Magellan™ 1400i

On-Counter Presentation Omnidirectional Bar Code Reader

Product Reference Guide

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Table of Contents

NOTES

Chapter 1

Getting Started

The Magellan™ 1400i Omni-Directional Imaging Scanner offers hands-free scanning for small, easily handled items and handheld scanning for bulkier items. Its aggressive imaging performance and intuitive operation reduces user training and speeds checkout for better customer service.

About This Manual

This manual presents advanced user information which includes connection, programming, product and cable specifications, and other useful references. For additional information, such as installation, maintenance, troubleshooting and warranty information, see the Quick Reference Guide (QRG). Copies of other publications for this product are downloadable free of charge from the website listed on the back cover of this manual.

On leaving the factory, units are programmed for the most common terminal and communications settings. If you need to change these settings, custom programming can be accomplished by scanning the barcodes in this guide.

Bold text and a yellow-highlighted background indicates the most common default setting for a feature/option.

Manual Conventions

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 scanner:

NOTE

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

CAUTION

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

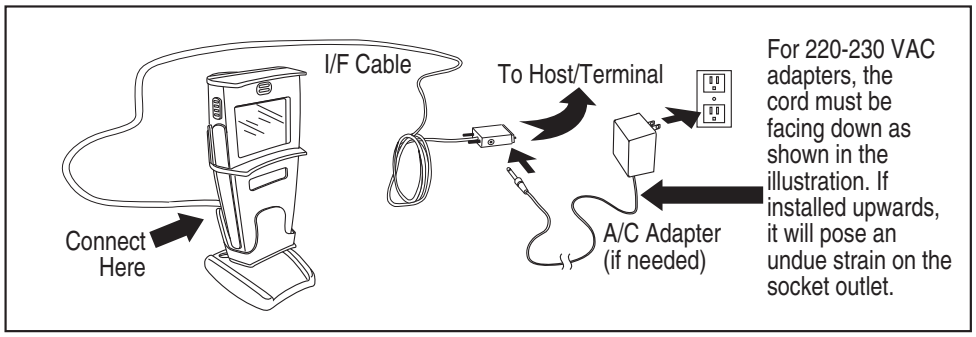
Connecting the Scanner

The scanner kit you ordered to match your interface should provide a compatible cable for your installation. Use the appropriate instructions below to connect the scanner to the terminal, PC or other host device.

Upon completing the connection via the appropriate interface instructions below, proceed to the Interface Related Features section of this manual and scan the barcode to select the correct interface type.

RS-232 Serial Connection — Turn off power to the terminal/PC and connect the scanner to the terminal/PC serial port via the RS-232 cable as shown in Figure 1. If the terminal will not support POT (Power Off the Terminal) to supply scanner 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 1. RS-232 Serial or USB Connection using A/C Adapter

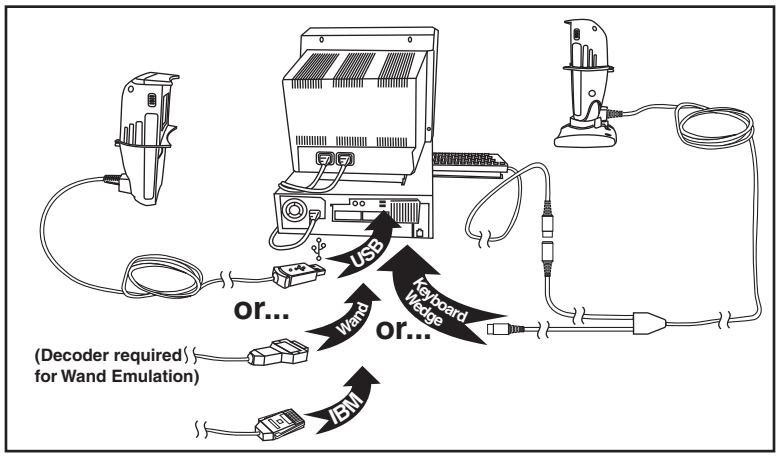


USB Connection — Connect the scanner to a USB port on the terminal/PC using the correct USB cable for the interface type you ordered. Reference Figure 1 and Figure 2.

NOTE

USB installations may require a power connection via an approved A/C Adapter as shown in Figure 1. For example, this would be the case if the scanner is connected along with a number of other devices to a non-powered USB hub.

Figure 2. Other Connection Types



Wand Emulation Connection — Connect the scanner to the appropriate port on the terminal/PC via a decoder[1] using the correct cable for the interface type you ordered. Reference Figure 2.

IBM Connection — Connect the scanner to the IBM port on the terminal/PC using the correct IBM cable. Reference Figure 2.

Keyboard Wedge Connection — Before connection, turn off power to the terminal/PC. The Keyboard Wedge cable has a 'Y' connection from the scanner. Connect the female to the male end from the keyboard and the remaining end at the keyboard port at the terminal/PC. Reference Figure 2.

Programming

The scanner is typically factory-configured with a set of default features standard to the interface type you ordered. After scanning the interface barcode from the Interface Related Features section, you can select other options and customize your scanner through use of the instructions and programming barcodes available in that section and also the Data Editing and Symbologies chapters of this manual.

Using the Programming Bar Codes

This manual contains feature descriptions and barcodes which allow you to reconfigure your scanner. Some programming barcode labels, like the label below for resetting defaults, require only the scan of that single label to enact the change. Most of the programming labels in this manual, however, require the scanner to be placed in Programming Mode prior to scanning them. Scan a START/END barcode once to enterProgramming Mode. Once the scanner is in Programming Mode, you can scan a number of parameter settings before scanning the START/END barcode a second time, which will then accept your changes, exit Programming Mode and return the scanner to normal operation.

Resetting the Standard Product Defaults

If you are unsure of what programming options are in your scanner, or you've changed some options and want the factory settings restored, scan the *Standard Product Default Settings* barcode below (you do not have to scan START/END barcodes when scanning the Standard Product Default Settings barcode). This will copy the factory configuration for the currently active interface to the current configuration.

Standard Product Default Settings

The programming section lists the factory default settings for each of the menu commands for the standard RS-232 interface in **BOLD** text on the following pages. Exceptions to default settings for the other interfaces can be found in Appendix D, Default Settings.

1. Wand Emulation requires a decoder.

LED and Beeper Indicators

The scanner's beeper sounds and its green LED illuminates to indicate various functions or errors on the scanner. The tables below list these indications. One exception to the behaviors listed in the tables is that the scanner'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.

Green LED Indications

LED INDICATION	INDICATION	COMMENT
Power-on indication	Bright green flash	Indicates the scanner has finished all its power up tests and is now ready for ooperation.
Good Read Indication	Bright green flash	Indicates a barcode has been read and decoded.
Scanner Ready	Constant dim green	The scanner is ready for operation.
Sleep Mode	Constant green flash (100mS on, 1900mS off)	The scanner is in Sleep Mode. To wake the scanner up, move an object in front of its window or press the button atop the unit.
Host Disable	Constant green flash at 1 Hz (100mS on, 900mS off)	The scanner is disabled due to receiving a disble command from the POS terminal.
Diagnostics	Varies (see "Error Codes" on page 1-5 for more information)	The LED can provide diagnostic feedback if the scanner discovers a problem during SelfTest.

BEEPER FUNCTIONS

BEEPER INDICATION	INDICATION	COMMENT
Power On Beep	Single beep	The Power-On LED indication is a configurable feature which can be enabled or disabled. When enabled, this beep Indicates the scanner has finished all its power up tests and is now ready for operation.
Good Read Indication	Single beep	The good read beep indication is configurable. Options include: Enable/disable, frequency, duration and volume. See the Product Reference Guide (PRG) for more information.
Diagnostics	Varies (see "Error Codes" on page 1-5 for more information)	The Beeper can provide diagnostic feedback if the scanner discovers a problem during SelfTest.
Programming Mode Indications	Varies (see the Product Reference Guide for more information about scanner programming)	The Beeper will sound as programming barcode labels are scanned, indicating progress during scanner configuration.

Error Codes

Upon startup, if the scanner flashes its indicator LED or sounds an unexpected series of beep tones (other than normal power-up indications), this means the scanner has not passed its automatic Selftest and has entered FRU[1] isolation mode. If the scanner is reset or the button is pressed, 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	
6	Main PCB	
10	Button Error	
11	Near Field Imager Module	
12	Far Field Imager Module	
13	Software ID Failure	
14	CPLD/Code Mismatch	

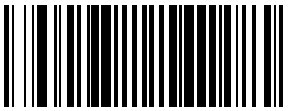
1. Field Replaceable Unit (FRU)

NOTES

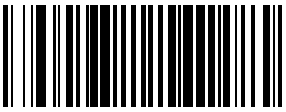
Chapter 2
General Features

1D Double Read Timeout

The Double Read Timeout feature sets a time limit that determines how much time must pass before reading the same label again (e.g. two identical items in succession).

