Add-On Timer" on page 151.

 ENTER/EXIT PROGRAMMING MODE	
	 Optional GS1-128 Add-On Timer = Disable
 Optional GS1-128 Add-On Timer = 10ms	
	 Optional GS1-128 Add-On Timer = 20ms
 Optional GS1-128 Add-On Timer = 30ms	
	 Optional GS1-128 Add-On Timer = 40ms
 Optional GS1-128 Add-On Timer = 50ms	

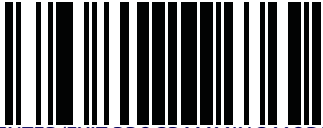



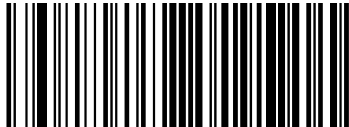



Add-Ons — cont.

Optional GS1-128 Add-On Timer — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Optional GS1-128 Add-On Timer = 60ms
 Optional GS1-128 Add-On Timer = 70ms	
	 Optional GS1-128 Add-On Timer = 100ms
 Optional GS1-128 Add-On Timer = 120ms	
	 Optional GS1-128 Add-On Timer = 140ms
 Optional GS1-128 Add-On Timer = 160ms	

Add-Ons — cont.

Optional GS1-128 Add-On Timer — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Optional GS1-128 Add-On Timer = 180ms
 Optional GS1-128 Add-On Timer = 200ms	
	 Optional GS1-128 Add-On Timer = 220ms
 Optional GS1-128 Add-On Timer = 240ms	
	 Optional GS1-128 Add-On Timer = 260ms
 Optional GS1-128 Add-On Timer = 280ms	
	 Optional GS1-128 Add-On Timer = 300ms

Add-Ons — cont.

P2 Add-Ons Minimum Reads

This feature specifies the minimum number of times a P2 add-on must be read before it is marked as valid and then combined with a base label.

 ENTER/EXIT PROGRAMMING MODE	
	 P2 Add-Ons Minimum Reads = 1
 P2 Add-Ons Minimum Reads = 2	
	 P2 Add-Ons Minimum Reads = 3
 P2 Add-Ons Minimum Reads = 4	

Add-Ons — cont.

P5 Add-Ons Minimum Reads

This feature specifies the minimum number of times a P5 add-on must be read before it is marked as valid and then combined with a base label.

 ENTER/EXIT PROGRAMMING MODE	
	 P5 Add-Ons Minimum Reads = 1
 P5 Add-Ons Minimum Reads = 2	
	 P5 Add-Ons Minimum Reads = 3
 P5 Add-Ons Minimum Reads = 4	

Add-Ons — cont.

GS1-128 Add-Ons Minimum Reads

This feature specifies the minimum number of times an GS1-128 add-on must be read before it is marked as valid and then combined with a base label.

 ENTER/EXIT PROGRAMMING MODE	
	 GS1-128 Add-Ons Minimum Reads = 1
 GS1-128 Add-Ons Minimum Reads = 2	
	 GS1-128 Add-Ons Minimum Reads = 3
 GS1-128 Add-Ons Minimum Reads = 4	

GS1 DataBar™ Omnidirectional

The following options apply to the GS1 DataBar™ Omnidirectional (formerly RSS-14) symbology.

GS1 DataBar™ Omnidirectional Enable/Disable

When disabled, the reader will not read GS1 DataBar™ Omnidirectional barcodes.



GS1 DataBar™ Omnidirectional GS1-128 Emulation

When enabled, GS1 DataBar™ Omnidirectional barcodes will be translated to the GS1-128 label data format.



GS1 DataBar™ Omnidirectional — cont.

GS1 DataBar™ Omnidirectional Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar™ Omnidirectional label must be decoded before it is accepted as good read.



GS1 DataBar™ Expanded

The following options apply to the GS1 DataBar™ Expanded (formerly RSS Expanded) symbology.

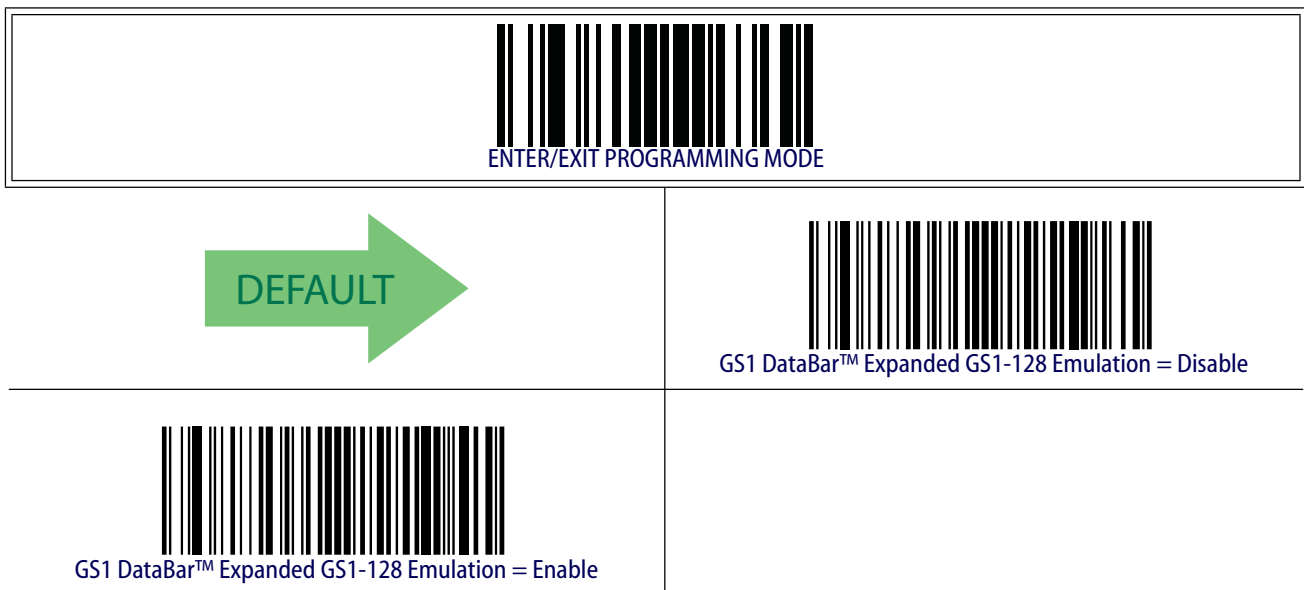
GS1 DataBar™ Expanded Enable/Disable

When disabled, the reader will not read GS1 DataBar™ Expanded barcodes.



GS1 DataBar™ Expanded GS1-128 Emulation

When enabled, GS1 DataBar™ Expanded barcodes will be translated to the GS1-128 label data format.



GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar™ Expanded label must be decoded before it is accepted as good read.



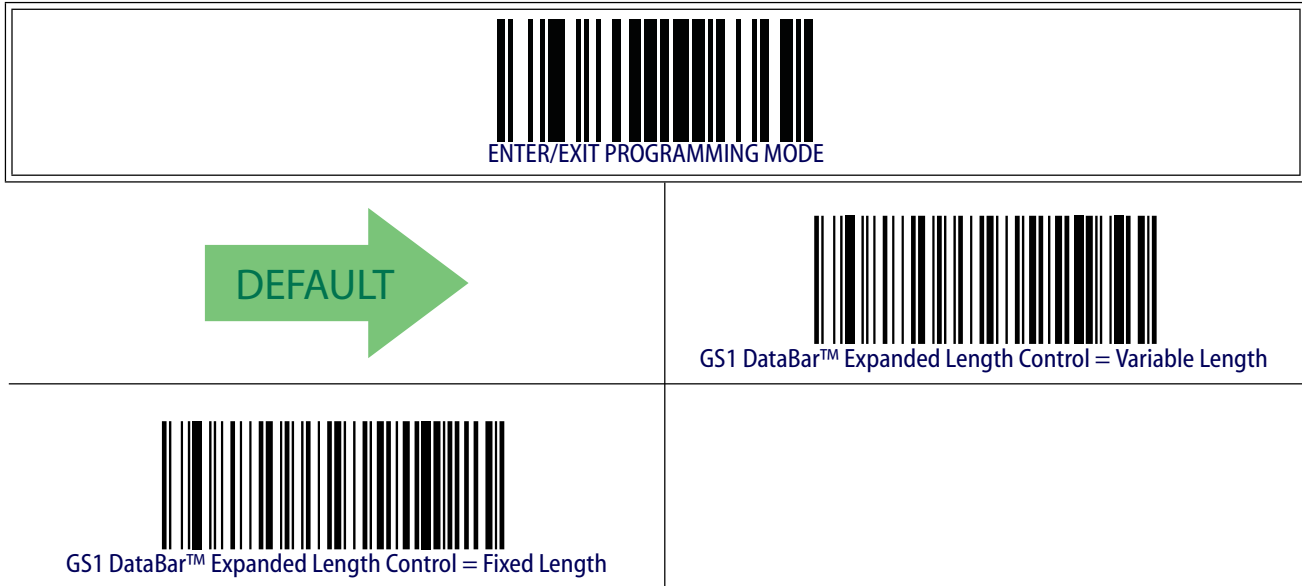
GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Length Control

This feature specifies either variable length decoding or fixed length decoding for the GS1 DataBar™ Expanded symbology.

Variable Length. For variable-length decoding, a minimum length may be set.

Fixed Length. For fixed-length decoding, two different lengths may be set.



GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Set Length 1

This feature specifies one of the barcode lengths for [GS1 DataBar™ Expanded Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). Length includes the barcode's data characters only.

The length can be set from 1 to 74 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 74). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT GS1 DataBar™ EXPANDED LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.




This completes the procedure. See [Table 19](#) for some examples of how to set this feature.


Table 19. GS1 DataBar™ Expanded Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Character	07 Characters	52 Characters	74 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT GS1 DataBar™ EXPANDED LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'0' and '7'	'5' and '2'	'7' AND '4'
5	Scan ENTER/EXIT PROGRAMMING MODE				

GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select GS1 DataBar™ Expanded Set Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL

 01 = Length 1 is 1 Character

GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Set Length 2

This feature specifies one of the barcode lengths for [GS1 DataBar™ Expanded Length Control](#). Length 2 is the maximum label length if in [Variable Length Mode](#), or the second fixed length if in [Fixed Length Mode](#). Length includes the barcode’s data characters only.

The length can be set from 1 to 74 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 74). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT GS1 DataBar™ EXPANDED LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

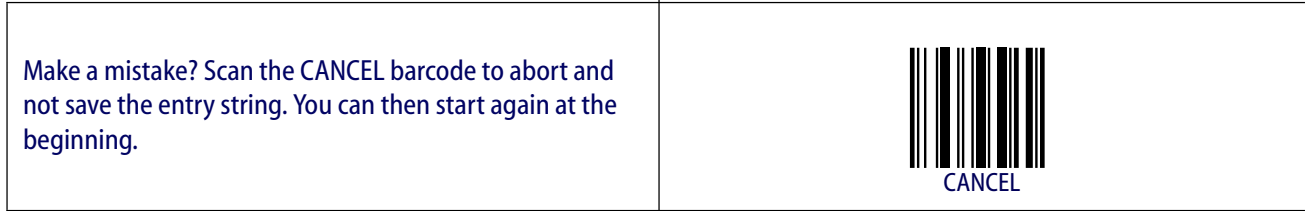
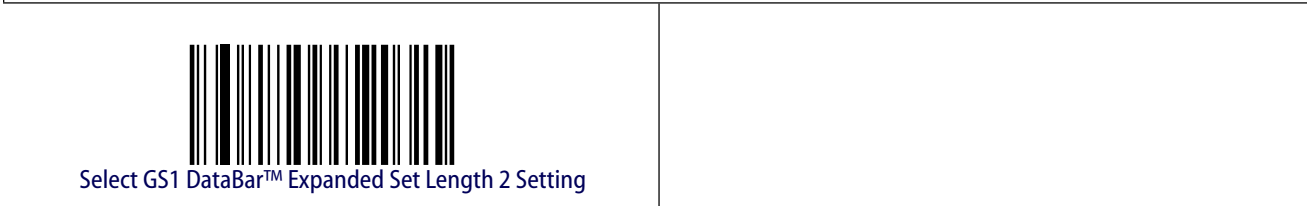
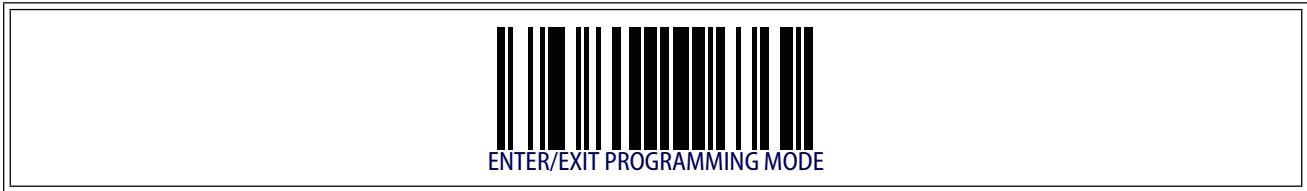
This completes the procedure. See [Table 20](#) for some examples of how to set this feature.

Table 20. GS1 DataBar™ Expanded Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 (ignore second length)	07 Characters	52 Characters	74 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT GS1 DataBar™ EXPANDED LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'5' and '2'	'7' and '4'
5	Scan ENTER/EXIT PROGRAMMING MODE				

GS1 DataBar™ Expanded — cont.

GS1 DataBar™ Expanded Set Length 2 — cont.



GS1 DataBar™ Limited

The following options apply to the GS1 DataBar™ Limited (formerly RSS Limited) symbology.

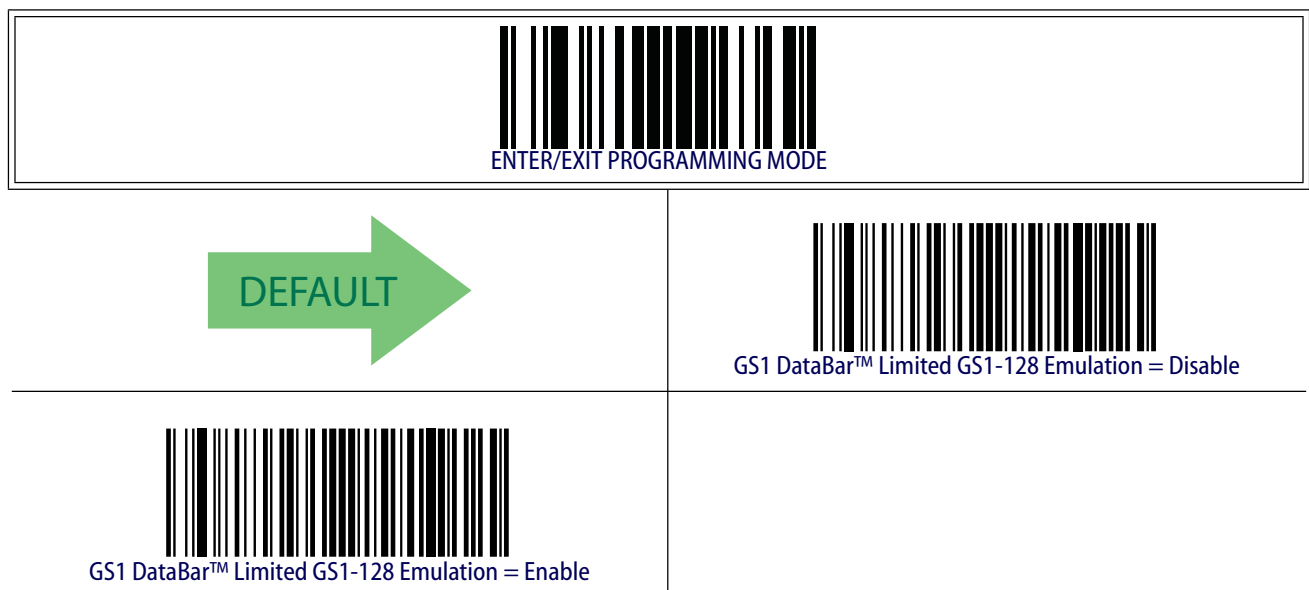
GS1 DataBar™ Limited Enable/Disable

When disabled, the reader will not read GS1 DataBar™ Limited barcodes.



GS1 DataBar™ Limited GS1-128 Emulation

When enabled, GS1 DataBar™ Limited barcodes will be translated to the GS1-128 label data format.



GS1 DataBar™ Limited — cont.

GS1 DataBar™ Limited Minimum Reads

This feature specifies the minimum number of consecutive times a GS1 DataBar™ Limited label must be decoded before it is accepted as good read.



Code 39

The following options apply to the Code 39 symbology.

Code 39 Enable/Disable


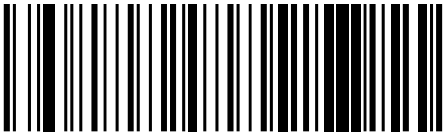
When disabled, the reader will not read Code 39 barcodes.



Code 39 — cont.

Code 39 Check Character Calculation

Enable this option to enables/disables calculation and verification of an optional Code 39 check character. When disabled, any check character in the label is treated as a data character

 ENTER/EXIT PROGRAMMING MODE	
	 Code 39 Check Character Calculation = Don't Calculate
 Code 39 Check Character Calculation = Calculate Std Check	 DEFAULT
	 Code 39 Check Character Calculation = Calculate Mod 7 Check
 Code 39 Check Character Calculation = Enable Italian Post Check	
	 Code 39 Check Character Calculation = Enable Daimler Chrysler Check

Code 39 — cont.

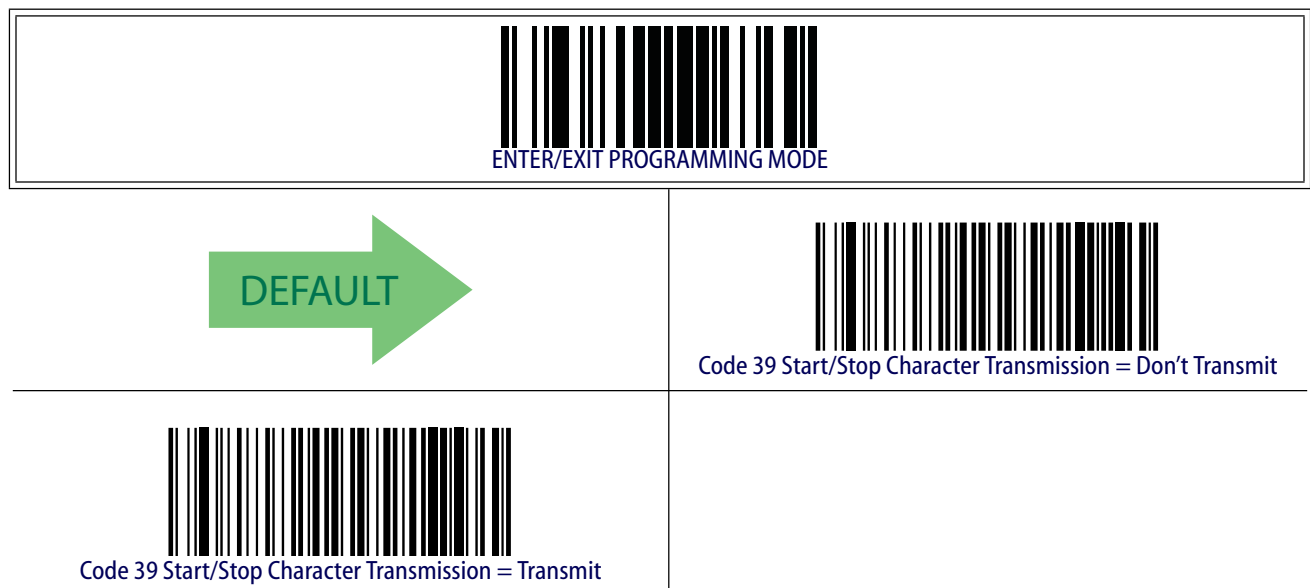
Code 39 Check Character Transmission

Enable this option to transmit the check character along with Code 39 barcode data.



Code 39 Start/Stop Character Transmission

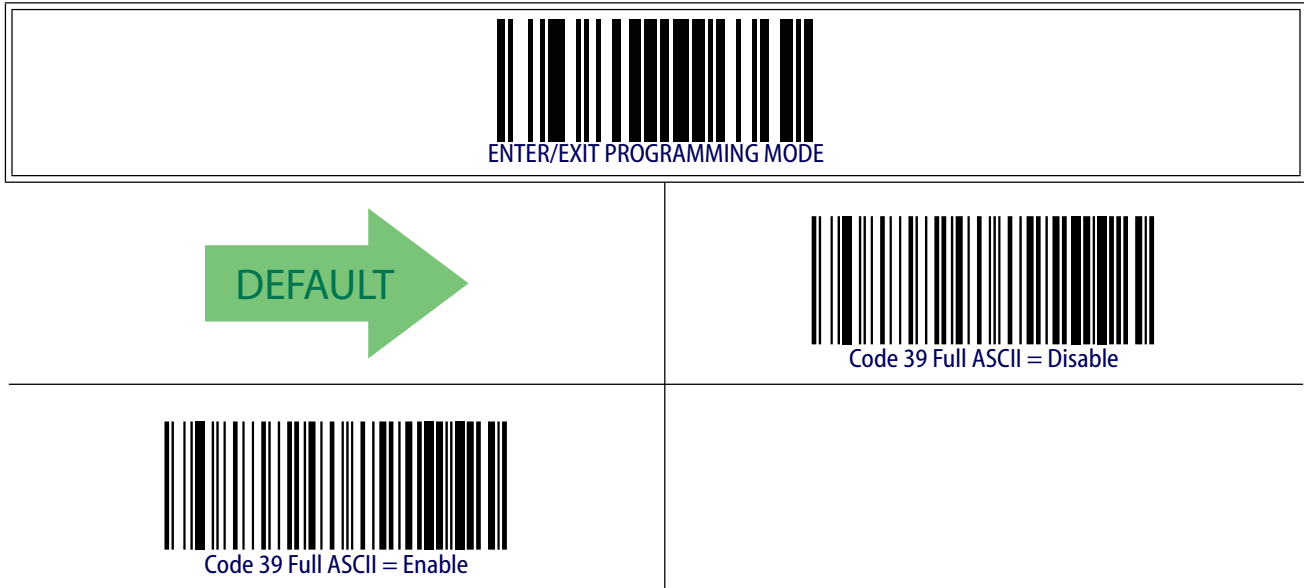
Enable this option to enable/disable transmission of Code 39 start and stop characters.



Code 39 — cont.

Code 39 Full ASCII

In Code 39 decoding, this enables/disables the translation of Code 39 characters to Code 39 full-ASCII characters.



Code 39 — cont.

Code 39 Quiet Zones

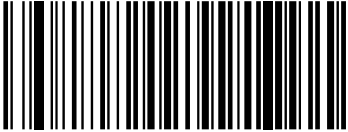
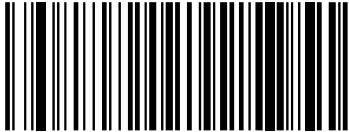
This feature specifies the number of quiet zones for Code 39 labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

 <p>ENTER/EXIT PROGRAMMING MODE</p>	
 <p>Code 39 Quiet Zones = Quiet Zone on one side</p>	
	 <p>Code 39 Quiet Zones = Quiet Zones on two sides</p>
 <p>Code 39 Quiet Zones = Auto</p>	 <p>DEFAULT</p>
	 <p>Code 39 Quiet Zones = Virtual Quiet Zones on two sides</p>

Code 39 — cont.

Code 39 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 39 label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 39 Minimum Reads = 1
 Code 39 Minimum Reads = 2	
	 Code 39 Minimum Reads = 3
 Code 39 Minimum Reads = 4	

Code 39 — cont.

Code 39 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

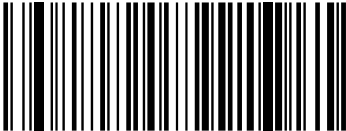


This configuration item applies to Code 39 and Code 32.

NOTE

Code 39 — cont.

Code 39 Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Code 39 Decoding Level = 1	
	 Code 39 Decoding Level = 2
 Code 39 Decoding Level = 3	 DEFAULT
	 Code 39 Decoding Level = 4
 Code 39 Decoding Level = 5	

Code 39 — cont.

Code 39 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 39 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Code 39 — cont.

Code 39 Set Length 1

This feature specifies one of the barcode lengths for [Code 39 Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). Length includes the barcode's data characters only.

The length can be set from 0 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 0 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 39 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

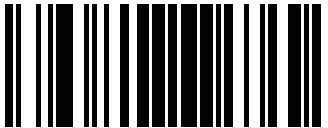
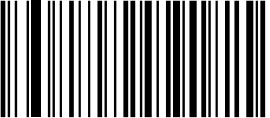

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

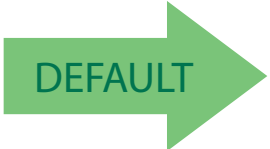
This completes the procedure. See [Table 21](#) for some examples of how to set this feature.

Table 21. Code 39 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 39 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 39 — cont.
Code 39 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Code 39 Set Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL


DEFAULT 02 = Length 1 is 2 Characters

Code 39 — cont.

Code 39 Set Length 2

This feature specifies one of the barcode lengths for [Code 39 Length Control](#). Length 2 is the maximum label length if in [Variable Length Mode](#), or the second fixed length if in [Fixed Length Mode](#). Length includes the barcode's check, data, and full-ASCII shift characters. The length does not include start/stop characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 39 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake, before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

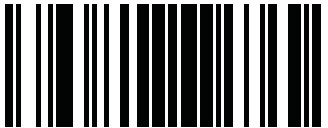


5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

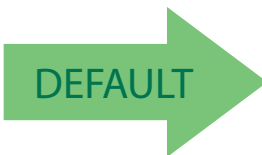
This completes the procedure. See [Table 22](#) for some examples of how to set this feature.

Table 22. Code 39 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 39 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 39 — cont.
Code 39 Set Length 2 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Code 39 Length 2 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL


 50 = Length 2 is 50 Characters

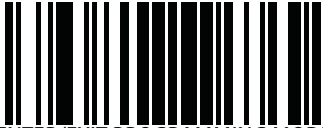
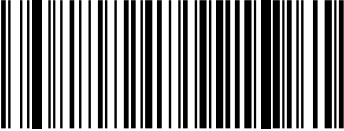
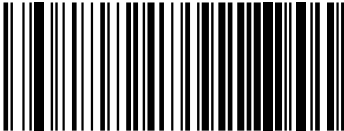

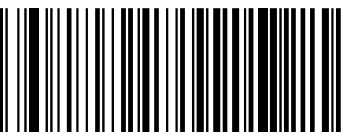

Code 39 — cont.

Code 39 Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Code 39 labels.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 39 Interdigit Ratio = Disable
 Code 39 Interdigit Ratio = 1	
	 Code 39 Interdigit Ratio = 2
 Code 39 Interdigit Ratio = 3	
 DEFAULT	 Code 39 Interdigit Ratio = 4
 Code 39 Interdigit Ratio = 5	

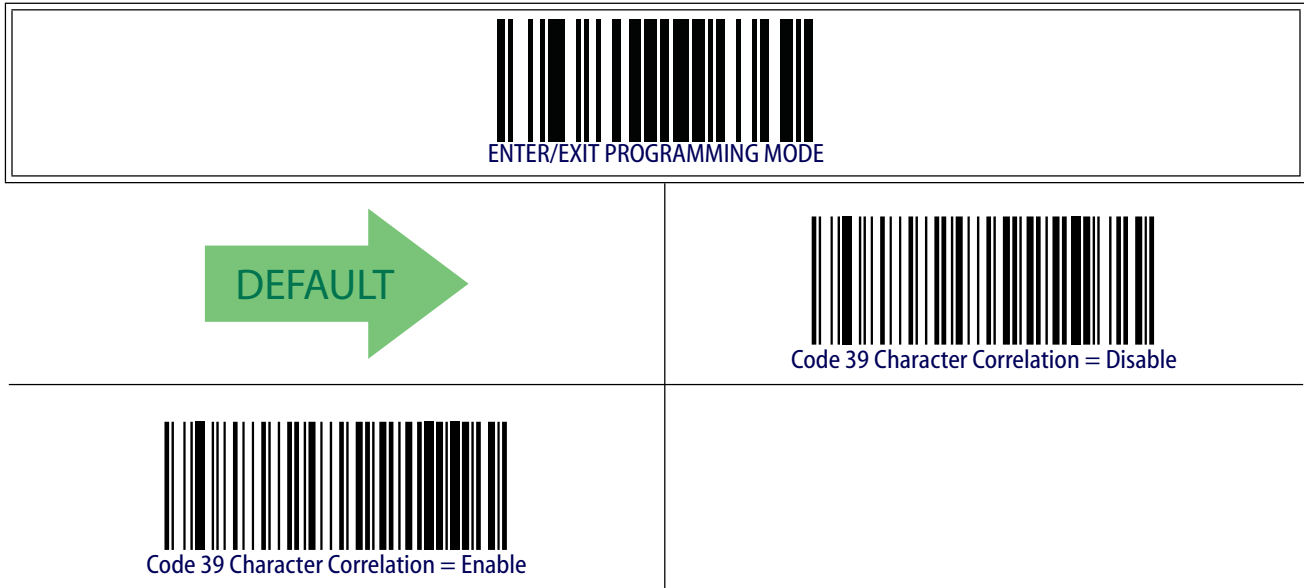
Code 39 — cont.
Code 39 Interdigit Ratio — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 39 Interdigit Ratio = 6
 Code 39 Interdigit Ratio = 7	
	 Code 39 Interdigit Ratio = 8
 Code 39 Interdigit Ratio = 9	
	 Code 39 Interdigit Ratio = 10

Code 39 — cont.

Code 39 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Code 39 Stitching

This option enables/disables stitching for Code 39 labels. When parts of a Code 39 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.



Code 32

The following options apply to the Code 32 (Italian Pharmaceutical Code) symbology.

Code 32 Enable/Disable

When disabled, the reader will not read Code 32 barcodes.



Code 32 Feature Setting Exceptions



NOTE

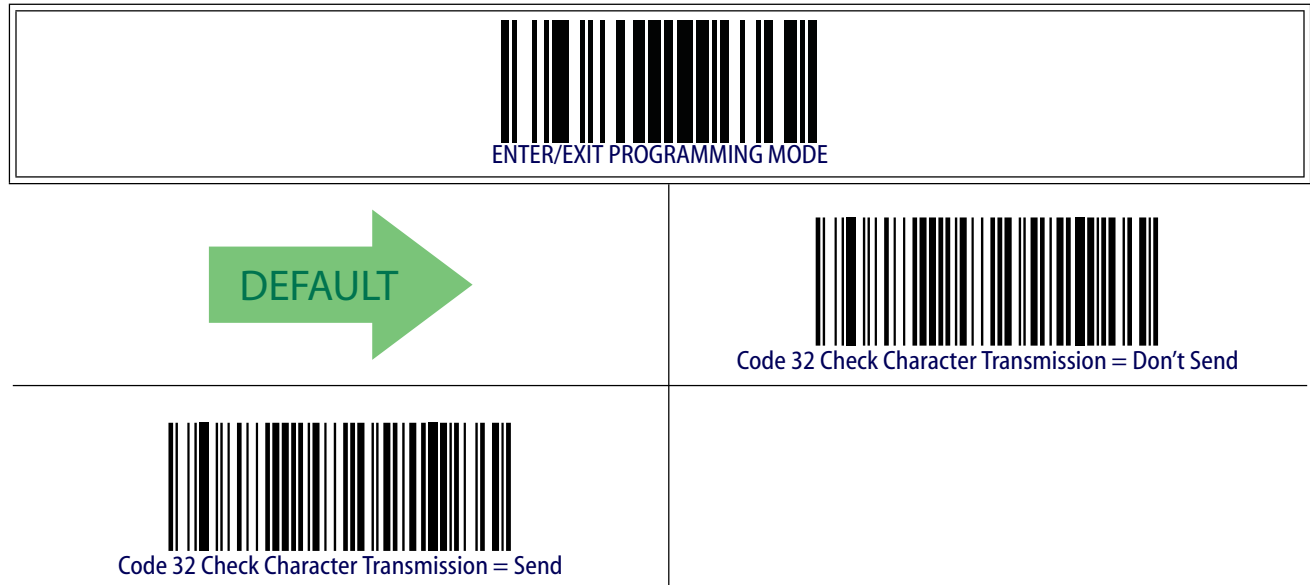
The following features are set for Code 32 by using these Code 39 settings:

- "Code 39 Quiet Zones" on page 175
- "Code 39 Minimum Reads" on page 176
- "Code 39 Decoding Level" on page 177
- "Code 39 Interdigit Ratio" on page 184
- "Code 39 Character Correlation" on page 186
- "Code 39 Stitching" on page 187

Code 32 — cont.

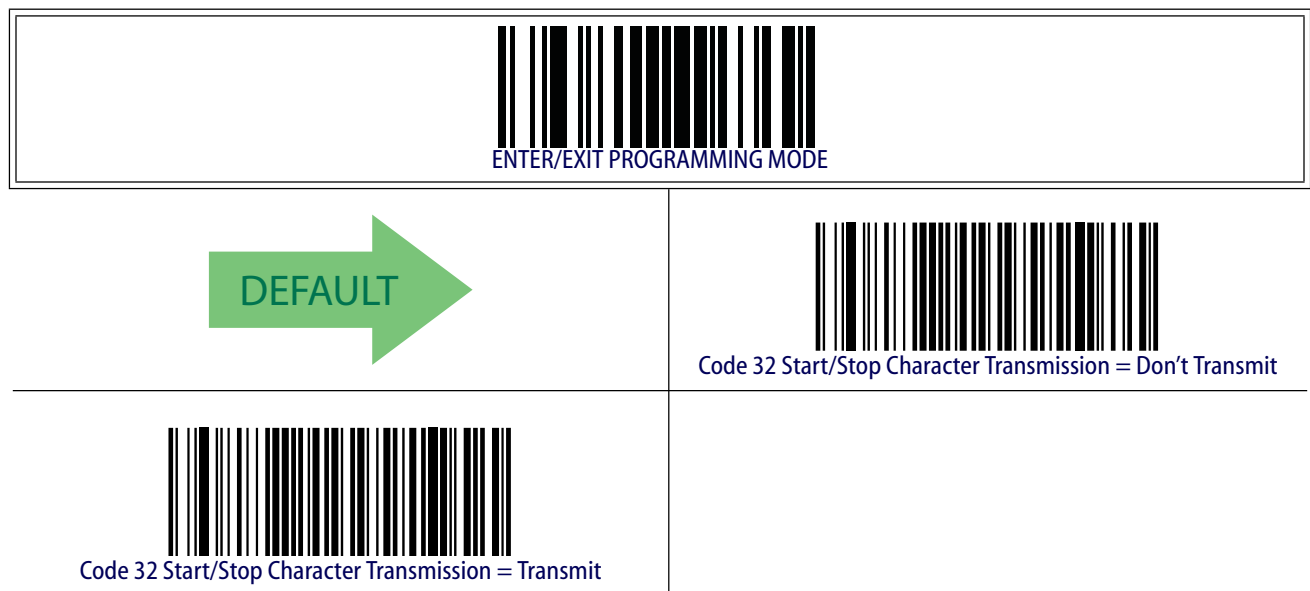
Code 32 Check Character Transmission

Enable this option to transmit the check character along with Code 32 barcode data.



Code 32 Start/Stop Character Transmission

This option enables/disables transmission of Code 32 start and stop characters.



Code 128

The following options apply to the Code 128 symbology.

Code 128 Enable/Disable

When disabled, the reader will not read Code 128 barcodes.



Expand Code 128 to Code 39

This feature enables/disables expansion of Code 128 labels to Code 39 labels.



Code 128 — cont.

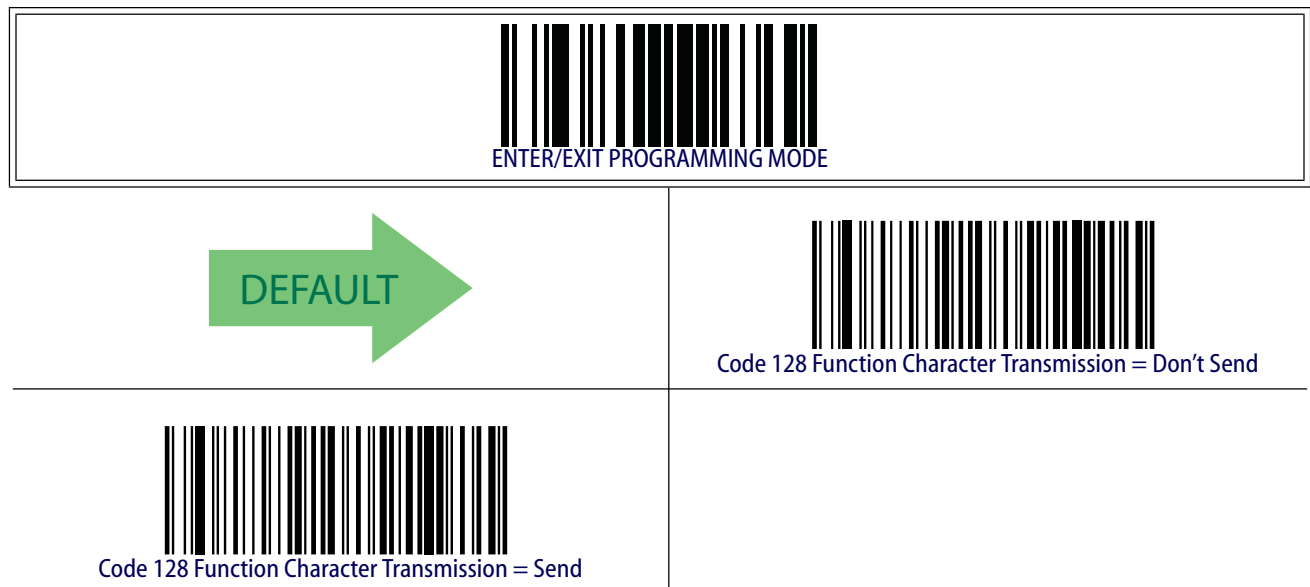
Code 128 Check Character Transmission

Enable this option to transmit the check character along with Code 128 barcode data.