	START / END
PROGRAMMING BAR CODES	
0.1 Second	
	0.2 Second
0.3 Second	
	0.4 Second
0.5 Second	
	**0.6 Second DEFAULT**

1D Double Read Timeout — cont.

	START / END
PROGRAMMING BAR CODES	
0.7 Second	
	0.8 Second
0.9 Second	
	1 Second

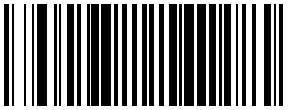
1D Label Gone Timeout

This feature sets the time after the last label segment is seen before the scanner prepares for a new label.

START / END	
PROGRAMMING BAR CODES	
Sets the label gone timeout duration using hex values from 000 to 255 in increments of ten milliseconds (10ms or 0.01 seconds). To configure this feature, scan the “START/END” bar code above to place the unit in Programming Mode, then the “Set Label Gone Timeout,” followed by three digits (zero padded) from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing the desired time value. Exit programming mode by scanning the “START/END” bar code again. **DEFAULT SETTING FOR THIS FEATURE: 200 milliseconds (020)**	
	Set Label Gone Timeout

Sleep Mode

This feature specifies the amount of time with no bar code reads before the scanner enters sleep mode.

	START / END
PROGRAMMING BAR CODES	
15 Seconds DEFAULT	
	30 Seconds
1 Minute	
	2 Minutes
3 Minutes	
	4 Minutes
5 Minutes	

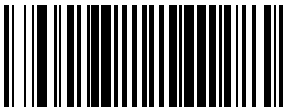
Sleep Mode — cont.

START / END	
PROGRAMMING BAR CODES	
	6 Minutes
7 Minutes	
	8 Minutes
9 Minutes	
	10 Minutes DEFAULT
12 Minutes	
	15 Minutes
30 Minutes	
	1 Hour

LED and Beeper Indicators

Power On Alert

Disables or enables the indication (a single beep) that the scanner has finished all its power up tests and is now ready for operation.



START / END

PROGRAMMING BAR CODES

Disable

Enable
DEFAULT

Good Read: When to Indicate

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

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

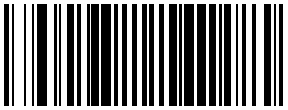
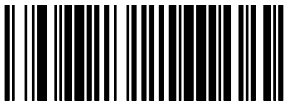
NOTE

This option (Indicate after CTS goes inactive, then active), which uses CTS, is only valid for RS-232 interfaces.

	START / END
PROGRAMMING BAR CODES	
After Decode DEFAULT	
	After Transmit
After CTS goes inactive, then active	

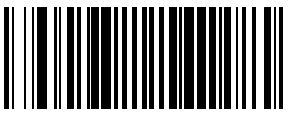
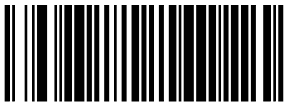
Good Read Beep Control

This feature enables/disables the scanner's ability to beep upon a successful decode of a bar code.

	START / END
PROGRAMMING BAR CODES	
Disable	
	**Enable** **DEFAULT**

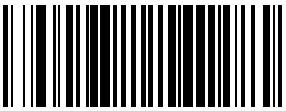
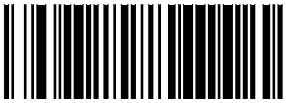
Good Read Beep Frequency

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.)

	START / END
PROGRAMMING BAR CODES	
Low	
	**Medium** **DEFAULT**
High	

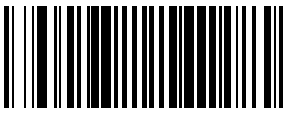
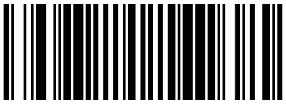
Good Read Beep Length

Specifies the duration of a good read beep.

	START / END
PROGRAMMING BAR CODES	
60msec DEFAULT	
	80msec
100msec	
	120msec
140msec	
	160msec
180msec	
	200msec

Good Read Beep Volume

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

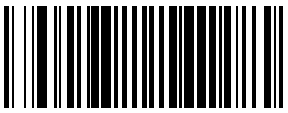
	START / END
PROGRAMMING BAR CODES	
Low	
	Medium
High **DEFAULT**	

Productivity Index Reporting (PIR)

When PIR is enabled, label quality data is appended to decoded data before being presented to the POS. The PIR feature allows the scanner to provide information to an external computer, indicating how easy the label was to read.

NOTE

This value-added feature is a factory-programmed option. Contact your dealer for information about upgrading your system to include this advanced capability.

	START / END
PROGRAMMING BARCODES	
Disable DEFAULT	
	Enable

Scanning Features

Aiming Pointer

This feature enables/disables the Aiming Pointer for all symbologies.

START / END
PROGRAMMING BAR CODES
Disable DEFAULT
Enable always on

Targeted Scanning Mode

Upon pressing the button, the scanner will project an aiming pattern to assist in centering over the bar code. Scanning then takes place as soon as the button is released.

When add-ons are enabled and a bar code is being read while in Targeted Mode, position the pointer at or near the end of the base label to ensure the scanner will read both the base and add-on label.

NOTE **Targeted Scanning Mode will read bar codes in any orientation.**

The scanner will return to full pattern Omni-directional Mode after either of the following has ocurred:
- Good Read + Target Mode: Linger Time **has elapsed.**
- Target Mode: Active Time **+** Target Mode: Linger Time **has elapsed.**

Configuration options for Targeted Scanning Mode are:

- Target Mode: Active Time
- Target Mode: Linger Time

Target Mode: Active Time

Specifies the time duration the scanner attempts to decode labels while in the targeted mode of operation.

	START / END
PROGRAMMING BAR CODES	
Extra Short Duration	
	Short Duration
Medium Duration DEFAULT	
	Long Duration

Target Mode: Linger Time

Specifies the time duration the scanner remains in the targeted mode of operation after reading a bar code or after Target Mode: Active Time has expired, before reverting to Omni-directional Mode. The linger timer starts upon a good read or upon timeout of Target Mode: Active Time; whichever is earliest. A button press at any time will reset the process back to the start.

NOTE

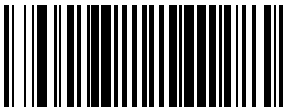
Active Time and Linger Time settings are totally independent from one another.

During the period Linger Time is active, no bar codes can be read, no matter what mode the scanner is in.

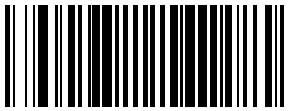
START / END	
PROGRAMMING BAR CODES	
	Short Duration
Medium Duration DEFAULT	
	Long Duration

Wake Up Intensity

This feature indicates the percentage of ambient light change which will trigger the scanner to wake up from Sleep Mode. Lower settings provide greater sensitivity.

	START / END
PROGRAMMING BAR CODES	
5%	
	8%
10% DEFAULT	
	15%
20%	
	25%
30%	
	35%

Wake Up Intensity — cont.

	START / END
PROGRAMMING BAR CODES	
40%	
	50%
60%	
	70%
80%	

Chapter 3

Interface Related Features

At the time of this writing, the Scanner supports the interfaces listed in the table below. Select the desired interface type from the table, then reference the page number given for the customizable features section associated with each interface. See for a description of each Keyboard Wedge interface type (A through Y as listed).

Interfaces Supported

a. Consult Table for more information regarding keyboard interface types.

NOTE

The correct interface cable is included for the scanner interface type you ordered.