Code 128 Function Character Transmission

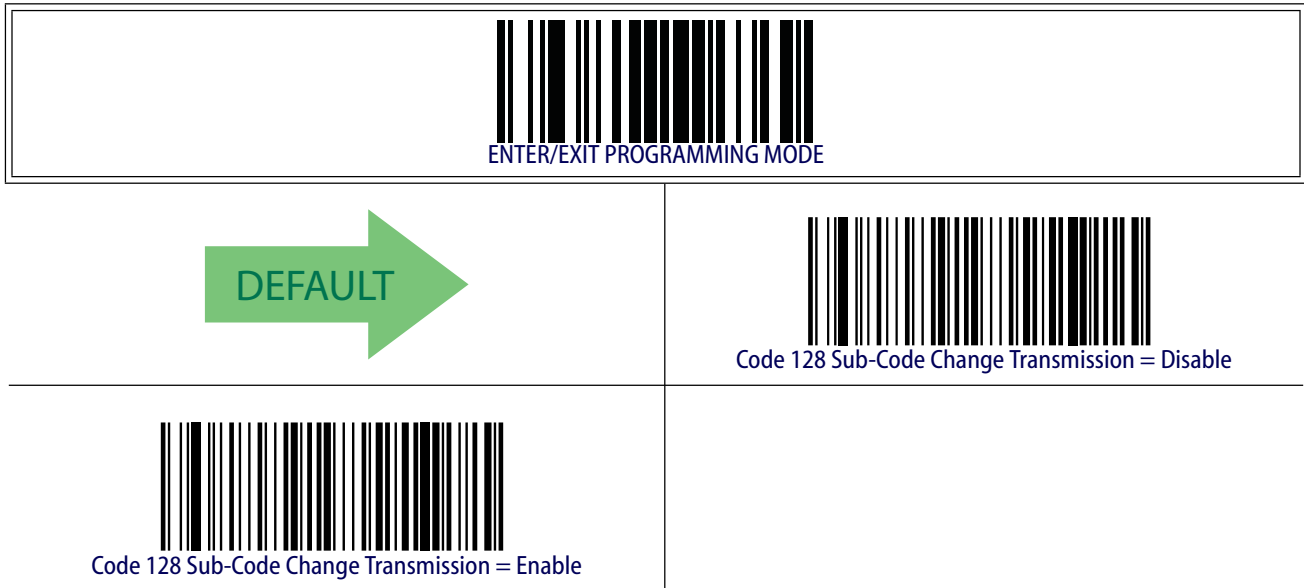
Enables/disables transmission of Code128 function characters 1, 2, 3, and 4.



Code 128 — cont.

Code 128 Sub-Code Change Transmission

Enables/disables the transmission of “Sub-Code exchange” characters (NOT transmitted by standard decoding).



Code 128 — cont.

Code 128 Quiet Zones

This feature specifies the number of quiet zones for Code 128 labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

 <p>ENTER/EXIT PROGRAMMING MODE</p>	
	 <p>Code 128 Quiet Zones = No Quiet Zones</p>
 <p>Code 128 Quiet Zones = Quiet Zone on one side</p>	
	 <p>Code 128 Quiet Zones = Quiet Zones on two sides</p>
 <p>Code 128 Quiet Zones = Auto</p>	 <p>DEFAULT</p>
	 <p>Code 128 Quiet Zones = Virtual Quiet Zones on two sides</p>

Code 128 — cont.

Code 128 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 128 label must be decoded before it is accepted as good read.



Code 128 — cont.

Code 128 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Code 128 — cont.

Code 128 Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Code 128 Decoding Level = 1	
	 Code 128 Decoding Level = 2
 Code 128 Decoding Level = 3	 DEFAULT
	 Code 128 Decoding Level = 4
 Code 128 Decoding Level = 5	

Code 128 — cont.

Code 128 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 128 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Code 128 — cont.

Code 128 Set Length 1

This feature specifies one of the barcode lengths for [Code 128 Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). Length includes the barcode's data characters only.

The length can be set from 1 to 80 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 80). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 128 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE


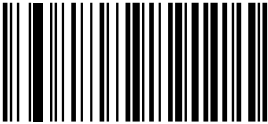
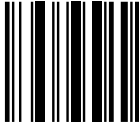
5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

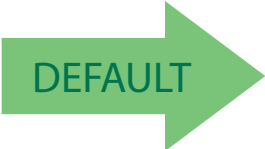
This completes the procedure. See [Table 23](#) for some examples of how to set this feature.

Table 23. Code 128 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Character	07 Characters	15 Characters	80 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 128 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'0' and '7'	'1' and '5'	'8' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 128 — cont.
Code 128 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Code 128 Set Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL


DEFAULT 01 = Length 1 is 1 Character

Code 128 — cont.

Code 128 Set Length 2

This feature specifies one of the barcode lengths for [Code 128 Length Control](#). Length 2 is the maximum label length if in [Variable Length Mode](#), or the second fixed length if in [Fixed Length Mode](#). Length includes the barcode's data characters only.

The length can be set from 1 to 80 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 80 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 128 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

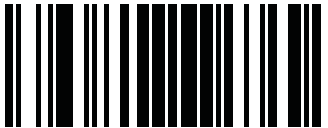


5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

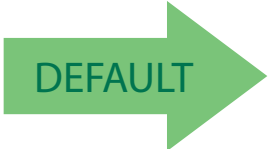
This completes the procedure. See [Table 24](#) for some examples of how to set this feature.

Table 24. Code 128 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	00 (Ignore This Length)	07 Characters	15 Characters	80 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 128 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'0' and 'F'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 128 — cont.
Code 128 Set Length 2 — cont.

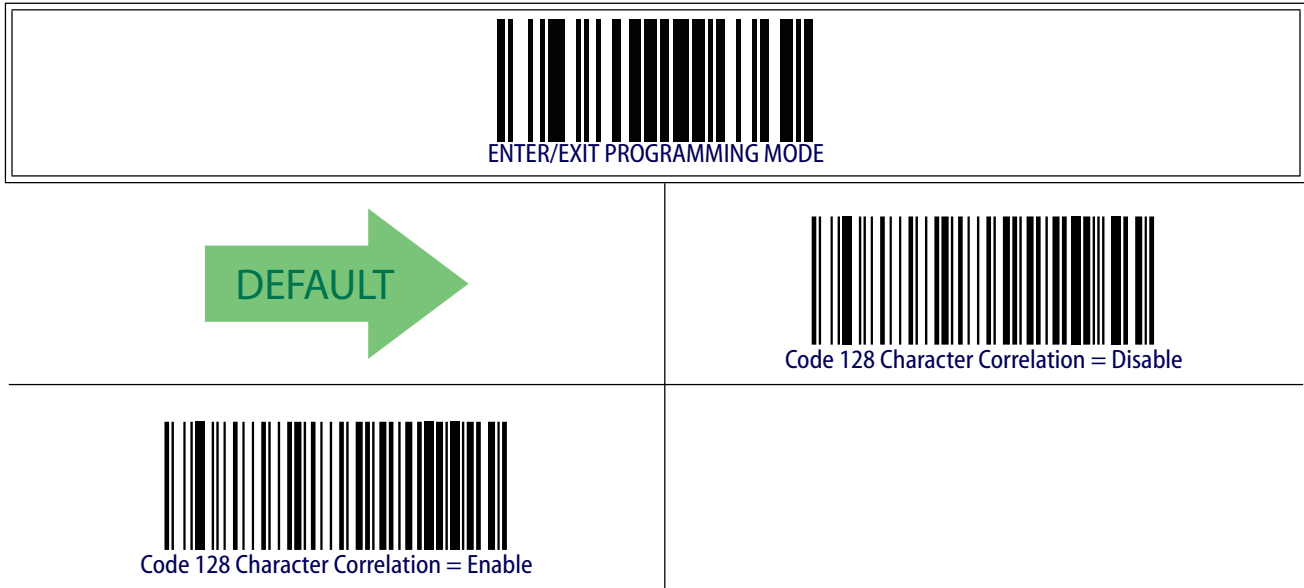
 ENTER/EXIT PROGRAMMING MODE	
 Select Code 128 Length 2 Setting	
<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	 CANCEL


 80 = Length 2 is 80 Characters

Code 128 — cont.

Code 128 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Code 128 — cont.

Code 128 Stitching

This option enables/disables stitching for Code 128 labels. When parts of a Code 128 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.



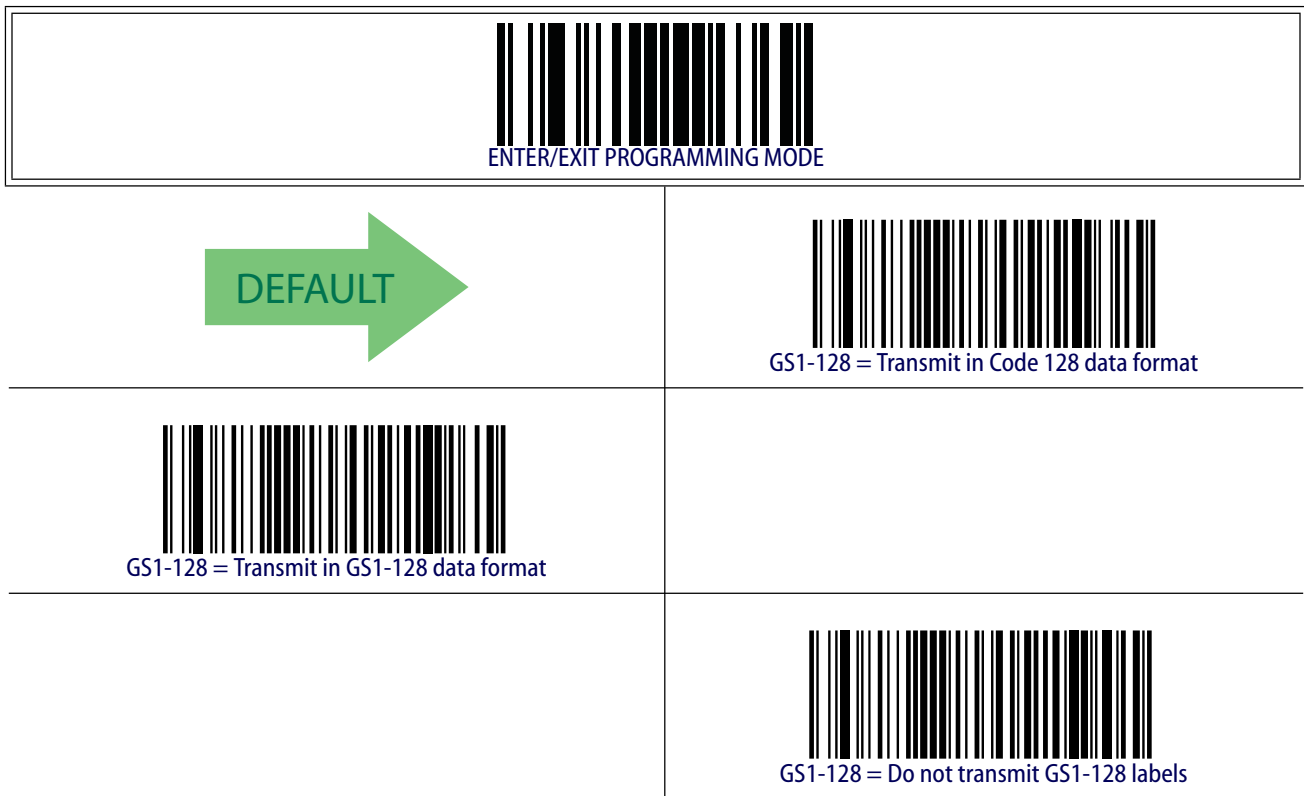
GS1-128

The following options apply to the GS1-128 symbology. (Also known as USS-128, GS1-128, GTIN-128, UCC-128, EAN-128.)

GS1-128 Enable

This option enables/disables the ability of the reader to translate GS1-128 labels to the GS1-128 data format. Options are:

- Transmit GS1-128 labels in Code 128 data format.
- Transmit GS1-128 labels in GS1-128 data format.
- Do not transmit GS1-128 labels.



Interleaved 2 of 5 (I 2 of 5)

The following options apply to the I 2 of 5 symbology.

I 2 of 5 Enable/Disable

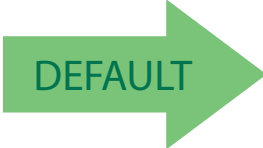

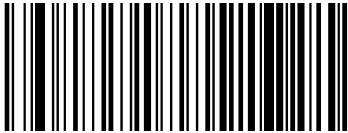
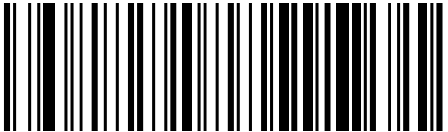

When disabled, the reader will not read I 2 of 5 barcodes.



Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Check Character Calculation

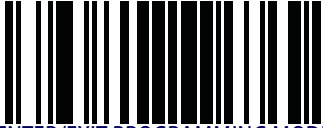

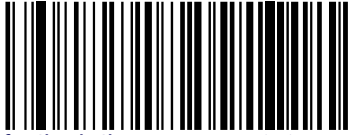
This option enables/disables calculation and verification of an optional I 2 of 5 check character.

 ENTER/EXIT PROGRAMMING MODE	
	 I 2 of 5 Check Character Calculation = Disable
 I 2 of 5 Check Character Calculation = Check Standard (Modulo 10)	
	 I 2 of 5 Check Character Calculation = Check German Parcel
 I 2 of 5 Check Character Calculation = Check DHL	
	 I 2 of 5 Check Character Calculation = Check Daimler Chrysler
 I 2 of 5 Check Character Calculation = Check Bosch	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Check Character Transmission

Enable this option to transmit the check character along with I 2 of 5 barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 I 2 of 5 Check Character Transmission = Don't Send
 I 2 of 5 Check Character Transmission = Send	 DEFAULT

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times an I 2 of 5 label must be decoded before it is accepted as good read.



Interleaved 2 of 5 (I 2 of 5) — cont.

2 of 5 Decoding Level



This configuration item applies to Interleaved 2 of 5, Datalogic 2 of 5 and Standard 2 of 5.

NOTE

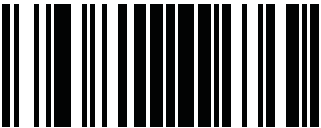
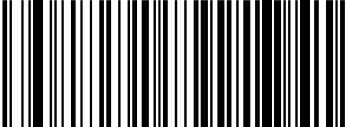
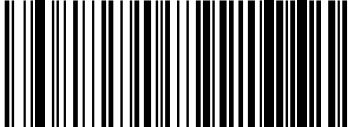




Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Interleaved 2 of 5 (I 2 of 5) — cont.

2 of 5 Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 2 of 5 Decoding Level = 1	
	 2 of 5 Decoding Level = 2
 2 of 5 Decoding Level = 3	 DEFAULT
	 2 of 5 Decoding Level = 4
 2 of 5 Decoding Level = 5	

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the I 2 of 5 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for [I 2 of 5 Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters in increments of two.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). The length must be an even number.
2. Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 1 SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

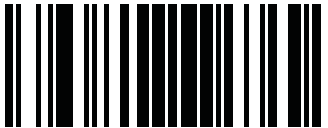


This completes the procedure. See [Table 27](#) for some examples of how to set this feature.

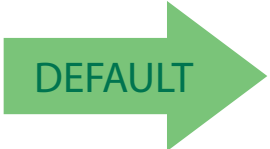
Table 25. I 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	2 Characters	6 Characters	14 Characters	50 Characters
2	Pad with leading zeroes to yield two digits	02	06	14	50
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT I 2 of 5 LENGTH 1 SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '2'	'0' and '6'	'1' and '4'	'5' AND '0'
6	Scan ENTER/EXIT PROGRAMMING MODE				

Interleaved 2 of 5 (I 2 of 5) — cont.

Datalogic 2 of 5 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select I 2 of 5 Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL

 **DEFAULT** 06 = Length 1 is 6 Characters

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for **I 2 of 5 Length Control**. Length 2 is the maximum label length if in **Variable Length Mode**, or the second fixed length if in **Fixed Length Mode**. The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50, or 0 to ignore this length). The length must be an even number.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 2 SETTING.
5. Scan the appropriate two digits from the keypad in **Appendix E, Keypad**, that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

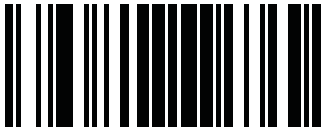
This completes the procedure. See Table 28 for some examples of how to set this feature.


Table 26. I 2 of 5 Length 2 Setting Examples


STEP	ACTION	EXAMPLES			
1	Desired Setting	Ignore This Length	4 Characters	14 Characters	50 Characters
2	Pad with leading zeroes to yield two digits	00	04	14	50
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT I 2 OF 5 LENGTH 2 SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '4'	'1' and '4'	'5' AND '0'
6	Scan ENTER/EXIT PROGRAMMING MODE				

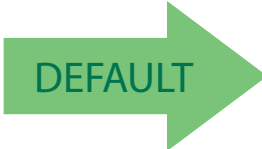
Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Set Length 2 — cont.