. Keyboard Wedge Interface Reference

I/F Type	PCs Supported
A	PC/XT w/Alternate Key Encoding
B	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Key Encoding
C	PS/2 25 and 30 w/Alternate Key Encoding
D	PC/XT w/Standard Key Encoding
E	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
F	PS/2 25 and 30 w/Standard Key Encoding
G	IBM 3xxx w/122 keyboard
H	IBM 3xxx w/102 keyboard
I	PS/55 5530T w/104 keyboard
J	NEC 9801
K	WYSE 30/30+ WY-30 Keyboard 83 Keys
L	WYSE 60/85/99 GT/150/160/285 Style IBM Enhanced PC, 520/520ES Style IBM Enhanced PC FR WYSE 55/65/65 ES/120/185/325 Style IBM Enhanced PC
M	WYSE 60/85/99 GT/150/160/285 ANSI Keyboard 105 Keys, 520/520 ES ANSI Keyboard 105 Keys WYSE 55/65/65 ES/120/185/325 ANSI Keyboard 105 Keys
N	WYSE 60/85/99 GT/150/160/285 ASCII Kbd, 520/520 ES ASCII Kbd WYSE 55/65/65 ES/120/185/325 ASCII Keyboard
O	WYSE 60/85/99 GT/150/160/285 ANSI W285 Keyboard 105 Keys, 520/520 ES ANSI W285 Keyboard 105 Keys WYSE 55/65/65 ES/120/185/325 ANSI W285 Keyboard 105 Keys
P	WYSE WINTERM 3320 SE
Q	IBM 3153 IBM 316X, 3179/3180/319X/3270
R	IBM 3151/3152-010, 347X/348X
S	DIGITAL VT 220/320/330/340/350/382
T	DIGITAL VT420
U	DIGITAL VT 510/520 IBM ANSI Style Keyboard
V	DIGITAL VT 510/520 IBM PC Style Keyboard
W	SUN SPARC 5/10
X	SUN 420/440, ITX
Y	WYSE 370/355 Style Enhanced IBM PC

NOTE

Reference Appendix E, Keyboard Function Key Mappings **for more information about keyboards.**

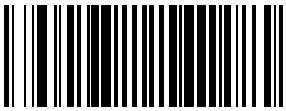
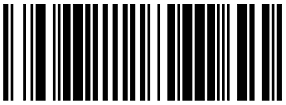
Interface Selection

START / END	
PROGRAMMING BAR CODES	
	RS-232 Standard
RS-232 Wincor-Nixdorf	
	IBM 4683 Port 5B
IBM 4683 Port 9B	
	IBM 4683 Port 17
USB-OEM	
	USB Keyboard
USB COM	
	Wand Emulation
Keyboard Wedge A	

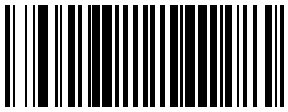
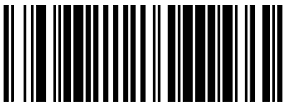
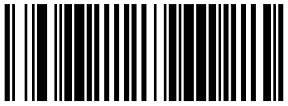
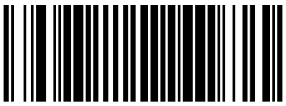
Interface Selection — cont.

START / END	
PROGRAMMING BAR CODES	
	Keyboard Wedge B
Keyboard Wedge C	
	Keyboard Wedge D
Keyboard Wedge E	
	Keyboard Wedge F
Keyboard Wedge G	
	Keyboard Wedge H
Keyboard Wedge I	
	Keyboard Wedge J

Interface Selection — cont.

	START / END
PROGRAMMING BAR CODES	
Keyboard Wedge K	
	Keyboard Wedge L
Keyboard Wedge M	
	Keyboard Wedge N
Keyboard Wedge O	
	Keyboard Wedge P
Keyboard Wedge Q	
	Keyboard Wedge R
Keyboard Wedge S	

Interface Selection — cont.

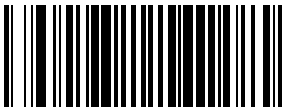
	START / END
PROGRAMMING BAR CODES	
Keyboard Wedge T	
	Keyboard Wedge U
Keyboard Wedge V	
	Keyboard Wedge W
Keyboard Wedge X	
	Keyboard Wedge Y

Interface Features

Obey/Ignore Host Commands

When set to ignore host commands, the scanner will ignore all host commands except for the minimum set necessary to keep the interface active and transmit labels For normal operation of the interface, select Obey Host Commands.

START / END



PROGRAMMING BAR CODES

Obey Host Commands
DEFAULT

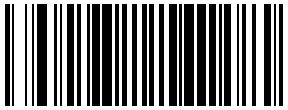
Ignore Host Commands

Interface Features — cont.

Host Transmission Buffers

Specifies the number of host transmission(s) that may be buffered. By buffering data from a bar-code, the scanner can continue to read a new barcode while the old one is being transmitted to the host. Selecting BUFFERS = 1 means that the first barcode must be transmitted before a new one can be read. A selection of BUFFERS = 2 means that a new barcode can be read while data from the first barcode is transmitted.

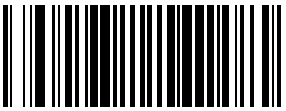
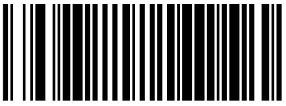
When a DISABLE SCANNER command is received from the host, the scanner will continue to transmit all data that is buffered.

START / END	
PROGRAMMING BAR CODES	
	Host Transmission Buffers = 1
Host Transmission Buffers = 2 DEFAULT	

RS-232 Interface Features

START / END	
PROGRAMMING BAR CODES	
	1200 Baud
2400 Baud	
	4800 Baud
9600 Baud DEFAULT	
	19200 Baud
38400 Baud	
	57600 Baud
115200 Baud	

RS-232 Interface Features — cont.

START / END	
PROGRAMMING BAR CODES	
	7 Data Bits
8 Data Bits DEFAULT	
	**1 Stop Bit DEFAULT**
2 Stop Bits	
	**Parity = None DEFAULT**
Parity = Even	
	Parity = Odd

RS-232 Interface Features — cont.

Hardware Flow Control

Disable Hardware Control— The scanner transmits to the host regardless of any activity on the CTS line.

Enable CTS Flow Control— The CTS signal controls transmission of data to the host.

Enable CTS Scan Control— The CTS line must be active for the scanner to read and transmit data. While the CTS line is inactive, the scanner remains in a host-disabled state; following a successful label transmission, the CTS signal must transition to inactive and then to active to enable scanning for the next label.

START / END	
PROGRAMMING BAR CODES	
	Disable Hardware Control DEFAULT
Enable CTS Flow Control	
	Enable CTS Scan Control

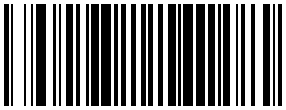
RS-232 Interface Features — cont.

Intercharacter Delay

This delay is inserted after each data character transmitted. If the transmission speed is too high, the system may not be able to receive all characters. You may need to adjust the delay to make the system work properly.

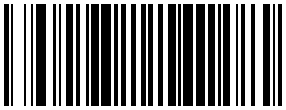
START / END	
PROGRAMMING BAR CODES	
	Inter-Char Delay = No Delay DEFAULT
Interchar Delay = 10 msec	
	Interchar Delay = 20 msec
Interchar Delay = 30 msec	
	Interchar Delay = 40 msec
Interchar Delay = 50 msec	
	Interchar Delay = 60 msec
Interchar Delay = 70 msec	

Intercharacter Delay — cont.

START / END	
PROGRAMMING BAR CODES	
	Interchar Delay = 80 msec
Interchar Delay = 90 msec	

Software Flow Control

Disables/Enables software control using XON/XOFF characters.

START / END	
PROGRAMMING BAR CODES	
	**Disable Software Flow Control** **DEFAULT**
Enable Software Flow Control	

RS-232 Interface Features — cont.

Host Echo

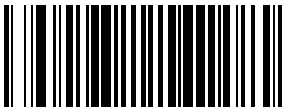
When enabled, this feature passes all data through the scanner to the host as it comes in. This feature is used for applications where "daisy chaining" of RS-232 devices onto the same cable is necessary. If, for example, one of the devices in the chain is a terminal where someone is entering data while another person is simultaneously scanning a barcode requiring transmission to the host, the scanner will wait for the RS-232 channel to be quiet for a specified period of time (set via *RS-232 Host Echo Quiet Interval*). The scanner can be set to observe this delay before sending its data in order to avoid RS-232 transmission conflicts.

START / END	
PROGRAMMING BAR CODES	
	Disable Host Echo **DEFAULT**
Enable Host Echo	

RS-232 Interface Features — cont.

Host Echo Quiet Interval

This setting specifies the time interval of RS-232 channel inactivity which must transpire before the scanner will break the host echo loop to transmit the barcode data that has just been scanned to the host.

START / END	
PROGRAMMING BAR CODES	
	Host Echo Quiet Interval = 0msec
Host Echo Quiet Interval = 10msec DEFAULT	
	Host Echo Quiet Interval = 20msec
Host Echo Quiet Interval = 30msec	
	Host Echo Quiet Interval = 40msec
Host Echo Quiet Interval = 50msec	
	Host Echo Quiet Interval = 60msec
Host Echo Quiet Interval = 70msec	

Host Echo Quiet Interval — cont.

START / END	
PROGRAMMING BAR CODES	
	Host Echo Quiet Interval = 80msec
Host Echo Quiet Interval = 90msec	
	Host Echo Quiet Interval = 100msec

Signal Voltage: Normal/TTL

Specifies whether the RS-232 interface provides TTL levels on the output pins TxD and RTS.

START / END	
PROGRAMMING BAR CODES	
	Signal Voltage: Normal RS-232 DEFAULT
Signal Voltage: TTL	

RS-232 Interface Features — cont.

RS-232 Invert

Enables/disables inversion of RS-232 TXD and RXD signals.