 ENTER/EXIT PROGRAMMING MODE

 Select I 2 of 5 Length 2 Setting	
-----------------------------------------------------------------------------------------------------------------------	--

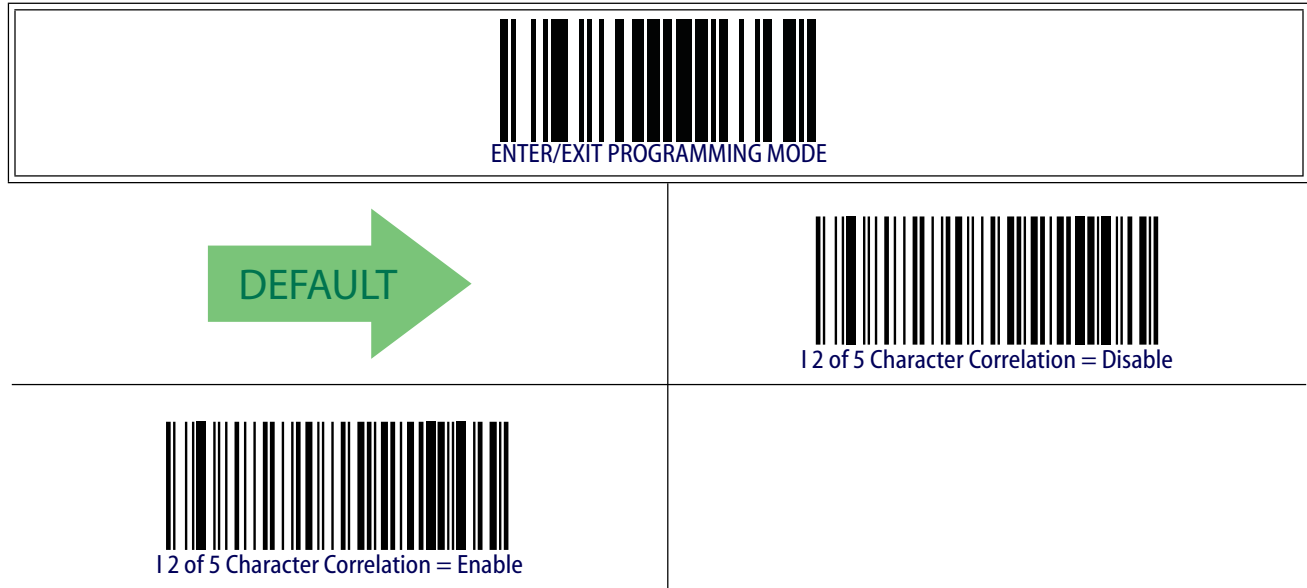
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL
----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 50 = Length 2 is 50 Characters

Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Interleaved 2 of 5 (I 2 of 5) — cont.

I 2 of 5 Stitching

This option enables/disables stitching for I 2 of 5 labels. When parts of a I 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.



Interleaved 2 of 5 (I 2 of 5) — cont.

Follett 2 of 5

The following options apply to the Follett 2 of 5 symbology.

Follett 2 of 5 Enable/Disable

Enables/Disables ability of imager to decode Follett 2 of 5 labels.



Datalogic 2 of 5

The following options apply to the Datalogic 2 of 5 symbology.

Datalogic 2 of 5 Enable/Disable

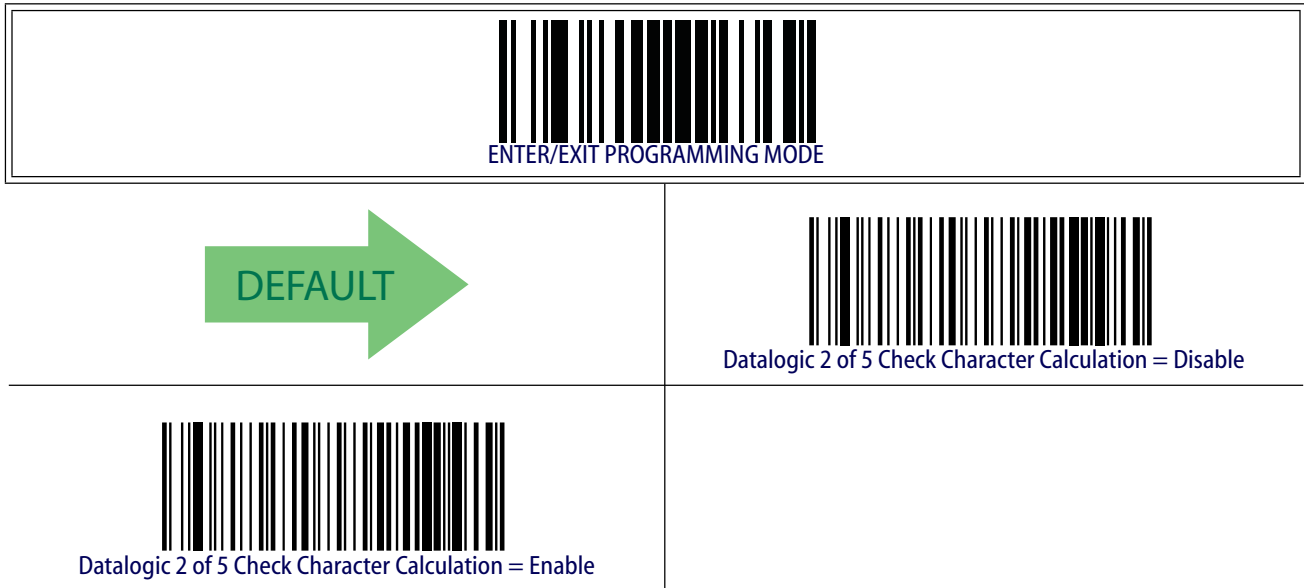
When disabled, the reader will not read Datalogic 2 of 5 barcodes.



Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional Datalogic 2 of 5 check character.



Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times an Datalogic 2 of 5 label must be decoded before it is accepted as good read.

 <p>ENTER/EXIT PROGRAMMING MODE</p>	
 <p>DEFAULT</p>	 <p>1 2 of 5 Minimum Reads = 1</p>
 <p>1 2 of 5 Minimum Reads = 2</p>	
	 <p>1 2 of 5 Minimum Reads = 3</p>
 <p>1 2 of 5 Minimum Reads = 4</p>	

Datalogic 2 of 5 Decoding Level



The Datalogic 2 of 5 Decoding Level feature is set using "2 of 5 Decoding Level" on page 209.

NOTE

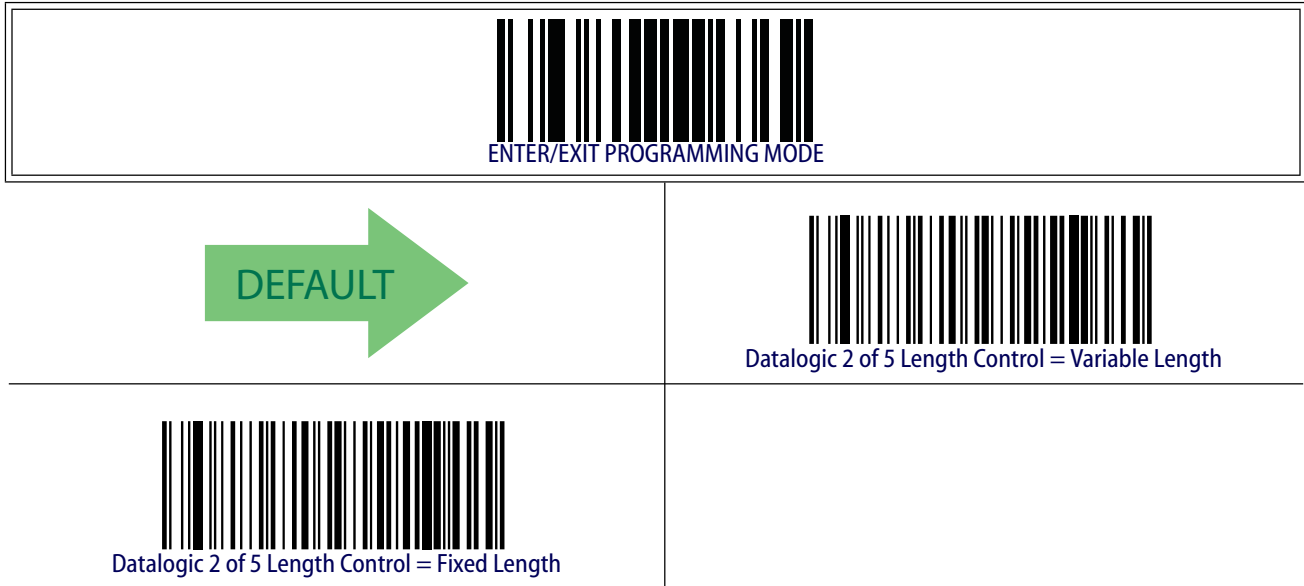
Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Datalogic 2 of 5 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for [Datalogic 2 of 5 Length Control](#). Length 1 is the minimum label length if in [Variable Length](#) Mode, or the first fixed length if in [Fixed Length](#) Mode. The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters in increments of two.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). The length must be an even number.
2. Pad the result with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT I 2 of 5 LENGTH 1 SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

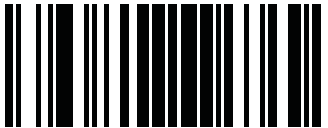
This completes the procedure. See [Table 27](#) for some examples of how to set this feature.


Table 27. Datalogic 2 of 5 Length 1 Setting Examples


STEP	ACTION	EXAMPLES			
1	Desired Setting	2 Characters	6 Characters	14 Characters	50 Characters
2	Pad with leading zeroes to yield two digits	02	06	14	50
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT Datalogic 2 of 5 LENGTH 1 SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '2'	'0' and '6'	'1' and '4'	'5' AND '0'
6	Scan ENTER/EXIT PROGRAMMING MODE				

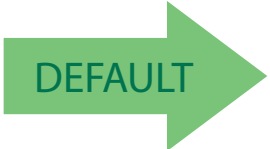
Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE

 Select Datalogic 2 of 5 Length 1 Setting	
-------------------------------------------------------------------------------------------------------------------------------	--

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL
----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 06 = Length 1 is 6 Characters

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for [Datalogic 2 of 5 Length Control](#). Length 2 is the maximum label length if in [Variable Length Mode](#), or the second fixed length if in [Fixed Length Mode](#). The length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50, or 0 to ignore this length). The length must be an even number.
2. Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
3. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
4. Scan the barcode: SELECT Datalogic 2 of 5 LENGTH 2 SETTING.
5. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

6. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

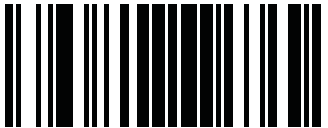
This completes the procedure. See [Table 28](#) for some examples of how to set this feature.


Table 28. Datalogic 2 of 5 Length 2 Setting Examples


STEP	ACTION	EXAMPLES			
1	Desired Setting	Ignore This Length	4 Characters	14 Characters	50 Characters
2	Pad with leading zeroes to yield two digits	00	04	14	50
3	Scan ENTER/EXIT PROGRAMMING MODE				
4	Scan SELECT DATALOGIC 2 OF 5 LENGTH 2 SETTING				
5	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '4'	'1' and '4'	'5' AND '0'
6	Scan ENTER/EXIT PROGRAMMING MODE				

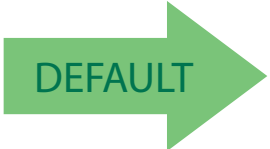
Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Set Length 2 — cont.

 ENTER/EXIT PROGRAMMING MODE

 Select Datalogic 2 of 5 Length 2 Setting	
-------------------------------------------------------------------------------------------------------------------------------	--

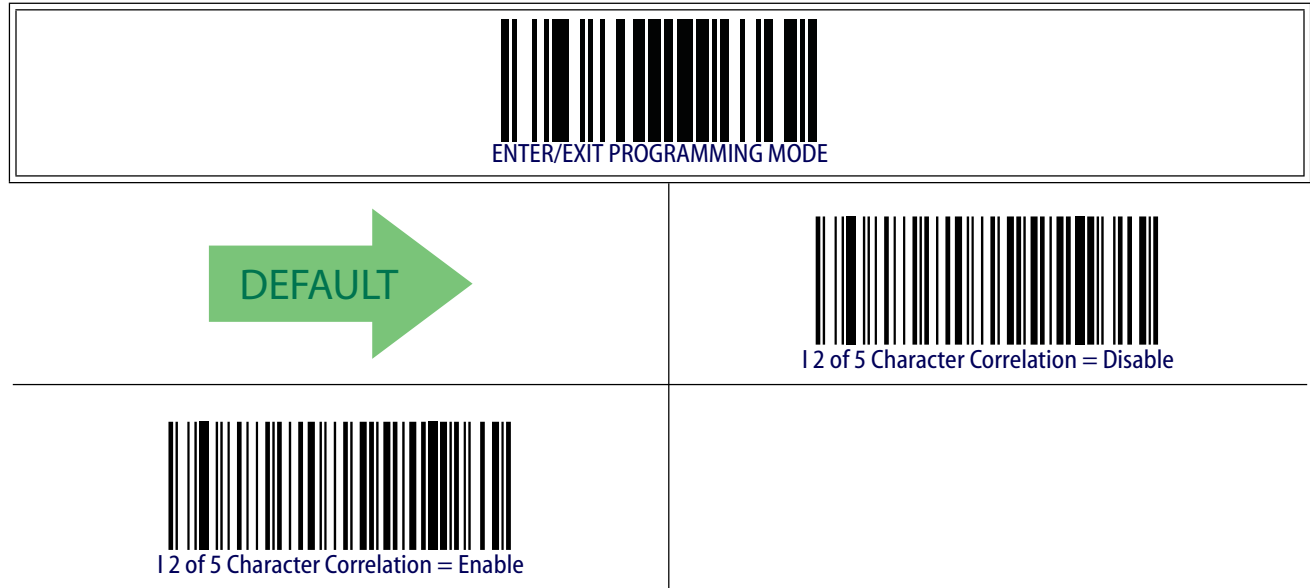
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL
----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 50 = Length 2 is 50 Characters

Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Datalogic 2 of 5 — cont.

Datalogic 2 of 5 Stitching

This option enables/disables stitching for Datalogic 2 of 5 labels. When parts of a Datalogic 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

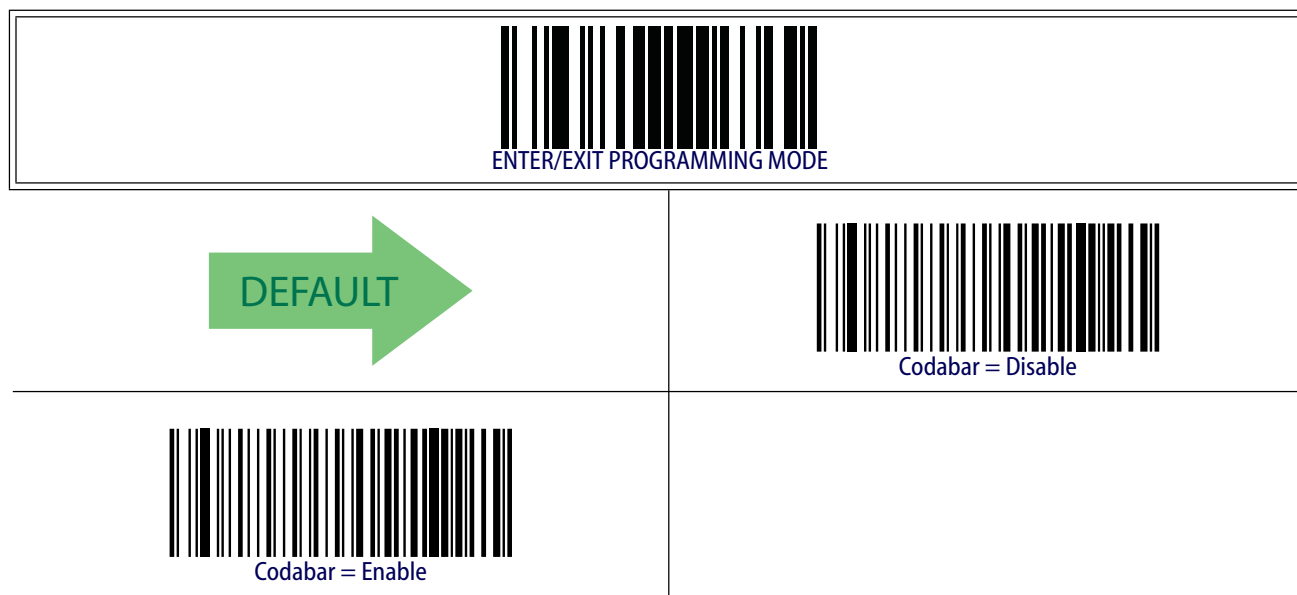


Codabar

The following options apply to the Codabar symbology.

Codabar Enable/Disable

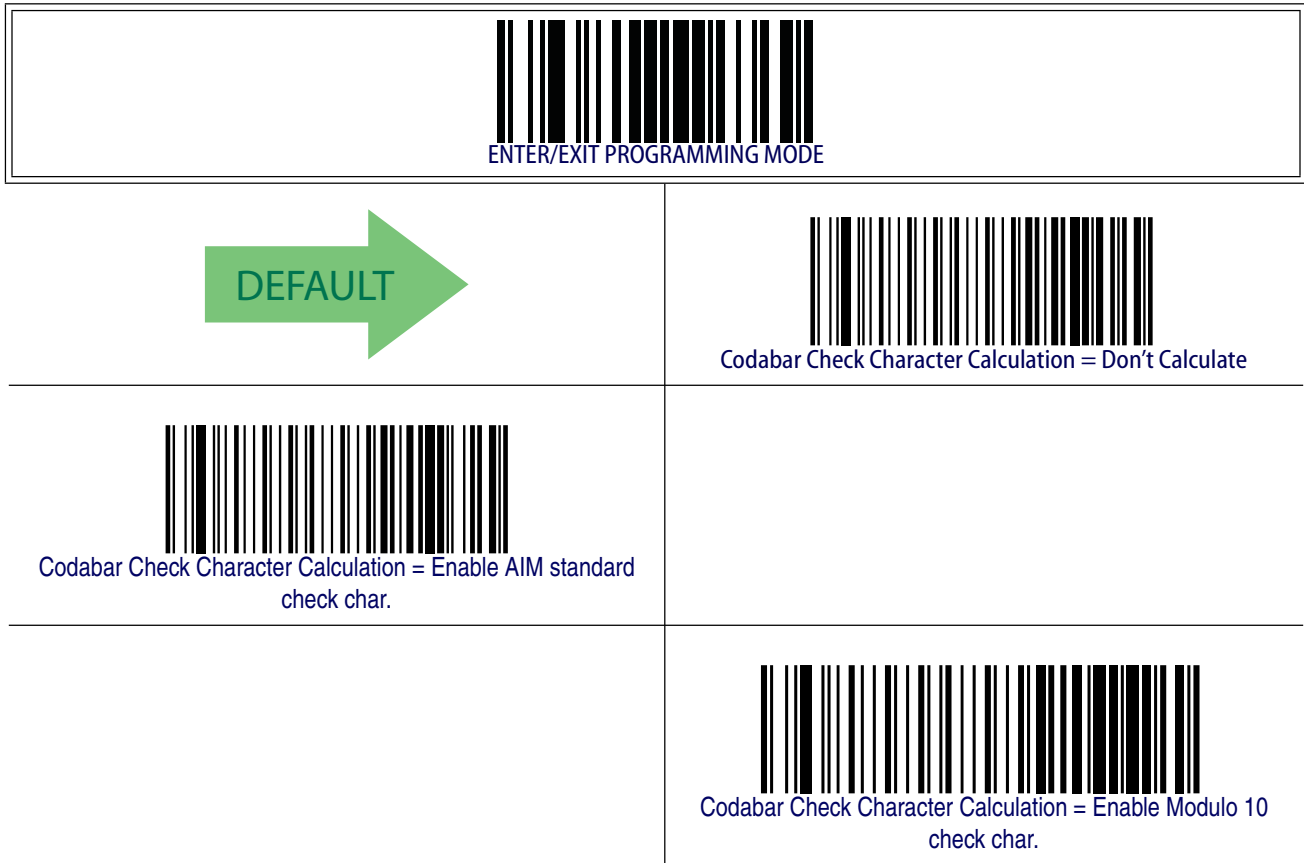
When disabled, the reader will not read Codabar barcodes.