START / END
PROGRAMMING BAR CODES
Disable RS-232 Invert DEFAULT
Enable RS-232 Invert

Beep on ASCII BEL

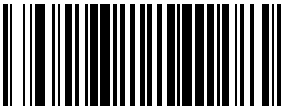
Enables/disables ability of scanner to beep (sound a good read tone) on receiving an ASCII BEL (07 hex).

START / END
PROGRAMMING BAR CODES
Enable Beep on ASCII BEL DEFAULT
Disable Beep on ASCII BEL

RS-232 Interface Features — cont.

Beep on Not on File

Select for the host to beep (or not) when a not-on-file (host command) condition is detected by the host.

START / END	
PROGRAMMING BAR CODES	
	Disable Beep on Not On File
Enable Beep on Not On File **DEFAULT**	

RS-232 Interface Features — cont.

ACK NAK Options

This enables/disables the ability of the scanner to support the RS-232 ACK/NAK protocol. When configured, the scanner and/or host sends an "ACK" when it receives data properly, and sends "NAK" when the data is in error. Selections for this option are:

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

START / END	
PROGRAMMING BAR CODES	
	Disable ACK NAK DEFAULT
Enable ACK NAK for Transmission	
	Enable ACK NAK for host command acknowledge
Enable ACK NAK for transmission and host command	

RS-232 Interface Features — cont.

ACK Character

START / END

PROGRAMMING BAR CODES

Sets the ACK character from the set of ASCII characters or any decimal value from 000 to 255. Pad entries of less than three digits with zeros, as in “005”. To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set ACK Character,” followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character. Exit programming mode by again scanning the “START/END” barcode above.

DEFAULT SETTING FOR THIS FEATURE: 006 (ACK)

Set ACK Character

NAK Character

START / END

PROGRAMMING BAR CODES

Sets the NAK character from the set of ASCII characters or any decimal value from 000 to 255. Pad entries of less than three digits with zeros, as in “005”. To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set NAK Character,” followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character. Exit programming mode by again scanning the “START/END” barcode above.

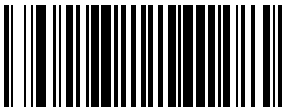
DEFAULT SETTING FOR THIS FEATURE: 021 (!)

Set NAK Character

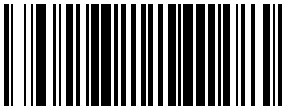
RS-232 Interface Features — cont.

Retry on ACK NAK Timeout

Enables/disables retry after the configurable ACK NAK Timeout Value (set in the following feature) has expired.

START / END 
PROGRAMMING BAR CODES
 Disable Retry on ACK NAK Timeout
Enable Retry on ACK NAK Timeout DEFAULT 

ACK NAK Timeout Value

START / END 
PROGRAMMING BAR CODES
This item specifies the time the scanner will wait for an ACK character from the host following a label transmission. 000 = Infinite timeout 001 - 075 = Timeout in 200-millisecond increments To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set ACK NAK Timeout Value,” followed by the two digits (zero padded) from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired value. Exit programming mode by again scanning the “START/END” barcode above. **DEFAULT SETTING FOR THIS FEATURE: 001 (200 msec)**
 Set ACK NAK Timeout Value

RS-232 Interface Features — cont.

ACK NAK Retry Count

START / END

PROGRAMMING BAR CODES

This feature sets the number of times for the scanner to retry a label transmission under a retry condition.
000 = No retry
001 - 254 = Retry for the specified number of times
255 = Retry forever
To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set ACK NAK Retry Count,” followed by the three digits (zero padded) from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired retry count. Exit programming mode by again scanning the “START/END” barcode above

DEFAULT SETTING FOR THIS FEATURE: 003

Set ACK NAK Timeout Value

RS-232 Interface Features — cont.

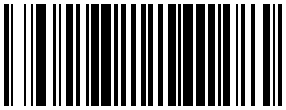
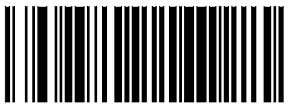
ACK NAK Error Handling

This item specifies the method the scanner will use to handle errors detected while waiting to receive the ACK character from the host. Errors include unrecognized host commands and communication errors such as parity or framing errors. Choices are:

00 = Ignore errors detected (recommended setting)

01 = Process error as valid ACK character (risk of lost label data)

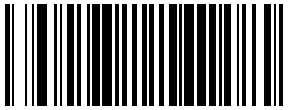
02 = Process error as valid NAK character (risk of duplicate label data)

START / END	
PROGRAMMING BAR CODES	
	**Ignore Errors Detected DEFAULT**
Process error as valid ACK character	
	Process error as valid NAK character

RS-232 Interface Features — cont.

Transmission Failure Indication

Enables/disables bad-label indication upon transmission failure.

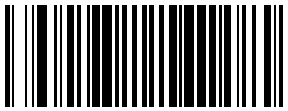
START / END	
PROGRAMMING BAR CODES	
	Disable Transmission Error Indication
Enable Transmission Error Indication DEFAULT	

USB-OEM Interface Features

USB-OEM Device usage

The USB-OEM protocol allows for the scanner 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:

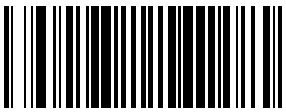
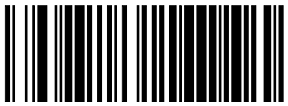
- Table Top Scanner
- Handheld Scanner

START / END	
PROGRAMMING BAR CODES	
	**Configure as Table Top Scanner DEFAULT**
Configure as Handheld Scanner	

IBM

IBM Transmit Labels in Code 39 Format

This feature enables/disables scanner's ability to set a symbology identifier for a specified label to Code 39 before transmitting that label data to an IBM host. This applies to: Code 128, Codabar and Code 93 for USB-OEM; Code 128, Codabar and Code 93 for IBM Port 5B; and Codabar and Code 93 for IBM Port 9B.

START / END	
PROGRAMMING BAR CODES	
	**Disable Convert to Code 39** **DEFAULT**
Enable Convert to Code 39	

Wand Emulation

Supported Symbologies

The Wand Emulation interface will transmit barcode data as a wand device would. This interface will transmit the following barcode symbologies:

- UPC/EAN
- UPC/EAN with addons
- Code 39
- Full ASCII Code 39
- Interleaved 2 of 5
- Codabar
- Code 128

Pharmacode 39 is transmitted as Code 39. All other barcode symbology types read by the scanner will be transmitted as Code 128.

Wand Emulation Bar Code Format

The following format settings are required for the wand emulation interface. These settings have been pre-configured at the factory for Wand Emulation scanners.

- UPC-A barcodes must include all 12 digits.
- UPC-E barcodes must contain 8 digits, including a system digit, 6 data digits, and the check digit.
- EAN-13 barcodes must have all 13 digits.
- EAN-8 barcodes must include all 8 digits.
- Code 39, Code 39 Full ASCII, and Pharmacode 39 barcodes must NOT contain start / stop characters.
- Codabar barcodes must include the start / stop characters, presented in the ABCD format.
- Interleaved 2 of 5 barcodes must have an even number of digits.

Wand Emulation — cont.

Bar/Space Polarity

Low/High — Black will be transmitted as a low voltage level (0 to +0.7V) and space as high level (+2.4 to +5.25V).

High/Low — Black will be transmitted as a high voltage level (+2.4 to +5.25V) and space as low level (0 to +0.7V).

START / END	
PROGRAMMING BAR CODES	
	Bar/Space = Low/High
Bar/Space = High/Low DEFAULT	

Wand Idle State

This feature specifies the level of the wand output signal when idle. TTL logic levels:

High voltage level (+2.4 to +5.25V)

Low voltage level (0 to +0.7V).

START / END	
PROGRAMMING BAR CODES	
	Wand Idle State = Low DEFAULT
Wand Idle State = High	

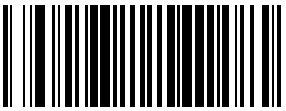
Wand Emulation — cont.

Signal Speed

The speed of the transmission can be set. This selects the width of the minimum narrow bar.

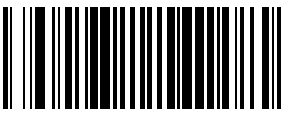
330 microseconds

660 microseconds

START / END	
PROGRAMMING BAR CODES	
	Signal Speed = 330mS
Signal Speed = 660mS DEFAULT	

Transmit Trailing Noise

The transmission of noise pulses after the label may be enabled or disabled.

START / END	
PROGRAMMING BAR CODES	
	Disable Trailing Noise
Enable Trailing Noise DEFAULT	

Wand Emulation — cont.

Transmit Leading Noise

The transmission of noise pulses before the barcode may be enabled or disabled.