Codabar — cont.

Codabar Check Character Calculation


Enable this option to enables/disables calculation and verification of an optional Codabar check character. When disabled, any check character in the label is treated as a data character



Codabar — cont.

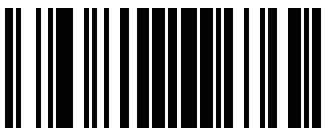
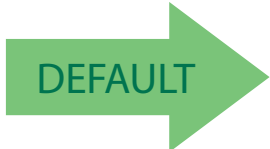

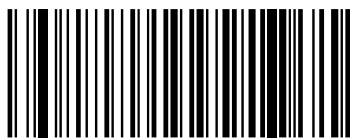
Codabar Check Character Transmission

Enable this option to transmit the check character along with Codabar barcode data.

 ENTER/EXIT PROGRAMMING MODE	
	 Codabar Check Character Transmission = Don't Send
 Codabar Check Character Transmission = Send	

Codabar Start/Stop Character Transmission

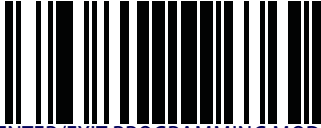
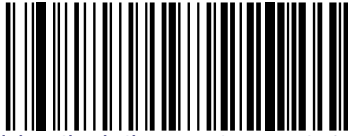
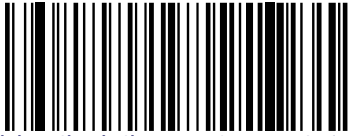

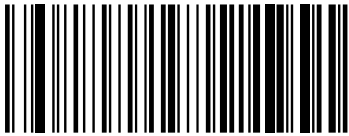

Enable this option to enable/disable transmission of Codabar start and stop characters.

 ENTER/EXIT PROGRAMMING MODE	
	 Codabar Start/Stop Character Transmission = Don't Transmit
 Codabar Start/Stop Character Transmission = Transmit	

Codabar — cont.

Codabar Start/Stop Character Set

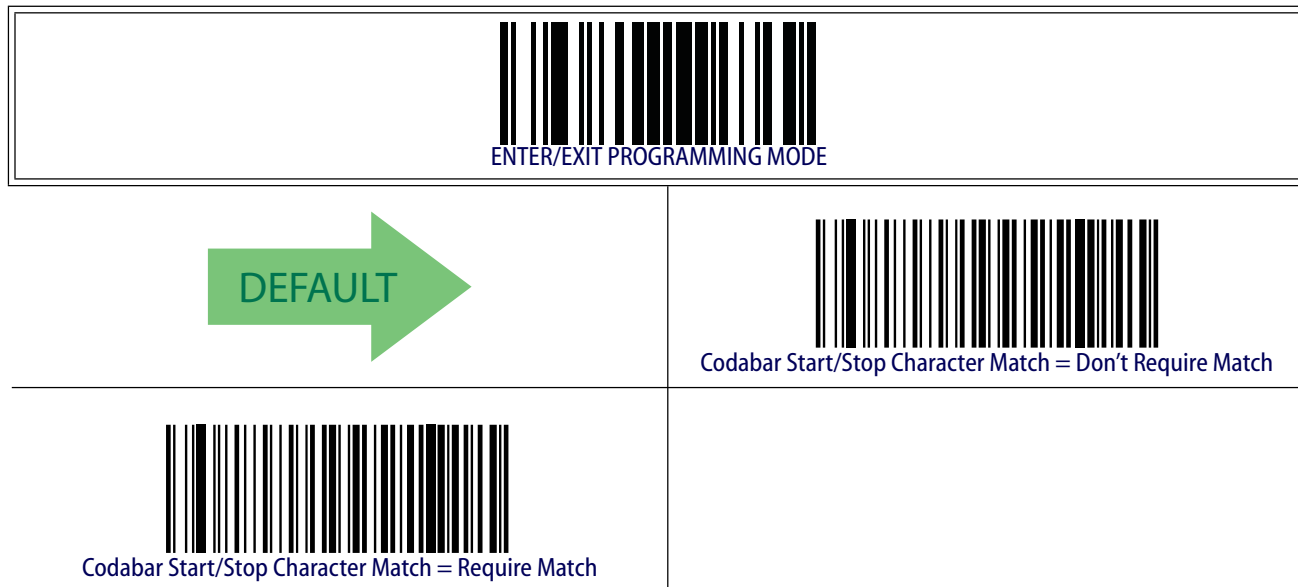
This option specifies the format of transmitted Codabar start/stop characters.

 ENTER/EXIT PROGRAMMING MODE	
	 Codabar Check Character Set = ABCD/TN*E
 Codabar Check Character Set = ABCD/ABCD	
	 Codabar Check Character Set = abcd/tn*e
 Codabar Check Character Set = abcd/abcd	 DEFAULT

Codabar — cont.

Codabar Start/Stop Character Match

When enabled, this option requires that start and stop characters match.



Codabar — cont.

Codabar Quiet Zones

This feature specifies the number of quiet zones for Codabar labels. Quiet zones are blank areas at the ends of a barcode and are typically 10 times the width of the narrowest bar or space in the label.

	
 Codabar Quiet Zones = Quiet Zone on one side	
	 Codabar Quiet Zones = Quiet Zones on two sides
 Codabar Quiet Zones = Auto	
	 Codabar Quiet Zones = Virtual Quiet Zones on two sides

Codabar — cont.

Codabar Minimum Reads

This feature specifies the minimum number of consecutive times a Codabar label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
 DEFAULT	 Codabar Minimum Reads = 1
 Codabar Minimum Reads = 2	
	 Codabar Minimum Reads = 3
 Codabar Minimum Reads = 4	

Codabar — cont.

Codabar Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Codabar — cont.

Codabar Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Codabar Decoding Level = 1	
	 Codabar Decoding Level = 2
 Codabar Decoding Level = 3	 DEFAULT
	 Codabar Decoding Level = 4
 Codabar Decoding Level = 5	

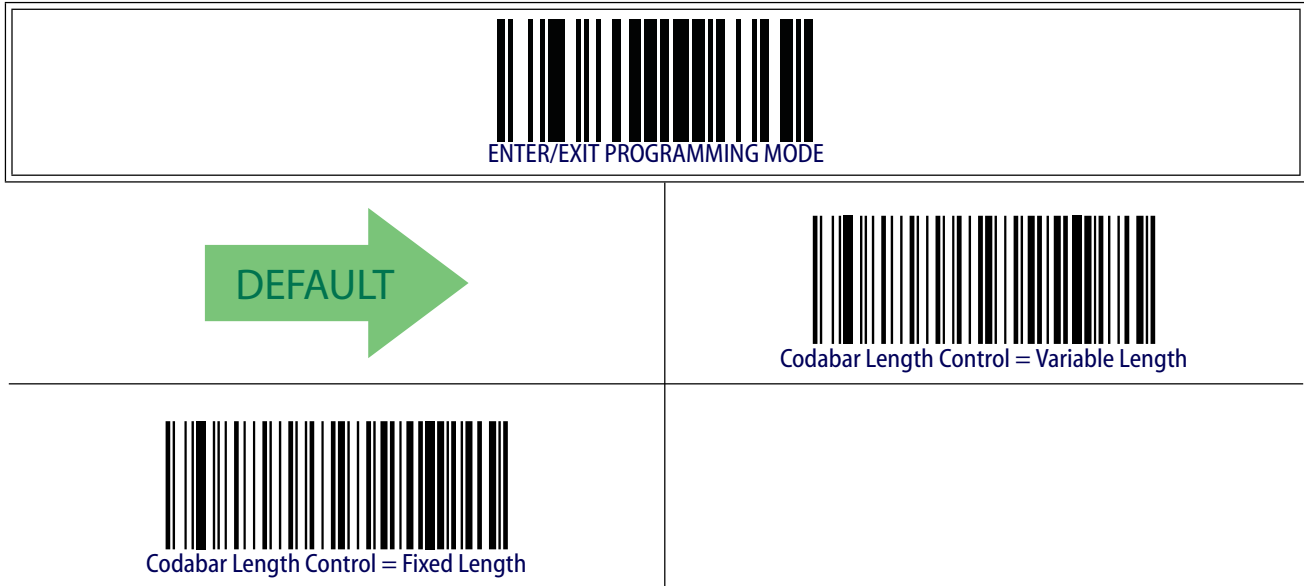
Codabar — cont.

Codabar Length Control

This feature specifies either variable length decoding or fixed length decoding for the Codabar symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Codabar — cont.

Codabar Set Length 1

This feature specifies one of the barcode lengths for [Codabar Length Control](#). Length 1 is the minimum label length if in [Variable Length](#) Mode, or the first fixed length if in [Fixed Length](#) Mode. Length includes the barcode's start, stop, check and data characters. The length must include at least one data character.

The length can be set from 3 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 3 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODABAR LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

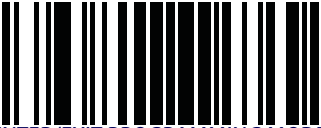
This completes the procedure. See [Table 29](#) for some examples of how to set this feature.


Table 29. Codabar Length 1 Setting Examples


STEP	ACTION	EXAMPLES			
1	Desired Setting (and pad with leading zeroes)	03 Characters	09 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODABAR LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '3'	'0' and '9'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

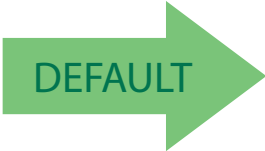
Codabar — cont.

Codabar Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE

 Select Codabar Length 1 Setting	
----------------------------------------------------------------------------------------------------------------------	--

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL
----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 03 = Length 1 is 3 Characters

Codabar — cont.

Codabar Set Length 2

This feature specifies one of the barcode lengths for [Codabar Length Control](#). Length 2 is the maximum label length if in [Variable Length](#) Mode, or the second fixed length if in [Fixed Length](#) Mode. The length includes the barcode's start, stop, check and data characters. The length must include at least one data character.

The length can be set from 3 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 3 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODABAR LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

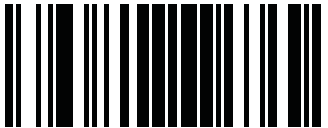
This completes the procedure. See [Table 30](#) for some examples of how to set this feature.


Table 30. Codabar Length 2 Setting Examples


STEP	ACTION	EXAMPLES			
1	Desired Setting (and pad with leading zeroes)	00 Ignore This Length	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 39 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

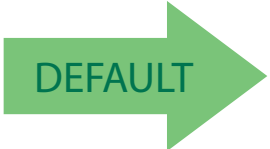
Codabar — cont.

Codabar Set Length 2 — cont.

 ENTER/EXIT PROGRAMMING MODE

 Select Codabar Length 2 Setting	
----------------------------------------------------------------------------------------------------------------------	--

Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL
----------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------

 50 = Length 2 is 50 Characters

Codabar — cont.


Codabar Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Codabar labels.

 ENTER/EXIT PROGRAMMING MODE	
	 Codabar Interdigit Ratio = Disable
 Codabar Interdigit Ratio = 1	
	 Codabar Interdigit Ratio = 2
 Codabar Interdigit Ratio = 3	
 DEFAULT	 Codabar Interdigit Ratio = 4
 Codabar Interdigit Ratio = 5	

Codabar — cont.

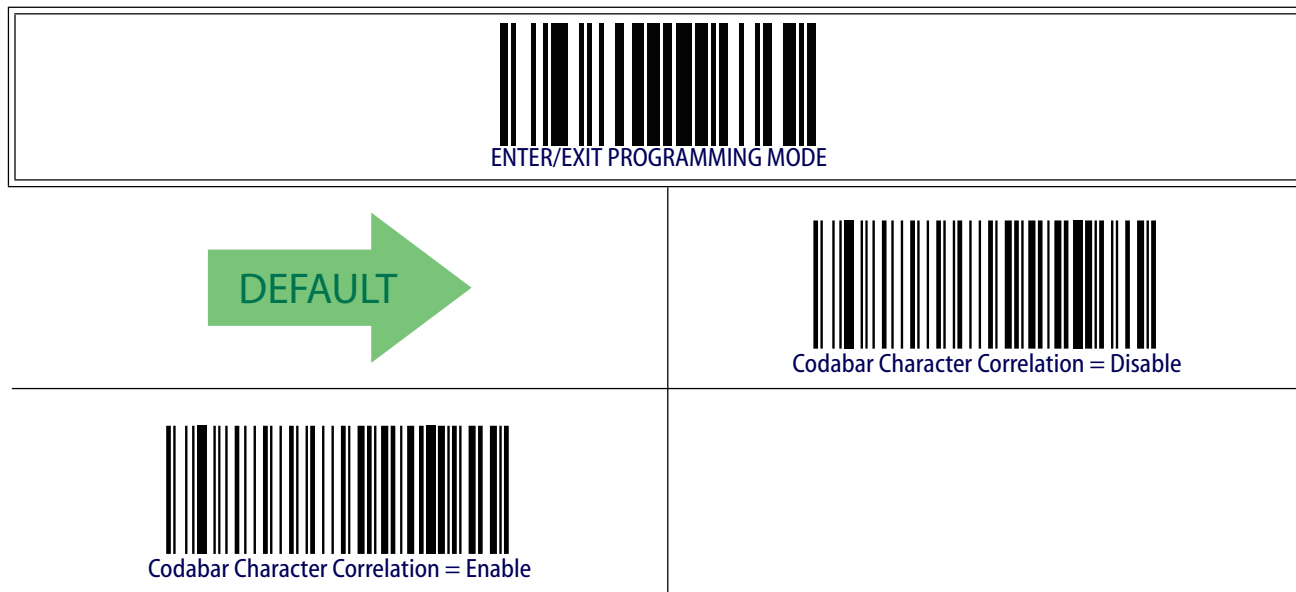
Codabar Interdigit Ratio — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Codabar Interdigit Ratio = 6
 Codabar Interdigit Ratio = 7	
	 Codabar Interdigit Ratio = 8
 Codabar Interdigit Ratio = 9	
	 Codabar Interdigit Ratio = 10

Codabar — cont.

Codabar Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Codabar Stitching

This option enables/disables stitching for Codabar labels. When parts of a Codabar barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.



Code 11

The following options apply to the Code 11 symbology.

Code 11 Enable/Disable

When disabled, the reader will not read Code 11 barcodes.



Code 11 — cont.

Code 11 Check Character Calculation

This option enables/disables calculation and verification of optional Code 11 check character.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 11 Check Character Calculation = Disable
 Code 11 Check Character Calculation = Check C	
	 Code 11 Check Character Calculation = Check K
 Code 11 Check Character Calculation = Check C and K	 DEFAULT

Code 11 — cont.**Code 11 Check Character Transmission**

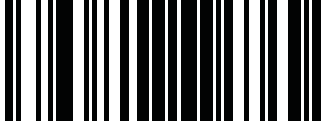
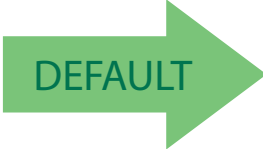
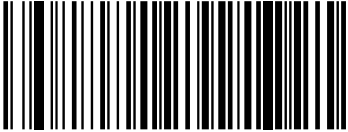
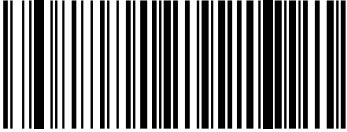
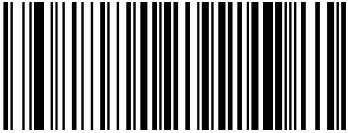
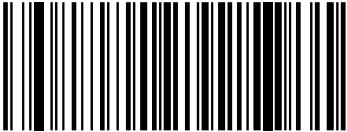
This feature enables/disables transmission of an optional Code 11 check character.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 11 Check Character Transmission = Don't Send
 Code 11 Check Character Transmission = Send	 DEFAULT

Code 11 — cont.

Code 11 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 11 label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 11 Minimum Reads = 1
 Code 11 Minimum Reads = 2	
	 Code 11 Minimum Reads = 3
 Code 11 Minimum Reads = 4	

Code 11 — cont.

Code 11 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Code 11 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Code 11 — cont.

Code 11 Set Length 1

This feature specifies one of the barcode lengths for [Code 11 Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). Length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 11 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

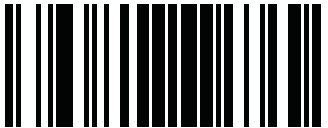


This completes the procedure. See [Table 31](#) for some examples of how to set this feature.


Table 31. Code 11 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	02 Characters	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '2'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 11 — cont.

Code 11 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Code 11 Set Length 1 Setting	
<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	 CANCEL


 04 = Length 1 is 4 Characters

Code 11 — cont.

Code 11 Set Length 2

This feature specifies one of the barcode lengths for [Code 11 Length Control](#). Length 2 is the maximum label length if in [Variable Length Mode](#), or the second fixed length if in [Fixed Length Mode](#). Length includes the barcode's check and data characters.

The length can be set from 2 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 2 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT CODE 11 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

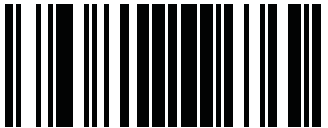


This completes the procedure. See [Table 32](#) for some examples of how to set this feature.

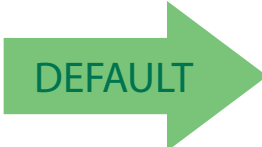
Table 32. Code 11 Length 2 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT CODE 11 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'0' and 'F'	'3' AND '2'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Code 11 — cont.