START / END
PROGRAMMING BAR CODES
Disable Leading Noise
Enable Leading Noise DEFAULT

Symbology Conversion

Wand Emulation can convert all barcodes to a single symbology. Choices are:

No Conversion

Convert to Code 39

Convert to Code 128

START / END
PROGRAMMING BAR CODES
No Symbology Conversion DEFAULT
Convert to C39
Convert to C128

Keyboard Wedge

and

USB Keyboard

As a keyboard interface, the scanner supports most popular PCs and IBM terminals. The installation of the wedge is a fairly simple process that doesn't require any changes of software or hardware.

NOTE

All of the options in this section apply to the Keyboard Wedge, however, only some apply to USB Keyboard.

Keyboard Layout

The Keyboard Layout option supports many countries. For details about Keyboard Layout, please refer to your operating system manual.

START / END	
PROGRAMMING BAR CODES	
	USA DEFAULT
Belgium	
	Britain
Denmark	
	France
Germany	

Keyboard Wedge — cont.

START / END	
PROGRAMMING BAR CODES	
	Italy
Norway	
	Portugal
Spain	
	Sweden
Switzerland	
	Japan 106 Key
Hungary	
	Czech

Keyboard Wedge — cont.

START / END	
PROGRAMMING BAR CODES	
	Slovakia
Romania	
	Croatia
Poland	

Caps Lock State

Specifies the format in which the scanner sends character data.

START / END	
PROGRAMMING BAR CODES	
	Disable Caps Lock DEFAULT
Caps Lock “ON”	
	Shift Lock “ON”

Keyboard Wedge — cont.

Power-On Simulation

This feature does not apply to the USB Keyboard interface.

NOTE

All PCs check the keyboard status during the power-on Selftest. It is recommended that you enable this function if you are working without a keyboard installation. It simulates keyboard timing and passes the keyboard status to the PC during power-on.

START / END	
PROGRAMMING BAR CODES	
	Disable Power-on Simulation DEFAULT
Enable Power-on Simulation	

Keyboard Wedge — cont.

Control Characters

Specifies how the scanner transmits ASCII control characters to the host. Choices are:

- Disable Control Characters
- Enable transmission of control characters to host
- Send characters between 00H and 1FH according to a special function-key mapping table. (This is used to send keys that are not in the normal ASCII set; a unique set is provided for each available scancode set. Reference Appendix E, Keyboard Function Key Mappings.)

START / END	
PROGRAMMING BAR CODES	
	Disable Control Characters DEFAULT
Enable Transmission of Control Characters	
	Enable Function Key Mapping

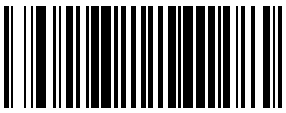
Keyboard Wedge — cont.

Wedge Quiet Interval

NOTE

This feature does not apply to the USB Keyboard interface.

Quiet Interval is the amount of time to look for keyboard activity before the scanner breaks the keyboard connection in order to transmit data to the host.

START / END 
PROGRAMMING BAR CODES
Selectable from 000 (no interval) to 255 in 10 msec increments. To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the Set Wedge Quiet Interval barcode followed by the three digits (zero padded) from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired length. Exit programming mode by again scanning the “START/END” barcode above. **DEFAULT SETTING FOR THIS FEATURE:** **010 (100 msec)**
 Set Wedge Quiet Interval

Keyboard Wedge — cont.

Intercharacter Delay

NOTE

This feature does not apply to the USB Keyboard interface.

START / END

PROGRAMMING BAR CODES

One-half of the delay specified below is inserted between scancodes within each character. If the transmission speed is too high, the system may not be able to receive all characters. You may need to adjust the delay to make the system work properly. Selectable from 000 to 255 in 10msec increments. To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set Intercharacter Delay,” followed by the three digits (zero padded) from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired length. Exit programming mode by again scanning the “START/END” barcode above/

DEFAULT SETTING FOR THIS FEATURE:
000 (No Delay)

Set Intercharacter Delay

USB COM Interface Set-up

This interface uses the Microsoft Windows USB COM driver. Before plugging your reader into the host PC, please ensure you have already copied the DLS_EUG_CDC_ACM.inf file provided by Datalogic to your PC and the reader’s interface is set to USB COM.

1. When you first plug the reader into the PC, Windows will bring up the “Found New Hardware Wizard.” Select “Install from a list” and click on “Next.”
2. Click on “Include this location in the search” and enter the path where the file DLS_EUG_CDC_ACM.inf file is stored. Click on “Next.”
3. If a message appears that says the software has not passed Windows logo testing, press “Continue” anyway.
4. Click on “Finish.”
5. Once the install is complete, reboot the PC.

Chapter 4
Data Editing

Data Editing Overview

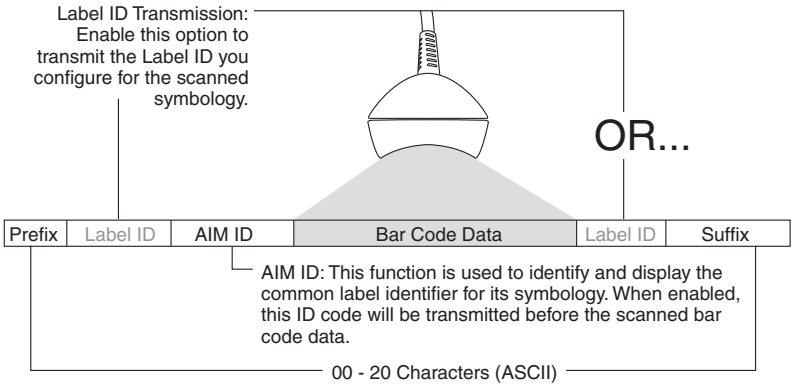
CAUTION

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

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 4-1 shows the available elements you can add to a message string:

Figure 4-1. Breakdown of a Message String



Please Keep In Mind...

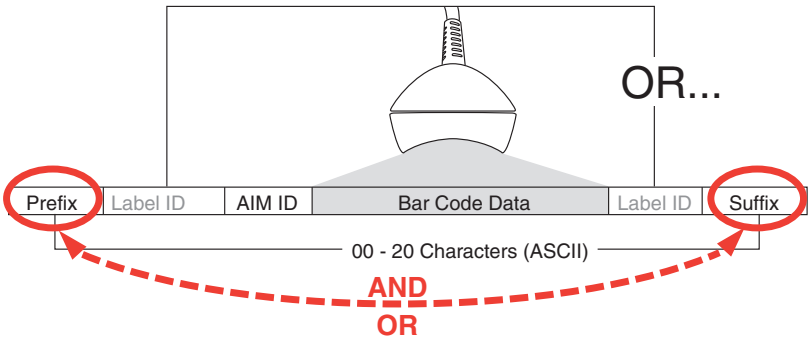
- Modifying a message string is not a mandatory requirement. Data editing is sophisticated feature allowing highly customizable output for advanced users. Factory default settings for data editing is typically set to NONE.
- A prefix or suffix may be applied (reference the Symbologies chapter for these settings) across all symbologies (set via the Global features in this chapter).
- You can add any character from the ASCII Chart (from 00-7F) 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 4-2.

Figure 4-2. 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 ('$') as a prefix.
2. Scan the START barcode.
3. Scan the SET PREFIX barcode.
4. Reference the ASCII Chart on the inside back cover of this manual, to find the hex value assigned to the desired character. The corresponding hex number for the '$' character is 24. To enter this selection code, scan the '2' and '4' barcodes from Appendix C, Alpha-Numeric Pad.
5. Scan the END barcode to exit Programming Mode.

NOTE

If less than the expected string of 20 characters are selected, scan the END barcode twice to accept the selections and exit Programming Mode.

6. The resulting message string would appear as follows:

   Scanned barcode data:12345
   Resulting message string output: $12345

Global Prefix/Suffix — cont.

START / END	
PROGRAMMING BARCODES	
Sets up to 20 characters each from the set of ASCII characters or any hex value from 00 to 7F. To configure this feature, scan the “START/END” barcode above to place the unit in Programming Mode, then the “Set Prefix” or “Set Suffix,” followed by the digits from the Alphanumeric table in Appendix C, Alpha-Numeric Pad representing your desired character(s). Reference the section, "Example: Setting a Prefix", for more information. Exit programming mode by scanning the “START/END” barcode again (scan “START/END” twice if less than 20 characters have been selected). **DEFAULT SETTING PREFIX: 00 (None)** **DEFAULT SETTING SUFFIX: 0D (CR)**	
	Set Prefix
Set Suffix	

AIM ID

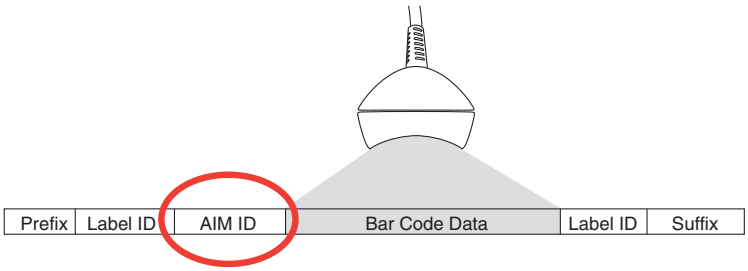
AIM (Automatic Identification Manufacturers) label identifiers are assigned from a globally standardized list — as opposed to custom label ID characters you select yourself — and can be included with scanned barcode data. AIM label identifiers consist of three characters as follows:

- 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	Code 128/EAN 128	C
Code 39	A	MSI/Plessey	M
Codabar	F	GS1 DataBarGS1 DataBar (GS1 DataBar Omnidirectional, GS1 DataBar Expanded, GS1 DataBar Limited)	e
Interleaved 2 of 5	I	Standard 2 of 5	S
Code 93	G	ISBN	X[a]

a. ISBN (X with a 0 modifier character)

Figure 4-3. AIM ID



START / END

PROGRAMMING BARCODES

Disable AIM ID
DEFAULT

Enable AIM ID

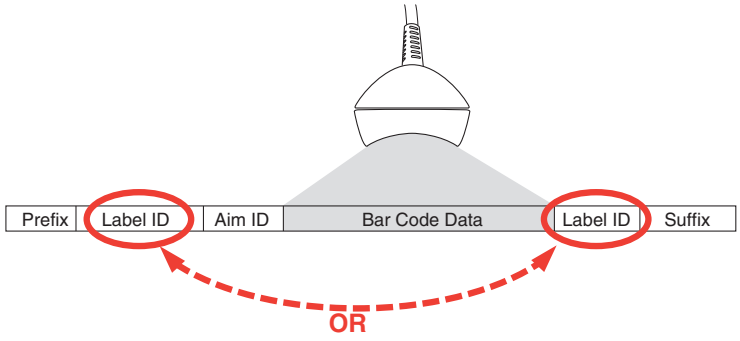
Label ID

A Label ID is a customizable code of up to two ASCII characters (00-7F hex), used to identify a barcode (symbology) type. See Appendix D, Default Settings, for a listing for common symbologies. 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 individually per symbology. If you wish to program the scanner to always include an industry standard label identifier for ALL symbology types, see the previous feature, AIM ID.

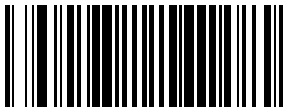
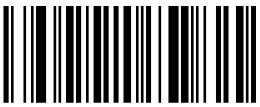
To configure a Label ID:

1. Scan the START barcode.
2. Select Label ID position as either BEFORE or AFTER by scanning the appropriate barcode.
3. Scan a barcode to select the symbology for which you wish to configure a custom Label ID.
4. Determine the desired character(s) (you may choose either one or two) which will represent the Label ID for the selected symbology. Next, 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.
5. Turn to Appendix C, Alpha-Numeric Pad and scan the barcodes representing the hex characters determined in the previous step. For the example given, the characters '3' and 'D' would be scanned.
6. Scan the END barcode to exit programming mode.

Figure 4-4. Label ID Position Options



Label ID — cont.

START / END	
PROGRAMMING BARCODES	
	Label ID Transmission: Disable
Label ID Position: Before Bar Code Data DEFAULT	
	Label ID Position: After Bar Code Data
Set UPC-A Label ID Character(s)	 **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
 **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**	Set UPC-A w/P2 Addon Label ID Character(s)
Set UPC-A w/P5 Addon Label ID Character(s)	 **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**
 **DEFAULT SETTING FOR THIS FEATURE: A (41 hex)**	Set UPC-A w/C128 Addon Label ID Character(s)
Set UPC-E Label ID Character(s)	 **DEFAULT SETTING FOR THIS FEATURE: E (45 hex)**

Label ID — cont.

START / END

PROGRAMMING BARCODES

DEFAULT SETTING FOR THIS FEATURE: E (45 hex)

Set UPC-E w/P2 Addon Label ID Character(s)

Set UPC-E w/P5 Addon Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: E (45 hex)

DEFAULT SETTING FOR THIS FEATURE: E (45 hex)

Set UPC-E w/C128 Addon Label ID Character(s)

Set EAN-8 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)

DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)

Set EAN-8 w/P2 Addon Label ID Character(s)

Set EAN-8 w/P5 Addon Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)

DEFAULT SETTING FOR THIS FEATURE: FF (4646 hex)

Set EAN-8 w/C128 Addon Label ID Character(s)

Set EAN-13 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: F (46 hex)

Label ID — cont.

START / END

PROGRAMMING BARCODES

DEFAULT SETTING FOR THIS FEATURE: F (46 hex)	Set EAN-13 w/P2 Addon Label ID Character(s)
Set EAN-13 w/P5 Addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: F (46 hex)**
DEFAULT SETTING FOR THIS FEATURE: F (46 hex)	Set EAN-13 w/C128 Addon Label ID Character(s)
Set ISBN Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: I (49 hex)**
DEFAULT SETTING FOR THIS FEATURE: IA (4941 hex)	Set IATA Label ID Character(s)
Set GTIN Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: G (47 hex)**
DEFAULT SETTING FOR THIS FEATURE: G2 (4732 hex)	Set GTIN w/P2 addon Label ID Character(s)
Set GTIN w/P5 addon Label ID Character(s)	**DEFAULT SETTING FOR THIS FEATURE: G5 (4735 hex)**

Label ID — cont.

START / END

PROGRAMMING BARCODES

Set GTIN w/C128 addon Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: G8 (4738 hex)

Set GS1 DataBar Ominidirectional Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: R4 (5234 hex)

Set GS1 DataBar Expanded Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: RX (5258 hex)

Set GS1 DataBar Limited Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: RL (524C hex)

Set Code 39 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: * (2A hex)

Set Pharmacode 39 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: A (41 hex)

Set Code 128 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: # (23 hex)

Set I 2 of 5 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: i (69 hex)

Label ID — cont.

START / END

PROGRAMMING BARCODES

Set Codabar Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: % (25 hex)

Set Code 93 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: & (26 hex)

Set Code 11 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: @ (40 hex)

Set MSI/Plessey Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: @ (40 hex)

Set Std 2 of 5 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: s (73 hex)

Set PDF417 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: P (5000 hex)

Set Micro PDF417 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: mP (6D50 hex)

Set PDF 417 Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: P (0x5000)[a]

Set Datamatrix Label ID Character(s)

DEFAULT SETTING FOR THIS FEATURE: Dm (0x446D)

a. Default setting exceptions for PDF 417 Label ID are as follows: Default for RS-232 WN is ‘Q’ (0x5100). Default for USB-HID-POS is ‘P ‘ (0x5020), or ‘P-Space’.

Case Conversion

This feature can convert scanned barcode data to either all lower case (a through z) or all upper case (A through Z) characters.

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

START / END	
PROGRAMMING BARCODES	
	Disable DEFAULT
Convert to Upper Case	
	Convert to Lower Case

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, AG15TA81, it would look as follows after the character conversion: BG25TB82.

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

To set Character Conversion:

1. Scan the START/END barcode.
2. Scan the Character Conversion barcode.
3. Determine the desired string. Up to sixteen positions can 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 C, Alpha-Numeric Pad and scan the barcodes representing the hex characters determined in the previous step.
5. Scan the START/END barcode to exit Programming Mode.

NOTE

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

START / END

PROGRAMMING BARCODES

Character Conversion

DEFAULT SETTING FOR THIS FEATURE:
FFFFFFFFFFFFFFFF hex (no conversion)

Chapter 5
Symbologies

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

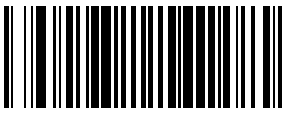
- UPC-A
- UPC-E
- EAN-13
- EAN-8
- GS1 DataBar Omnidirectional / Stacked Ominidirectional
- GS1 DataBar Expanded / Expanded Stacked
- GS1 DataBar Limited
- Code 39
- Pharmacode 39
- Transmit Function Characters
- Interleaved 2 of 5
- Codabar
- Code 93
- MSI/Plessey
- Standard 2 of 5

Factory Defaults— for the standard RS-232 interface are indicated in bold text throughout this section. Reference Appendix D, Default Settings for default exceptions for your interface.

UPC-A

Disable/Enable UPC-A

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

START / END	
PROGRAMMING BAR CODES	
	Disable UPC-A
Enable UPC-A DEFAULT	

UPC-A — continued

Check Digit Transmission

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

START / END

PROGRAMMING BAR CODES

Don't Send Check Digit

Send Check Digit
DEFAULT

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.