Code 11 Set Length 2 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Code 11 Length 2 Setting	
<p>Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.</p>	 CANCEL


 50 = Length 2 is 50 Characters

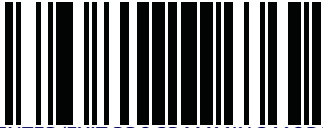
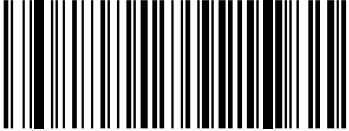
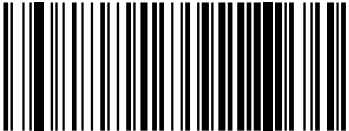



Code 11 — cont.

Code 11 Interdigit Ratio

This feature specifies the ratio between an intercharacter space and module for Code 11 labels.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 11 Interdigit Ratio = Disable
 Code 11 Interdigit Ratio = 1	
	 Code 11 Interdigit Ratio = 2
 Code 11 Interdigit Ratio = 3	
 DEFAULT	 Code 11 Interdigit Ratio = 4
 Code 11 Interdigit Ratio = 5	

Code 11 — cont.
Code 11 Interdigit Ratio — cont.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 11 Interdigit Ratio = 6
 Code 11 Interdigit Ratio = 7	
	 Code 11 Interdigit Ratio = 8
 Code 11 Interdigit Ratio = 9	
	 Code 11 Interdigit Ratio = 10

Code 11 Decoding Level

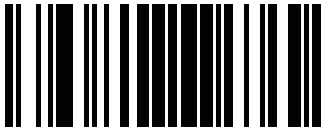
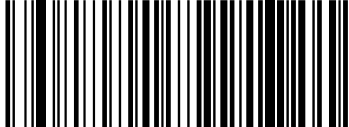





Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

Code 11 — cont.

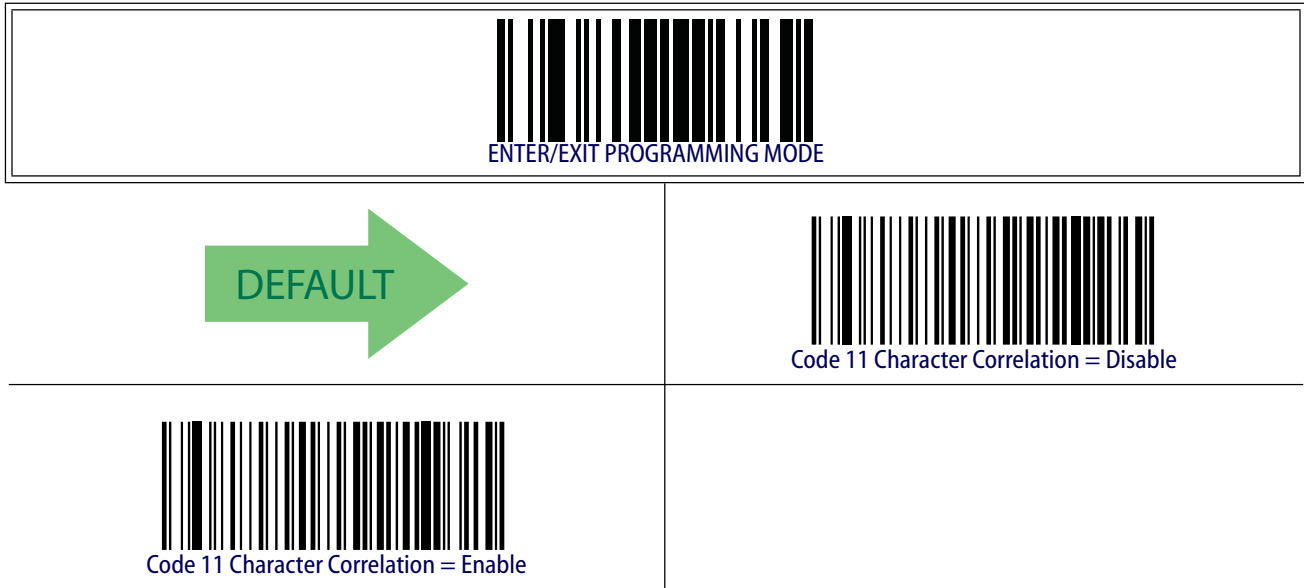
Code 11 Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Codabar Decoding Level = 1	
	 Codabar Decoding Level = 2
 Codabar Decoding Level = 3	 DEFAULT
	 Codabar Decoding Level = 4
 Codabar Decoding Level = 5	

Code 11 — cont.

Code 11 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Code 11 Stitching

This option enables/disables stitching for Code 11 labels. When parts of a Code 11 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.



Standard 2 of 5

The following options apply to the Standard 2 of 5 symbology.

Standard 2 of 5 Enable/Disable

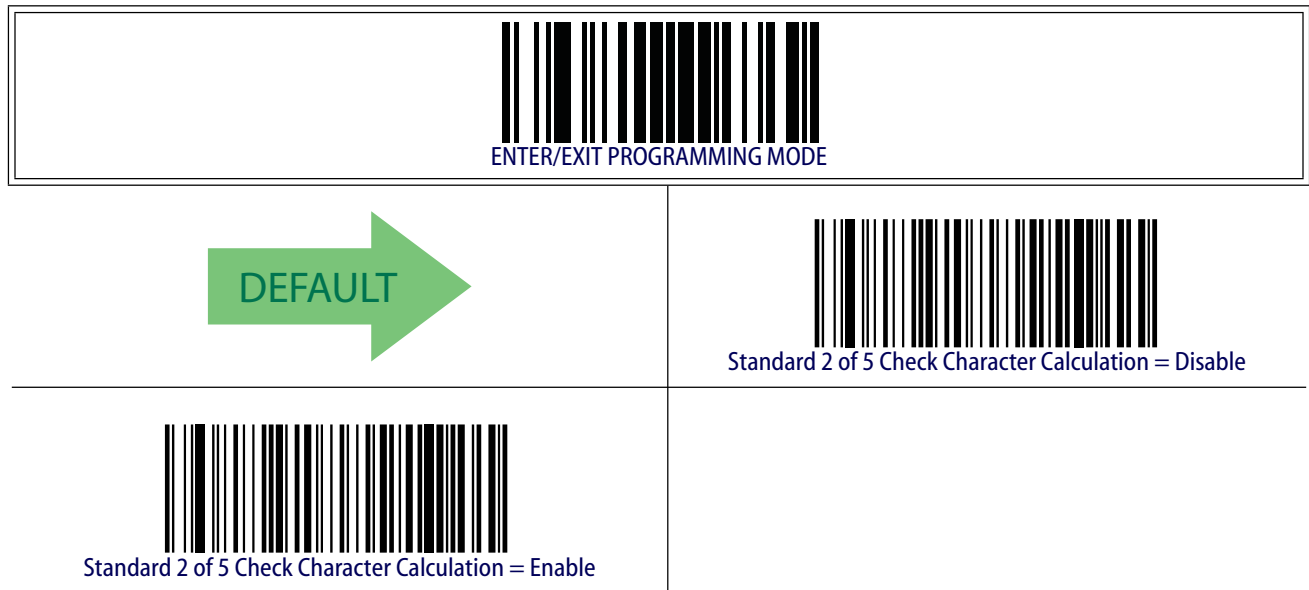
When disabled, the reader will not read Standard 2 of 5 barcodes.



Standard 2 of 5 — cont.

Standard 2 of 5 Check Character Calculation

This option enables/disables calculation and verification of an optional Standard 2 of 5 check character.



Standard 2 of 5 Check Character Transmission

This feature enables/disables transmission of an optional Standard 2 of 5 check character.



Standard 2 of 5 — cont.

Standard 2 of 5 Minimum Reads

This feature specifies the minimum number of consecutive times a Standard 2 of 5 label must be decoded before it is accepted as good read.

 ENTER/EXIT PROGRAMMING MODE	
	 Standard 2 of 5 Minimum Reads = 1
 Standard 2 of 5 Minimum Reads = 2	
	 Standard 2 of 5 Minimum Reads = 3
 Standard 2 of 5 Minimum Reads = 4	

Standard 2 of 5 Decoding Level



The Standard 2 of 5 Decoding Level feature is set using "2 of 5 Decoding Level" on page 209.

NOTE

Standard 2 of 5 — cont.

Standard 2 of 5 Length Control

This feature specifies either variable length decoding or fixed length decoding for the Standard 2 of 5 symbology.

Variable Length. For variable length decoding, a minimum and maximum length may be set.

Fixed Length. For fixed length decoding, two different lengths may be set.



Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 1

This feature specifies one of the barcode lengths for [Standard 2 of 5 Length Control](#). Length 1 is the minimum label length if in [Variable Length Mode](#), or the first fixed length if in [Fixed Length Mode](#). Length includes the barcode's check and data characters.

The length can be set from 1 to 50 characters.

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT STANDARD 2 OF 5 LENGTH 1 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

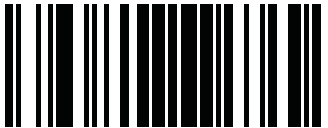


5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

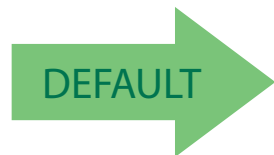
This completes the procedure. See [Table 33](#) for some examples of how to set this feature.

Table 33. Standard 2 of 5 Length 1 Setting Examples

STEP	ACTION	EXAMPLES			
1	Desired Setting	01 Character	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT STANDARD 2 OF 5 LENGTH 1 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '1'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Standard 2 of 5 — cont.
Standard 2 of 5 Set Length 1 — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Select Standard 2 of 5 Length 1 Setting	
Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.	 CANCEL



08 = Length 1 is 8 Characters

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 2

This feature specifies one of the barcode lengths for [Standard 2 of 5 Length Control](#). Length 2 is the maximum label length if in [Variable Length](#) Mode, or the second fixed length if in [Fixed Length](#) Mode. Length includes the barcode's check and data characters.

The length can be set from 1 to 50 characters. A setting of 0 specifies to ignore this length (only one fixed length).

Follow these instructions to set this feature:

1. Determine the desired character length (from 1 to 50 — or 0 to ignore this length). Pad the number with leading zeroes to yield two digits. For example: 0 = 00, 5 = 05, 20 = 20, etc.
2. Scan the ENTER/EXIT PROGRAMMING MODE barcode to enter Programming Mode.
3. Scan the barcode: SELECT STANDARD 2 OF 5 LENGTH 2 SETTING.
4. Scan the appropriate two digits from the keypad in [Appendix E, Keypad](#), that represent the length setting which was determined in the steps above. You will hear a two-beep indication after the last character.



If you make a mistake before the last character, scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

NOTE

5. Scan the ENTER/EXIT PROGRAMMING MODE barcode to exit Programming Mode.

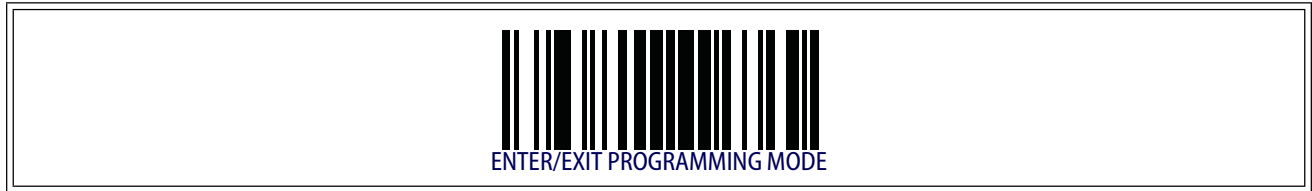
This completes the procedure. See [Table 34](#) for some examples of how to set this feature.

Table 34. Standard 2 of 5 Length 2 Setting Examples

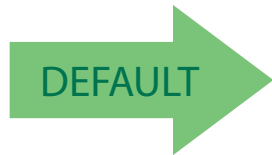
STEP	ACTION	EXAMPLES			
1	Desired Setting (pad with leading zeroes)	00 (Ignore This Length)	07 Characters	15 Characters	50 Characters
2	Scan ENTER/EXIT PROGRAMMING MODE				
3	Scan SELECT STANDARD 2 OF 5 LENGTH 2 SETTING				
4	Scan Two Characters From Appendix E, Keypad	'0' and '0'	'0' and '7'	'1' and '5'	'5' AND '0'
5	Scan ENTER/EXIT PROGRAMMING MODE				

Standard 2 of 5 — cont.

Standard 2 of 5 Set Length 2 — cont.



Make a mistake? Scan the CANCEL barcode to abort and not save the entry string. You can then start again at the beginning.

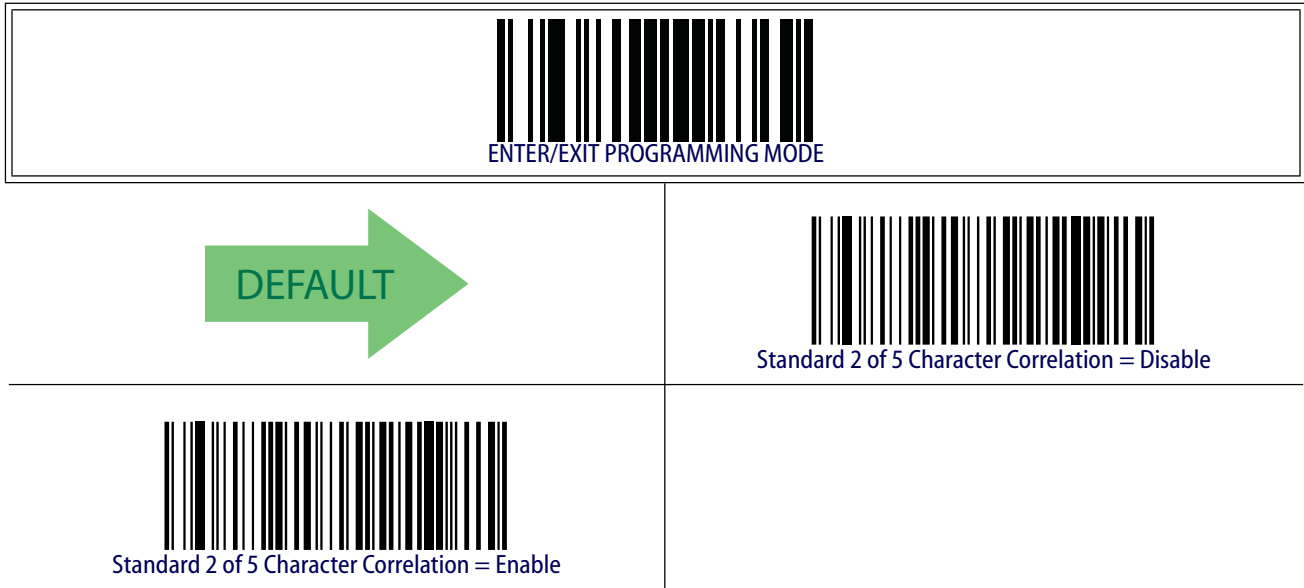


50 = Length 2 is 50 Characters

Standard 2 of 5 — cont.

Standard 2 of 5 Character Correlation

When correlation is enabled, the barcode reader will combine label data from multiple scans when decoding. Enabling correlation will help the scanner read labels that have some spots and/or voids. It may also help read labels that have damaged areas. Enabling correlation will also increase the chances that a label will be read incorrectly.



Standard 2 of 5 Stitching

This option enables/disables stitching for Standard 2 of 5 labels. When parts of a Standard 2 of 5 barcode are presented to the reader with this feature enabled, the barcode parts will be assembled by the reader's software, and the data will be decoded if all barcode proofing requirements are met.

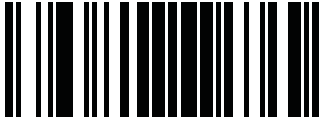
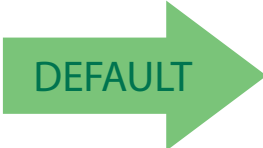
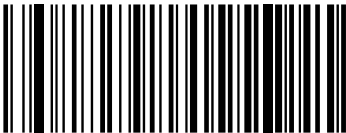
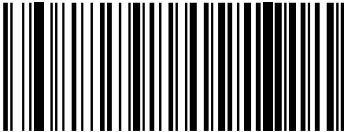


ISBT 128

The following options apply to the ISBT 128 symbology.

ISBT 128 Enable/Disable

When disabled, the imager will not read ISBT barcodes.

 ENTER/EXIT PROGRAMMING MODE	
	 ISBT 128 = Disable
 ISBT 128 = Enable	

ISBT 128 Concatenation

Use this option to enable/disable ISBT128 concatenation of 2 labels.

 ENTER/EXIT PROGRAMMING MODE	
	 ISBT 128 Concatenation = Disable
 ISBT 128 Concatenation = Enable	

ISBT 128 — cont.

ISBT 128 Force Concatenation

When enabled, this feature forces concatenation for ISBT.



This option is only valid when ISBT 128 Concatenation is enabled. (see page <Links>12-272).

NOTE



ISBT 128 Advanced Concatenation Options



Contact Customer Support to set up pairs of label types for concatenation.

NOTE

Code 4

The following options apply to the Code 4 symbology.

Code 4 Enable/Disable

Enables/Disables ability of imager to decode Code 4 labels.



Code 4 — cont.

Code 4 Check Character Transmission

This feature enables/disables transmission of an optional Code 4 check character.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 4 Check Character Transmission = Don't Send
 Code 4 Check Character Transmission = Send	 DEFAULT

Code 4 Hex to Decimal Conversion

This feature enables/disables the conversion of hexadecimal label data to decimal label data.