START / END

PROGRAMMING BAR CODES

Don't Expand to EAN-13
DEFAULT

Expand to EAN-13

UPC-A — continued

Number System Transmission

This feature enables/disables transmission of UPC-A System Number.

START / END
PROGRAMMING BAR CODES
Disable Number System Transmission
Enable Number System Transmission DEFAULT

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 a good read.

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read DEFAULT
Minimum = 2 Reads
Minimum = 3 Reads
Minimum = 4 Reads

UPC-A — continued

UPC-A In-store Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	Minimum = 1 Read DEFAULT
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

UPC-E

The following options apply to the UPC-E symbology.

Disable/Enable UPC-E

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

START / END

PROGRAMMING BAR CODES

Disable UPC-E

Enable UPC-E
DEFAULT

Check Digit Transmission

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

START / END

PROGRAMMING BAR CODES

Don't Send Check Digit

Send Check Digit
DEFAULT

UPC-E — continued

Number System Digit

The Number System Digit (NSD) which is always a zero (0) in the leading position can be optionally included (or not) with scanned barcode data.

START / END
PROGRAMMING BAR CODES
Exclude Number System Digit DEFAULT
Include Number System Digit

Expand UPC-E to UPC-A

Enables/disables expansion of UPC-E labels to UPC-A. Selecting this feature also changes the symbology ID to match those required for UPC-A.

START / END
PROGRAMMING BAR CODES
Don't Expand UPC-E to UPC-A DEFAULT
Expand UPC-E to UPC-A

UPC-E — continued

Expand UPC-E to EAN13

Enables/disables expansion of UPC-E labels to EAN-13. Selecting this feature also changes the symbology ID to match those required for EAN-13.

START / END
PROGRAMMING BAR CODES
Don't Expand UPC-E to EAN-13 DEFAULT
Expand UPC-E to EAN-13

Minimum Reads

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

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read
Minimum = 2 Reads DEFAULT
Minimum = 3 Reads
Minimum = 4 Reads

GTIN

The following options apply to the GTIN label data format.

Expand UPC/EAN to GTIN

When this feature is enabled, the scanner will translate UPC/EAN labels to the 14 digit GTIN format.

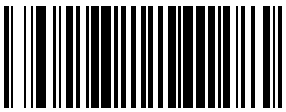
START / END	
PROGRAMMING BAR CODES	
	Don't Expand to GTIN DEFAULT
Expand to GTIN	

EAN-13

The following options apply to the EAN-13 symbology.

Disable/Enable EAN-13

When disabled, the scanner will not read EAN-13 barcodes.

START / END 

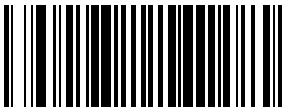
PROGRAMMING BAR CODES

 Disable EAN-13

Enable EAN-13
DEFAULT 

Check Digit Transmission

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

START / END 

PROGRAMMING BAR CODES

 Don't Send Check Digit

Send Check Digit
DEFAULT 

EAN-13 — continued

EAN-13 Flag 1 Character

Enables/disables transmission of an EAN/JAN13 Flag1 character.

START / END

PROGRAMMING BAR CODES

Don't Transmit EAN-13 Flag 1 Char

Transmit EAN-13 Flag 1 Char
DEFAULT

ISBN

When enabled, this feature truncates the leading three digits from labels that contain ISBN (International Standard Book Number) and appends an ISBN check character to the end of the label. These codes are used for books and magazines. Labels with ISBN codes start with "978".

Example:

Bar code data: "9789572222720"

Output: "9572222724"

START / END

PROGRAMMING BAR CODES

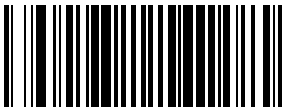
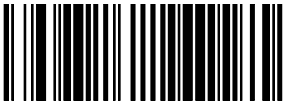
Disable ISBN
DEFAULT

Enable ISBN

EAN-13 — continued

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	**Minimum = 1 Read DEFAULT**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

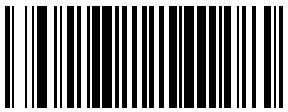
EAN-8

The following options apply to the EAN-8 symbology.

Disable/Enable EAN-8

When disabled, the scanner will not read EAN-8 barcodes.

START / END



PROGRAMMING BAR CODES

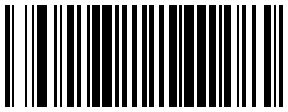
Disable EAN-8

Enable EAN-8
DEFAULT

Check Digit Transmission

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

START / END



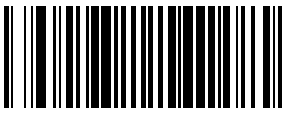
PROGRAMMING BAR CODES

Don't Send Check Digit

Send Check Digit
DEFAULT

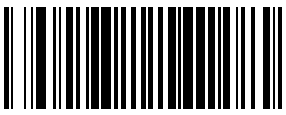
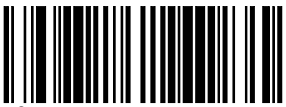
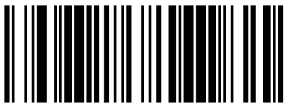
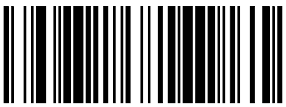
EAN-8 — continued

Expand EAN-8 to EAN-13— Expands EAN-8 data to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

START / END 
PROGRAMMING BAR CODES
 **Don't Expand to EAN-13 DEFAULT**
Expand to EAN-13 

Minimum Reads

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

START / END 
PROGRAMMING BAR CODES
 **Minimum = 1 Read DEFAULT**
Minimum = 2 Reads 
 Minimum = 3 Reads
Minimum = 4 Reads 

Enable EAN Two-Label

Enables/disables the ability of the scanner to decode EAN two-label pairs.

START / END

PROGRAMMING BAR CODES

Disable EAN Two-Label

Enable EAN Two-Label

Enable EAN Two-Label Combined

Enables/disables the transmitting of an EAN two label pair as one label.

START / END

PROGRAMMING BAR CODES

Disable EAN Two-Label Combined

Enable EAN Two-Label Combined

NOTE **Contact Customer Support for advanced programming of Two-Label Pairs.**

Add-ons

Add-ons (or supplemental characters) are commonly added to the end of UPC/EAN barcodes. The scanner will read the add-ons if they are enabled and in the field of view. Three add-on types are supported: 2-digit, 5-digit and Code 128 add-ons. Supported options are:

None— This option directs the scanner to ignore add-on portion of a UPC/EAN barcode but still read the main portion of the barcode.

2 Digits— The scanner will optionally read 2-digit add-ons with the UPC/EAN label.

5 Digits— The scanner will optionally read 5-digit add-ons with the UPC/EAN label.

Code 128 Add-on— The scanner will optionally read Code 128 add-ons with the UPC/EAN label.

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

Add-ons — continued

START / END	
PROGRAMMING BAR CODES	
	Disable Optional 2-Digit Add-ons **DEFAULT**
Enable Optional 2-Digit Add-ons	
	Disable Optional 5-Digit Add-ons **DEFAULT**
Enable Optional 5-Digit Add-ons	
	Disable Optional Code 128 Add-ons **DEFAULT**
Enable Optional Code 128 Add-ons	

GS1 DataBar Omnidirectional / Stacked Ominidirectional

The following options apply to the GS1 DataBar Omnidirectional symbology.

Disable/Enable GS1 DataBar Omnidirectional

When this feature is disabled, the scanner will not read GS1 DataBar Omnidirectional barcodes.

START / END

PROGRAMMING BAR CODES

Disable GS1 DataBar Omnidirectional
DEFAULT

Enable GS1 DataBar Omnidirectional

GS1 128 Emulation

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

START / END

PROGRAMMING BAR CODES

Disable GS1 128 Emulation
DEFAULT

Enable GS1 128 Emulation

GS1 DataBar Omnidirectional / Stacked Ominidirectional — continued

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	Minimum = 1 Read DEFAULT
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

GS1 DataBar Expanded / Expanded Stacked

The following options apply to the GS1 DataBar Expanded symbology.

Disable/Enable GS1 DataBar Expanded

When this feature is disabled, the scanner will not read GS1 DataBar Expanded barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable GS1 DataBar Expanded **DEFAULT**
Enable GS1 DataBar Expanded	

GS1 DataBar Expanded 128 Emulation

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

START / END	
PROGRAMMING BAR CODES	
	Disable GS1 DataBar Expanded 128 Emulation **DEFAULT**
Enable GS1 DataBar Expanded 128 Emulation	

GS1 DataBar Expanded / Expanded Stacked — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

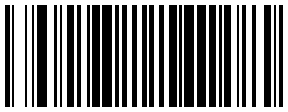
Configuring Fixed Length Decoding:

1. Scan the START/END barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first fixed length by following the GS1 DataBar Expanded Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the GS1 DataBar Expanded Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START/END barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first variable length by following the GS1 DataBar Expanded Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the GS1 DataBar Expanded Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding
DEFAULT

Fixed Length Decoding

GS1 DataBar Expanded / Expanded Stacked — continued

GS1 DataBar Expanded Length 1, Length 2 Programming Instructions

1. Scan the START/END barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For GS1 DataBar Expanded barcodes, only the data characters are included in the length calculations.