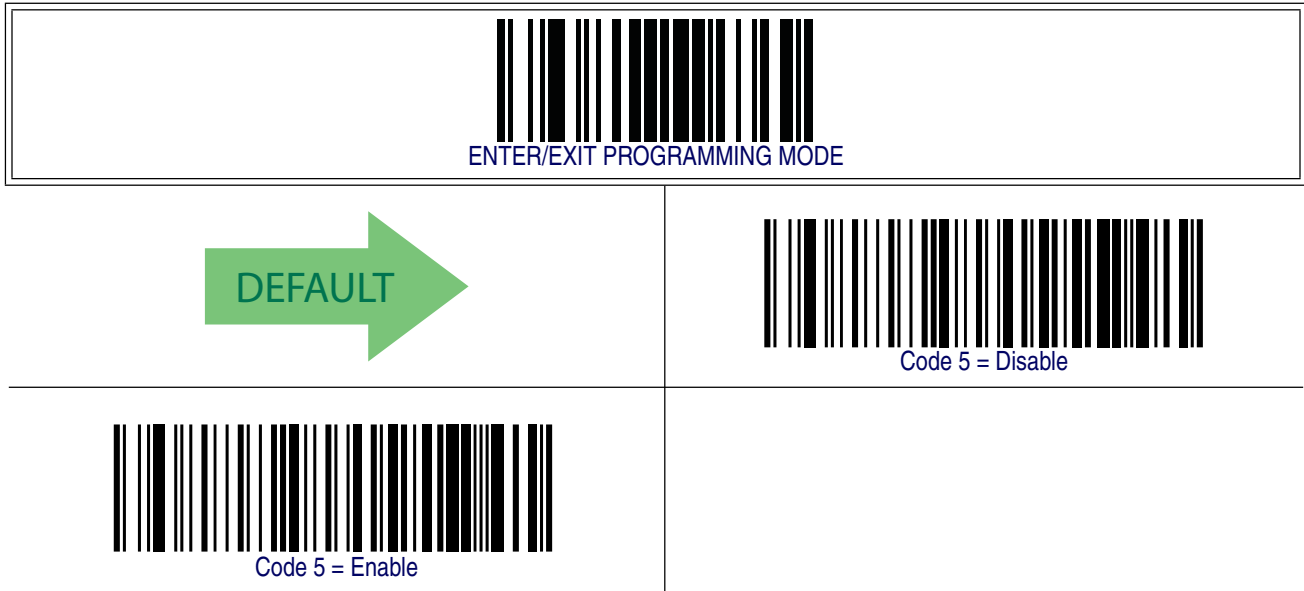
 ENTER/EXIT PROGRAMMING MODE	
	 Code 4 Hex to Decimal Conversion = Disable
 Code 4 Hex to Decimal Conversion = Enable	 DEFAULT

Code 5

The following options apply to the Code 5 symbology.

Code 5 Enable/Disable

Enables/Disables ability of imager to decode Code 5 labels.



Code 5 — cont.

Code 5 Check Character Transmission

This feature enables/disables transmission of an optional Code 5 check character.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 5 Check Character Transmission = Don't Send
 Code 5 Check Character Transmission = Send	 DEFAULT

Code 5 Hex to Decimal Conversion

This feature enables/disables the conversion of hexadecimal label data to decimal label data.

 ENTER/EXIT PROGRAMMING MODE	
	 Code 5 Hex to Decimal Conversion = Disable
 Code 5 Hex to Decimal Conversion = Enable	 DEFAULT

Code 4 and Code 5 Common Configuration Items

The following options apply to both Code 4 and Code 5 symbologies.

Code 4 and 5 Decoding Level

Decoding Levels are used to configure a barcode symbology decoder to be very aggressive to very conservative depending on a particular customer's needs.

- Choosing Level 1 results in a very conservative decoder at the expense of not being able to read poorly printed or damaged labels.
- Choosing Level 5 results in a very aggressive decoder. This aggressive behavior allows decoding of poorly printed and damaged labels at the expense of increasing the likelihood of decoding errors.
- Choosing Level 3, which is the default setting, allows the majority of product labels to be decoded.

There are many factors that determine when to change the decoding level for a particular symbology. These factors include spots, voids, non-uniform bar/space widths, damaged labels, etc. that may be experienced in some barcode labels. If there are many hard to read or damaged labels that cannot be decoded using a conservative setting, increase the decoding level to be more aggressive. If the majority of labels are very good quality labels, or there is a need to decrease the possibility of a decoder error, lower the decoding level to a more conservative level.

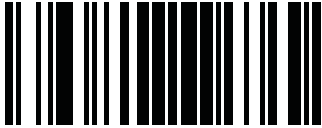
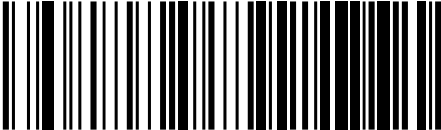


This configuration item applies to Code 4 and Code 5.

NOTE

Code 4 and Code 5 Common Configuration Items — cont.

Code 4 and 5 Decoding Level — cont.

 ENTER/EXIT PROGRAMMING MODE	
 Code 4 and Code 5 Decoding Level = 1	
	 Code 4 and Code 5 Decoding Level = 2
 Code 4 and Code 5 Decoding Level = 3	
	 Code 4 and Code 5 Decoding Level = 4
 Code 4 and Code 5 Decoding Level = 5	

Code 4 and Code 5 Common Configuration Items — cont.

Code 4 and Code 5 Minimum Reads

This feature specifies the minimum number of consecutive times a Code 4 or Code 5 label must be decoded before it is accepted as good read.



Appendix A

Technical Specifications

Table 35 contains Physical and Performance Characteristics, User Environment and Regulatory information. Table 36 provides Standard Cable Pinouts.

Table 35. Technical Specifications

Item	Description
Physical Characteristics	
Color	White/Gray Gray/Gray
Dimensions	Height 7.1"/181 mm Length 3.9"/100 mm Width 2.8"/71 mm
Weight (without cable)	Approximately 6.0 ounces/169 g
Electrical Characteristics	
Voltage & Current	GD4130 model: Input current at 5V = 360 mA (max) 2.5 mA (RS-232 sleep mode) 2.5 mA (USB suspend) Input Power = 1.9W max in the 5V±5% range GD4110 model: Input current at 5V = 340 mA (max) 2.5 mA (RS-232 sleep mode) 2.5 mA (USB suspend) Input Power = 1.8W max in the 4.5÷14V range
Performance Characteristics	
Light Source	Dual LEDs
Roll (Tilt) Tolerance	± 35° from normal
Pitch Tolerance	± 65°
Skew (Yaw) Tolerance	± 65°
Field of View	10" (25.4cm) wide at 12.5" (31.8cm) from the reader
Depth of Field (Typical) (d)	3 mil – 2.9" to 4.7" (7.5cm to 12cm) 13 mil (d) – 1.2" to 23.6" (3cm to 60cm) 20 mil – 1.2" to 31.5" (3cm to 80cm)
Minimum Element Width	3 mil

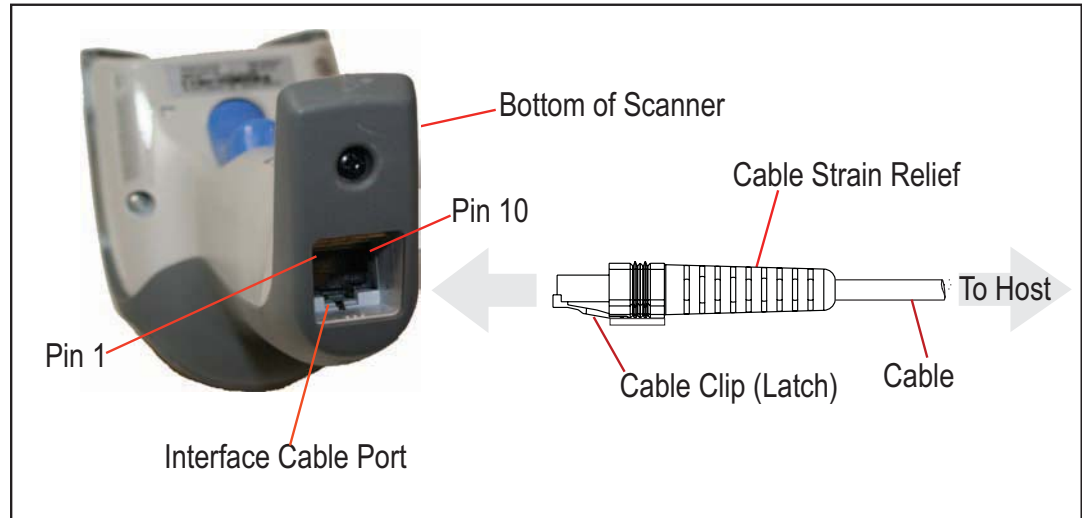
Item	Description
Print Contrast Minimum	15% minimum reflectance
Decode Capability	UPC/EAN/JAN, P2 /P5 add-ons; Code 39; Code 32; Code 128; C128 ISBT; Code 128 add-ons; Interleaved 2 of 5; Follett 2 of 5; Standard 2 of 5; Code 11; Codabar; EAN 128; GS1 DataBar™ Omnidirectional, GS1 DataBar™ Limited, GS1 DataBar™ Expanded; Code4, Code5.
Interfaces Supported(b)	RS-232 Std, RS-232 Wincor-Nixdorf, RS-232 OPOS, IBM 46xx (ports5B and 9B), USB Com Std., USB Keyboard, USB Alternate Keyboard,USB OEM, Keyboard Wedge (AT with or w/o Alternate Key, IBM AT PS2 with or w/o Alternate Key, PC-XT, IBM 3153, IBM Terminals 31xx, 32xx,34xx, 37xx make only and make break keyboard, Digital TerminalsVT2x, VT3xx, VT4xx, and Apple) and Wand Emulation.
User Environment	
Operating Temperature	32° to 131° F (0° to 55° C)
Charging Temperature	32° to 104° F (0° to 40° C)
Storage Temperature	-4° to 158° F (-20° to 70° C)
Humidity	Operating: 5% to 90% relative humidity, non-condensing
Drop Specifications	18 drops from 1.8 meters (5.9 feet) to concrete
Ambient Light Immunity	Up to 100,000 Lux
Contaminants Spray/rainDust/particulates	IEC 529-IP52
ESD Level	16 KV
Regulatory	
Electrical Safety	UL 60950, CSA C22.2 No. 60950, IEC 60950
EMI/RFI	Pending: 433 MHz model Europe - CE, Russia – Gost; Australia – Ctick; China – SRRC; Singapore – IDA, Brasile – Anatel 910 MHz USA/Canada – FCC/IC; Mexico – NOM + Cofetel
LED class safety	IEC Class 1

- (a) Typical input current measured under factory default configuration.
 (b) See "Interface Selection" on page 17 for a listing of available interface sets by model type.
 (c) 13 mils DOF based on EAN. All others are Code 39. All labels grade A, typical environmental light, 20°C, label inclination 10°

Standard Cable Pinouts

Figure 10 and Table 36 provide standard pinout information for the Base Station's interface cable.

Figure 10. Standard Cable Pinouts



The signal descriptions in Table 36 apply to the connector on the reader and are for reference only.

Table 36. Standard Cable Pinouts — Reader Side

Pin	RS-232	OEM	USB	Keyboard Wedge
1	RTS (out)			
2			D+	CLKIN (KBD side)
3			D-	DATAIN (KBD side)
4	GND	GND	GND	GND
5	RX			
6	TX			
7	VCC	VCC	VCC	VCC
8		IBM_B		CLKOUT (PC side)
9		IBM_A		DATAOUT (PC side)
10	CTS (in)			

NOTES

Appendix B

LED and Beeper Indications

The reader's beeper sounds and its LED illuminates to indicate various functions or errors on the reader. An optional "Green Spot" also performs useful functions. The tables below list these indications. One exception to the behaviors listed in the tables is that the reader's functions are programmable, and may or may not be turned on. For example, certain indications such as the power-up beep can be disabled using programming barcode labels.

LED and Beeper Indications

INDICATION	DESCRIPTION	LED	BEEPER
Power-up Beep	The reader is in the process of powering-up.		Reader beeps four times at highest frequency and volume upon power-up.
Good Read Beep	A label has been successfully scanned by the reader.	LED behavior for this indication is configurable via the feature "Good Read: When to Indicate"	The reader will beep once at current frequency, volume, mono/bi-tonal setting and duration upon a successful label scan.
ROM Failure	There is an error in the reader's software/programming	Flashes	Reader sounds one error beep at highest volume.
Limited Scanning Label Read	Indicates that a host connection is not established when the IBM or USB interface is enabled.	N/A	Reader 'chirps' six times at the highest frequency and current volume.
Reader Active Mode	The reader is active and ready to scan.	The LED is lit steadily ^a	N/A
Reader Disabled	The reader has been disabled by the host.	The LED blinks continuously	N/A
Green Spot is on continuously	While in Stand Mode or Trigger Stand Mode the green spot shall be on while in stand watch state.	N/A	N/A
Green Spot ^a flashes momentarily	Upon successful read of a label, the software shall turn the green spot on for the time specified by the configured value.	N/A	N/A

Programming Mode - The following indications ONLY occur when the reader is in Programming Mode.

Label Programming Mode Entry	A valid programming label has been scanned.	LED blinks continuously	Reader sounds four low frequency beeps.
Label Programming Mode Rejection of Label	A label has been rejected.	N/A	Reader sounds three times at lowest frequency & current volume.
Label Programming Mode Acceptance of Partial Label	In cases where multiple labels must be scanned to program one feature, this indication acknowledges each portion as it is successfully scanned.	N/A	Reader sounds one short beep at highest frequency & current volume.
Label Programming Mode Acceptance of Programming	Configuration option(s) have been successfully programmed via labels and the reader has exited Programming Mode.	N/A	Reader sounds one high frequency beep and 4 low frequency beeps followed by reset beeps.
Label Programming Mode Cancel Item Entry	Cancel label has been scanned.	N/A	Reader sounds two times at low frequency and current volume.

a. Except when in sleep mode or when a [Good Read LED Duration](#) other than 00 is selected

Error Codes

Upon startup, if the reader sounds a long tone, this means the reader has not passed its automatic Selftest and has entered FRU (Field Replaceable Unit) isolation mode. If the reader is reset, the sequence will be repeated. The following table describes the LED flashes/beep codes associated with an error found.

NUMBER OF LED FLASHES/ BEEPS	ERROR	CORRECTIVE ACTION
1	Configuration	Contact Helpdesk for assistance
2	Interface PCB	
4	Reader Module	
5	Laser Pointer (if so equipped)	
6	Digital PCB	
14	CPLD/Code Mismatch	

NOTES

Appendix C

Standard Defaults

The most common configuration settings are listed in the “Default” column of the table below. Page references are also provided for feature descriptions and programming barcodes for each parameter. A column has also been provided for recording of your preferred default settings for these same configurable features.

Table 37. Standard Defaults

Parameter	Default	Your Setting	Page Number
General Features			
Double Read Timeout	0.4 Second		23
Label Gone Timeout	160 ms		25
Sleep Mode Timeout	Disable		27
Power On Alert	4 Beeps		29
Good Read: When to Indicate	After Decode		30
Good Read Beep Type	Mono		31
Good Read Beep Frequency	Medium		32
Good Read Beep Length	80 ms		32
Good Read Beep Volume	High		34
Good Read LED Duration	LED on until next trigger pull		35
Scan Mode	Trigger Single		37
Scanning Active Time	5 Seconds		42
Flash On Time	1 Second		44
Flash Off Time	600 ms		46
Green Spot Duration	300 ms		49
RS-232			
Baud Rate	9600		52

Parameter	Default	Your Setting	Page Number
Data Bits	8 Data Bits		54
Stop Bits	1 Stop Bit		55
Parity	None		56
Handshaking Control	Disable		57
RS-232/USB-COM			
RTS/CTS Scan Control — RTS is asserted during transmissions. CTS gates transmissions and controls enable and disable state of scanner.	No Delay		57
Beep On ASCII BEL	Disable		62
Beep On Not on File	Enable		62
ACK Character	'ACK'		64
NAK Character	'NAK'		66
ACK NAK Timeout Value	600 ms		68
ACK NAK Retry Count	3 Retries		70
ACK NAK Error Handling	Ignore Errors Detected		72
Indicate Transmission Failure	Enable		73
Disable Character	'D'		74
Enable Character	'E'		76
Keyboard Wedge			
Country Mode	U.S. Keyboard		80
	Caps Lock OFF		82
Numlock	Numlock Key Unchanged		83
Send Control Characters	Disable		84
Intercode Delay	100 ms		89
Intercharacter Delay	No Delay		87
	100 ms		90
USB Keyboard Speed	1 ms		91
USB-OEM			
USB-OEM Device Usage	Handheld Reader		94
Data Editing			

Parameter	Default	Your Setting	Page Number
Global Prefix/Suffix	No Global Prefix Global Suffix = 0x0D (CR)		108
Global AIM ID	Disable		110
Label ID Control	Disable		117
Case Conversion	Disable		124
Character Conversion	No Char Conversion		125
Symbologies			
UPC-A			
UPC-A Enable/Disable	Enable		129
UPC-A Check Character Transmission	Enable		129
Expand UPC-A to EAN-13	Don't Expand		130
UPC-A Number System Character Transmission	Transmit		130
UPC-A Minimum Reads	1		131
UPC-E	2		132
UPC-E			
UPC-E Enable/Disable	Enable		132
UPC-E Check Character Transmission	Send		132
Expand UPC-E to EAN-13	Don't Expand		133
Expand UPC-E to UPC-A	Don't Expand		133
UPC-E Number System Character Transmission	Transmit		134
UPC-E Minimum Reads	2		135
GTIN			
GTIN Formatting	Disable		136
EAN 13			
EAN 13 Enable/Disable	Enable		137
EAN 13 Check Character Transmission	Send		137
EAN-13 Flag 1 Character	Transmit		138
EAN-13 ISBN Conversion	Disable		139
EAN 13 Minimum Reads	1		140
EAN 8			

Parameter	Default	Your Setting	Page Number
EAN 8 Enable/Disable	Enable		141
EAN 8 Check Character Transmission	Send		141
Expand EAN 8 to EAN 13	Disable		142
EAN 8 Minimum Reads	1		143
UPC/EAN Global Settings			
UPC/EAN Decoding Level	3		144
UPC/EAN Correlation	Disable		146
	Disable		146
UPC/EAN Price Weight Check	Disable		147
Add-Ons			
Optional Add-ons	Disable P2, P5 and P8		149
Optional Add-On Timer	70 ms		151
Optional GS1-128 Add-On Timer	Disable		154
P2 Add-Ons Minimum Reads	2		157
P5 Add-Ons Minimum Reads	1		158
GS1-128 Add-Ons Minimum Reads	1		159
GS1 DataBar™ Omnidirectional			
GS1 DataBar™ Omnidirectional Enable/Disable	Disable		160
GS1 DataBar™ Omnidirectional GS1-128 Emulation	Disable		160
GS1 DataBar™ Omnidirectional Minimum Reads	1		161
GS1 DataBar™ Expanded			
GS1 DataBar™ Expanded Enable/Disable	Disable		162
GS1 DataBar™ Expanded GS1-128 Emulation	Disable		162
GS1 DataBar™ Expanded Minimum Reads	1		163
GS1 DataBar™ Expanded Length Control	Variable		164
GS1 DataBar™ Expanded Set Length 1	1		165
GS1 DataBar™ Expanded Set Length 2	74		167
GS1 DataBar™ Limited			

Parameter	Default	Your Setting	Page Number
GS1 DataBar™ Limited Enable/Disable	Disable		169
GS1 DataBar™ Limited GS1-128 Emulation	Disable		169
GS1 DataBar™ Limited Minimum Reads	1		170
Code 39			
Code 39 Enable/Disable	Enable		171
Code 39 Check Character Calculation	Calculate		172
Code 39 Check Character Transmission	Send		173
Code 39 Start/Stop Character Transmission	Don't Transmit		173
Code 39 Full ASCII	Disable		174
Code 39 Quiet Zones	Auto		175
Code 39 Minimum Reads	1		176
Code 39 Decoding Level	3		177
Code 39 Length Control	Variable		179
Code 39 Set Length 1	2		180
Code 39 Set Length 2	50		182
Code 39 Interdigit Ratio	4		184
Code 39 Character Correlation	Disable		186
Code 39 Stitching	Enable		187
Code 32			
Code 32 Enable/Disable	Disable		188
Code 32 Feature Setting Exceptions	3		188
Code 32 Check Character Transmission	Don't Send		189
Code 32 Start/Stop Character Transmission	Don't Transmit		189
Code 128			
Code 128 Enable/Disable	Enable		190
Expand Code 128 to Code 39	Don't Expand		190
Code 128 Check Character Transmission	Send		191
Code 128 Quiet Zones	Auto		193
Code 128 Minimum Reads	1		194

Parameter	Default	Your Setting	Page Number
Code 128 Decoding Level	3		195
Code 128 Length Control	Variable		197
Code 128 Set Length 1	1		198
Code 128 Set Length 2	80		200
Code 128 Character Correlation	Disable		202
Code 128 Stitching	Enable		203
GS1-128			
GS1-128 Enable	Transmit in Code 128 Data Format		204
ISBT 128			
ISBT 128 Enable/Disable	Disable		272
ISBT 128 Concatenation	Disable		272
ISBT 128 Force Concatenation	Enable		273
ISBT 128 Advanced Concatenation Options	Disable		273
Interleaved 2 of 5			
I 2 of 5 Enable/Disable	Enable		205
I 2 of 5 Check Character Calculation	Disable		206
I 2 of 5 Check Character Transmission	Send		207
I 2 of 5 Minimum Reads	1		221
I 2 of 5 Length Control	Variable		211
I 2 of 5 Set Length 1	12		212
I 2 of 5 Set Length 2	100		214
I 2 of 5 Character Correlation	Disable		216
I 2 of 5 Stitching	Disable		217
Datalogic 2 of 5			
Datalogic 2 of 5 Enable/Disable	Enable		219
Datalogic 2 of 5 Check Character Calculation	Disable		220
Datalogic 2 of 5 Minimum Reads	1		221
Datalogic 2 of 5 Length Control	Variable		222
Datalogic 2 of 5 Set Length 1	12		223

Parameter	Default	Your Setting	Page Number
Datalogic 2 of 5 Set Length 2	100		225
Datalogic 2 of 5 Character Correlation	Disable		227
Datalogic 2 of 5 Stitching	Disable		228
Codabar			
Codabar Enable/Disable	Disable		229
Codabar Check Character Calculation	Don't Calculate		230
Codabar Check Character Transmission	Send		231
Codabar Start/Stop Character Transmission	Don't Transmit		231
Codabar Start/Stop Character Set	abcd/abcd		232
Codabar Start/Stop Character Match	Don't Require Match		233
Codabar Quiet Zones	Auto		234
Codabar Minimum Reads	1		235
Codabar Decoding Level	3		236
Codabar Length Control	Variable		238
Codabar Set Length 1	3		239
Codabar Set Length 2	50		241
Codabar Interdigit Ratio	4		243
Codabar Character Correlation	Disable		245
Codabar Stitching	Disable		246
Code 11			
Code 11 Enable/Disable	Disable		247
	1		247
Code 11 Check Character Calculation	Check C and K		248
Code 11 Check Character Transmission	Send		249
Code 11 Minimum Reads	1		250
Code 11 Length Control	Variable		251
Code 11 Set Length 1	4		252
Code 11 Set Length 2	50		254
Code 11 Interdigit Ratio	4		256
Code 11 Decoding Level	3		258
Code 11 Character Correlation	Disable		260

Parameter	Default	Your Setting	Page Number
Code 11 Stitching	Disable		261
Standard 2 of 5			
Standard 2 of 5 Enable/Disable	Disable		262
Standard 2 of 5 Check Character Calculation	Disable		263
Standard 2 of 5 Check Character Transmission	Send		263
Standard 2 of 5 Minimum Reads	1		264
Standard 2 of 5 Decoding Level	3		264
Standard 2 of 5 Length Control	Variable		265
Standard 2 of 5 Set Length 1	8		266
Standard 2 of 5 Set Length 2	50		268
Standard 2 of 5 Character Correlation	Disable		270
Standard 2 of 5 Stitching	Disable		271

Appendix D

Sample Barcodes

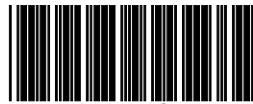
The sample barcodes in this appendix are typical representations for their symbology types.



UPC-A



EAN-13



Code 39



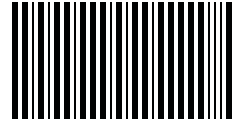
Code 128



12345678901231

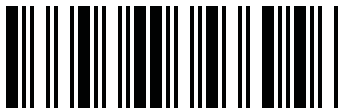
Interleaved 2 of 5

Sample Barcodes — continued



00246897634

Code 32

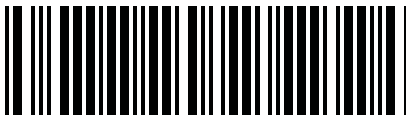


5765485

Codabar



Code 93



7554628485

Code 11

GS1 DataBar™ (RSS)



GS1 DataBar™ variants must be enabled to read the barcodes below (see [GS1 DataBar™ \(RSS\)](#) on page 299).

NOTE



10293847560192837465019283746029478450366523
(GS1 DataBar™ Expanded Stacked)



1234890hjjio9900mnb
(GS1 DataBar™ Expanded)



08672345650916
(GS1 DataBar™ Limited)

GS1 DataBar™-14



55432198673467
(GS1 DataBar™ Omnidirectional Truncated)



90876523412674
(GS1 DataBar™ Omnidirectional Stacked)









78123465709811
(GS1 DataBar™ Omnidirectional Stacked)

NOTES

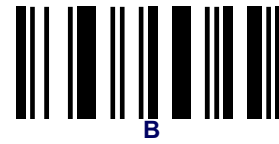
Appendix E

Keypad

Use the barcodes in this appendix to enter numbers as you would select digits/characters from a keypad.

 0	
	 1
 2	
	 3
 4	
	 5





NOTES

Appendix F

Scancode Tables

Control Character Emulation

Control character emulation selects from different scancode tables as listed in this appendix. Each of the control character sets below are detailed by interface type in the tables. These apply to Wedge and USB Keyboard platforms.

Control Character 00 . Characters from 00 to 0x1F are sent as control character Ctrl+Keys, special keys are located from 0x80 to 0xA1.

Control Character 01 . Characters from 00 to 0x1F are sent as control character Ctrl+Capital Key, special keys are located from 0x80 to 0xA1.

Control Character 02 . Special keys are located from 00 to 0x1F and characters from 0x80 to 0xFE are intended as an extended ASCII table (Microsoft Windows Codepage 1252 — See page -314.)

Single Press and Release Keys

In the following tables, Ar↓ means Alt right pressed and Ar↑ means Alt right released and so on. Definitions for other keys are Al (Alt left), Cr (Control Right) Cl (Control Left) Sh (shift). This method can be used for combining Alt, Control or Shift with other keys.

Example: Consider a Control character set to 00. If AltRight+A is required before sending a label to the host, it could be done by setting three Prefix keys in this way: 0x99 0x41 0x9A.

Interface Type PC AT PS/2 or USB-Keybaord

Table F-1. Scancode Set When Control Character is 00 or 01

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C(S)+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS C(S)+X	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C+1	GS C+]	RS C+^	US C(S)+_
2x	SP	1	2	#	\$	%	&	'	()	* _	±	•	=	•	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	≤	≡	≥	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[]	^	_	-
6x	:	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	}	~	Del	
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↑	Ar↓	Al↑	Al↓	Cl↓	Cl↑	Cr↓
Ax	Cr↑	□	‘	f	”	…	†	‡	•	%	Š	‹	Š	‹	œ	□
Bx	°	±	ˆ	˚	˘	μ	¶	·	˙	˚	°	»	¼	½	¾	¿
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ø	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Extended characters (sky blue) are sent through dedicated keys (when available in the selected country mode) or by using an Alt Mode sequence.

Interface Type PC AT PS/2 or USB-Keyboard — cont.

Table F-2. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	All	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	,	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	Del
8x	€	□	'	f	"	...	†	‡	ˆ	%	S	<	S	<	œ	□
9x	□	'	'	"	"	•	-	—	˜	™	§	>	œ	□	ž	Y
Ax	NBSP	ı	ø	£	□	≠	ı	\$	ˆ	©	ˆ	«	-	-	®	-
Bx	°	±	z	,	ˆ	μ	†	.	ˆ	ˆ	ˆ	»	¼	¼	¼	ı
Cx	A	A	A	A	A	A	Æ	Ç	E	E	E	E	I	I	I	I
Dx	Ð	□	O	O	O	O	O	×	Ø	U	U	U	U	Y	p	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Interface type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode

Table F-3. Scancode Set When Control Character is 00 or 01

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	Xf
0x	Alt+000	Alt+001	Alt+002	Alt+003	Alt+004	Alt+005	Alt+006	Alt+007	BS	HT TAB	Alt+010	Alt+011	Alt+012	CR Enter	Alt+014	Alt+015
1x	Alt+016	Alt+017	Alt+018	Alt+019	Alt+020	Alt+021	Alt+022	Alt+023	Alt+024	Alt+025	Alt+026	ESC Esc	Alt+028	Alt+029	Alt+030	Alt+031
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	€	Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↓	Ar↑	All	Alt↑	Ctrl↓	Ctrl↑	Cr↓
Ax	Cr↑	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Cx	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+0252	A+0253	A+0254	A+0255

Interface type PC AT PS/2 Alt Mode or USB-Keyboard Alt Mode — cont.

Table F-4. Scancode Set When Control Character is 02

	x0	x1	x2	x3	x4	x5	X6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	All	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	A+032	A+033	A+034	A+035	A+036	A+037	A+038	A+039	A+040	A+041	A+042	A+043	A+044	A+045	A+046	A+047
3x	A+048	A+049	A+050	A+051	A+052	A+053	A+054	A+055	A+056	A+057	A+058	A+059	A+060	A+061	A+062	A+063
4x	A+064	A+065	A+066	A+067	A+068	A+069	A+070	A+071	A+072	A+073	A+074	A+075	A+076	A+077	A+078	A+079
5x	A+080	A+081	A+082	A+083	A+084	A+085	A+086	A+087	A+088	A+089	A+090	A+091	A+092	A+093	A+094	A+095
6x	A+096	A+097	A+098	A+099	A+100	A+101	A+102	A+103	A+104	A+105	A+106	A+107	A+108	A+109	A+110	A+111
7x	A+112	A+113	A+114	A+115	A+116	A+117	A+118	A+119	A+120	A+121	A+122	A+123	A+124	A+125	A+126	A+127
8x	A+0128	A+0129	A+0130	A+0131	A+0132	A+0133	A+0134	A+0135	A+0136	A+0137	A+0138	A+0139	A+0140	A+0141	A+0142	A+0143
9x	A+0144	A+0145	A+0146	A+0147	A+0148	A+0149	A+0150	A+0151	A+0152	A+0153	A+0154	A+0155	A+0156	A+0157	A+0158	A+0159
Ax	A+0160	A+0161	A+0162	A+0163	A+0164	A+0165	A+0166	A+0167	A+0168	A+0169	A+0170	A+0171	A+0172	A+0173	A+0174	A+0175
Bx	A+0176	A+0177	A+0178	A+0179	A+0180	A+0181	A+0182	A+0183	A+0184	A+0185	A+0186	A+0187	A+0188	A+0189	A+0190	A+0191
Cx	A+0192	A+0193	A+0194	A+0195	A+0196	A+0197	A+0198	A+0199	A+0200	A+0201	A+0202	A+0203	A+0204	A+0205	A+0206	A+0207
Dx	A+0208	A+0209	A+0210	A+0211	A+0212	A+0213	A+0214	A+0215	A+0216	A+0217	A+0218	A+0219	A+0220	A+0221	A+0222	A+0223
Ex	A+0224	A+0225	A+0226	A+0227	A+0228	A+0229	A+0230	A+0231	A+0232	A+0233	A+0234	A+0235	A+0236	A+0237	A+0238	A+0239
Fx	A+0240	A+0241	A+0242	A+0243	A+0244	A+0245	A+0246	A+0247	A+0248	A+0249	A+0250	A+0251	A+0252	A+0253	A+0254	A+0255

Digital Interface

Table F-5. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+\	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	,	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	Del
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	F13	F14	F15	F16	↑	↓	←	→					Cl↓	Cl↑	

Digital Interface — cont.

Table F-6. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x					Cl ↓	Cl ↑			BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	
1x			←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	'	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	Del

IBM31xx 102-key

Table F-7. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS C(S)+H	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+\	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\] ^	^	_
6x	,	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		Del
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Enter	Reset	Insert	Delete	Field -	Field +	Enter paddle	Printl	Ar↓	Ar↑	All↓	Al↑	Cl↓	Cl↑	Cr↓
Ax	Cr↑															

IBM31xx 102-key — cont.

Table F-8. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	,	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		Del

Table F-9. Scancode Set When Control Character is 00 or 01

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NULL C+@	SOH C(S)+A	STX C(S)+B	ETX C(S)+C	EOT C+D	ENQ C(S)+E	ACK C(S)+F	BEL C(S)+G	BS C(S)+H	HT TAB	LF C(S)+J	VT C(S)+K	FF C(S)+L	CR Enter	SO C(S)+N	SI C(S)+O
1x	DLE C(S)+P	DC1 C(S)+Q	DC2 C(S)+R	DC3 C(S)+S	DC4 C(S)+T	NAK C(S)+U	SYN C(S)+V	ETB C(S)+W	CAN C(S)+X	EM C(S)+Y	SUB C(S)+Z	ESC Esc	FS C(S)+[	GS C+]	RS C(S)+^	US C(S)+_
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	,	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		Del
8x		Sh↓	Sh↑	Ins	Ent (keyp)	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
9x	F12	Home	End	Pg Up	Pg Dwn	↑	↓	←	→	Ar↓	Ar↑	All↓	Al↑	Cl↓	Cl↑	Cr↓
Ax	Cr↑															

IBM XT — cont.

Table F-10. Scancode Set When Control Character is 02

	X0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	Ar↓	Ar↑	Al↓	Al↑	Cl↓	Cl↑	Cr↓	Cr↑	BS	Tab	→	S+ Tab	Enter Keypd	Enter	Ins	Pg Up
1x	Pg Dwn	Home	←	↓	↑	F6	F1	F2	F3	F4	F5	ESC	F7	F8	F9	F10
2x	Space	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6x	,	a	B	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	R	s	t	u	v	w	x	y	z	{	|	}		Del

Microsoft Windows Codepage 1252

Windows-1252 is a character encoding of the Latin alphabet, used by default in the legacy components of Microsoft Windows in English and some other Western languages.

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	MUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	EDQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DCL 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	\$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	:	;	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	€ 20AC	ƒ 20A1	ſ 20A2	ˆ 20A3	˜ 20A4	˘ 20A5	˙ 20A6	˚ 20A7	¸ 20A8	¸ 20A9	¸ 20AA	¸ 20AB	¸ 20AC	¸ 20AD	¸ 20AE	¸ 20AF
90	¸ 20B0	¸ 20B1	¸ 20B2	¸ 20B3	¸ 20B4	¸ 20B5	¸ 20B6	¸ 20B7	¸ 20B8	¸ 20B9	¸ 20BA	¸ 20BB	¸ 20BC	¸ 20BD	¸ 20BE	¸ 20BF
A0	¸ 20C0	¸ 20C1	¸ 20C2	¸ 20C3	¸ 20C4	¸ 20C5	¸ 20C6	¸ 20C7	¸ 20C8	¸ 20C9	¸ 20CA	¸ 20CB	¸ 20CC	¸ 20CD	¸ 20CE	¸ 20CF
B0	¸ 20D0	¸ 20D1	¸ 20D2	¸ 20D3	¸ 20D4	¸ 20D5	¸ 20D6	¸ 20D7	¸ 20D8	¸ 20D9	¸ 20DA	¸ 20DB	¸ 20DC	¸ 20DD	¸ 20DE	¸ 20DF
C0	¸ 20E0	¸ 20E1	¸ 20E2	¸ 20E3	¸ 20E4	¸ 20E5	¸ 20E6	¸ 20E7	¸ 20E8	¸ 20E9	¸ 20EA	¸ 20EB	¸ 20EC	¸ 20ED	¸ 20EE	¸ 20EF
D0	¸ 20F0	¸ 20F1	¸ 20F2	¸ 20F3	¸ 20F4	¸ 20F5	¸ 20F6	¸ 20F7	¸ 20F8	¸ 20F9	¸ 20FA	¸ 20FB	¸ 20FC	¸ 20FD	¸ 20FE	¸ 20FF

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ASCII Chart

ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.	ASCII Char.	Hex No.
NUL	00	SP	20	@	40	'	60
SOH	01	!	21	A	41	a	61
STX	02	"	22	B	42	b	62
ETX	03	#	23	C	43	c	63
EOT	04	\$	24	D	44	d	64
ENQ	05	%	25	E	45	e	65
ACK	06	&	26	F	46	f	66
BEL	07	'	27	G	47	g	67
BS	08	(	28	H	48	h	68
HT	09	)	29	I	49	i	69
LF	0A	*	2A	J	4A	j	6A
VT	0B	+	2B	K	4B	k	6B
FF	0C	,	2C	L	4C	l	6C
CR	0D	-	2D	M	4D	m	6D
SO	0E	.	2E	N	4E	n	6E
SI	0F	/	2F	O	4F	o	6F
DLE	10	0	30	P	50	p	70
DC1	11	1	31	Q	51	q	71
DC2	12	2	32	R	52	r	72
DC3	13	3	33	S	53	s	73
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75
SYN	16	6	36	V	56	v	76
ETB	17	7	37	W	57	w	77
CAN	18	8	38	X	58	x	78
EM	19	9	39	Y	59	y	79
SUB	1A	:	3A	Z	5A	z	7A
ESC	1B	;	3B	[5B	{	7B
FS	1C	<	3C	\	5C		7C
GS	1D	=	3D]	5D	}	7D
RS	1E	>	3E	^	5E	~	7E
US	1F	?	3F	_	5F	DEL	7F

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