4. Scan the START/END barcode.

START / END

PROGRAMMING BAR CODES

DEFAULT SETTING FOR THIS FEATURE: 008

Set Length 1

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 014

GS1 DataBar Expanded / Expanded Stacked — continued

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	Minimum = 1 Read DEFAULT
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

GS1 DataBar Expanded / Expanded Stacked — continued

Coupon Read Control

This feature controls coupon reading.

START / END	
PROGRAMMING BARCODES	
	Disable coupon filtering
Enable UPCA coupon decoding Disable GS1 DataBar coupon decoding **DEFAULT**	
	Enable GS1 DataBar coupon decoding Disable UPCA coupon decoding

GS1 DataBar Limited

The following options apply to the GS1 DataBar Limited symbology.

Disable/Enable GS1 DataBar Limited

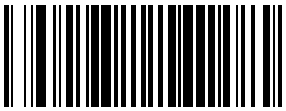
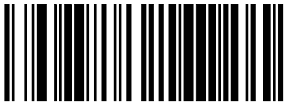
When this feature is disabled, the scanner will not read GS1 DataBar Limited barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable GS1 DataBar Limited **DEFAULT**
Enable GS1 DataBar Limited	

GS1 DataBar Limited — continued

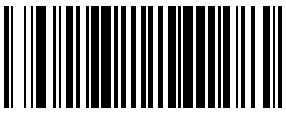
GS1 DataBar Limited 128 Emulation

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

START / END	
PROGRAMMING BAR CODES	
	**Disable GS1 DataBar Limited 128 Emulation DEFAULT**
Enable GS1 DataBar Limited 128 Emulation	

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	**Minimum = 1 Read DEFAULT**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

Code 39

The following options apply to the Code 39 symbology.

Disable/Enable Code 39

When this feature is disabled, the scanner will not read Code 39 barcodes.

START / END
PROGRAMMING BAR CODES
Disable Code 39
Enable Code 39 DEFAULT

Check Character Calculation

When enabled, the scanner will calculate the check character of the labels. Turn this option on only when a checksum is present in the Code 39 labels.

START / END
PROGRAMMING BAR CODES
Disable Check Char Calculation DEFAULT
Enable Check Char Calculation

Code 39 — continued

Check Character Transmit

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

START / END
PROGRAMMING BAR CODES
Disable Check Char Transmission
Enable Check Char Transmission **DEFAULT**

Start/Stop Characters

Enables/disables transmission of Code39 start and stop characters.

START / END
PROGRAMMING BAR CODES
Don't Transmit Start/Stop Characters **DEFAULT**
Transmit Start/Stop Characters

Code 39 — continued

Code 39 Full ASCII

Enables/disables the translation of Code 39 characters to Code 39 full-ASCII characters.

START / END	
PROGRAMMING BAR CODES	
	Disable Code 39 Full ASCII **DEFAULT**
Enable Code 39 Full ASCII	

Code 39 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

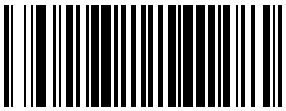
Configuring Fixed Length Decoding:

1. Scan the START/END barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first fixed length by following the Code 39 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Code 39 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START/END barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first variable length by following the Code 39 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Code 39 Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding
DEFAULT

Fixed Length Decoding

Code 39 — continued

Code 39 Length 1, Length 2 Programming Instructions

1. Scan the START/END barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Code 39 barcodes, all check, data and full ASCII shift characters (even if full ASCII is enabled) are included in the length calculations. Start/Stop characters are not included.

4. Scan the START/END barcode.

START / END

PROGRAMMING BAR CODES

Set Length 1

DEFAULT SETTING FOR THIS FEATURE: 003

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 050

Quiet Zones

This feature enables/disables the requirement that quiet zones must be present for Code 39 barcodes.

START / END

PROGRAMMING BAR CODES

Don't require Quiet Zones
DEFAULT

Require Quiet Zones

Code 39 — continued

Code 39 Stitching

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

START / END
PROGRAMMING BAR CODES
Disable Code 39 Stitching
Enable Code 39 Stitching DEFAULT

Minimum Reads

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

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read DEFAULT
Minimum = 2 Reads
Minimum = 3 Reads
Minimum = 4 Reads

Pharmacode 39

The following options apply to the Pharmacode 39 symbology.

Disable/Enable Pharmacode 39

When this feature is disabled, the scanner will not read Pharmacode 39 barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable Pharmacode 39 **DEFAULT**
Enable Pharmacode 39	

Start/Stop Characters

Enables or disables transmission of Pharmacode 39 start/stop characters.

START / END	
PROGRAMMING BAR CODES	
	Don't Transmit Start/Stop Characters **DEFAULT**
Transmit Start/Stop Characters	

Pharmacode 39 — continued

Check Character Transmit

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

START / END	
PROGRAMMING BAR CODES	
	Disable Check Char Transmission
Enable Check Char Transmission DEFAULT	

Code 128 and UCC/EAN 128

The following options apply to the Code 128 and EAN 128 symbologies.

Code 128— When this feature is disabled, the scanner will not read Code 128 barcodes.

UCC/EAN 128— Enables/disables ability of scanner to translate UCC/EAN 128 labels to the EAN 128 data format.

START / END
PROGRAMMING BAR CODES
Disable Code 128
Enable Code 128
Transmit EAN128 labels in Code128 data format
Transmit EAN128 labels in EAN128 data format

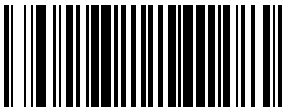
Code 128 and UCC/EAN 128 — continued

Transmit Function Characters

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

Function codes are transmitted as follows:

- FNC1 = 80 hex
- FNC2 = 81 hex
- FNC3 = 82 hex
- FNC4 = 83 hex

START / END 

PROGRAMMING BAR CODES

Don't Transmit Function Characters
DEFAULT

Transmit Function Characters 

Code 128 and UCC/EAN 128 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

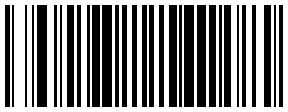
Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first fixed length by following the Code 128 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Code 128 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first variable length by following the Code 128 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Code 128 Length 1, Length 2 Programming Instructions below.

START / END	
PROGRAMMING BAR CODES	
	**Variable Length Decoding DEFAULT**
Fixed Length Decoding	

Code 128 and UCC/EAN 128 — continued

Code 128 Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Code 128 barcodes, only the data characters are included in the length calculations.

4. Scan the END barcode.

START / END
PROGRAMMING BAR CODES
DEFAULT SETTING FOR THIS FEATURE: 001 — Set Length 1
Set Length 2 — DEFAULT SETTING FOR THIS FEATURE: 080

Code 128 Conversion to Code 39

Enables/disables expansion of Code 128 labels to Code 39.

START / END
PROGRAMMING BAR CODES
Disable DEFAULT
Enable

Code 128 and UCC/EAN 128 — continued

Code 128 Stitching

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

START / END
PROGRAMMING BAR CODES
Disable Code 128 Stitching
Enable Code 128 Stitching DEFAULT

Minimum Reads

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

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read DEFAULT
Minimum = 2 Reads
Minimum = 3 Reads
Minimum = 4 Reads

Interleaved 2 of 5

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

Disable/Enable Interleaved 2 of 5

When this feature is disabled, the scanner will not read Interleaved 2 of 5 barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable Interleaved 2 of 5 **DEFAULT**
Enable Interleaved 2 of 5	

Check Digit Calculation

When enabled, the scanner will calculate the check digit of the labels.

START / END	
PROGRAMMING BAR CODES	
	Disable Check Digit Calculation **DEFAULT**
Enable Check Digit Calculation	

Interleaved 2 of 5 — continued

Check Digit Transmit

Enable this option to transmit the check digit with scanned barcode data.

START / END	
PROGRAMMING BAR CODES	
	Disable Check Digit Transmission **DEFAULT**
Enable Check Digit Transmission	

Interleaved 2 of 5 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

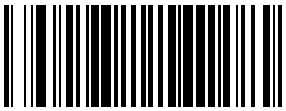
Configuring Fixed Length Decoding:

1. Scan the START barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first fixed length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first variable length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Interleaved 2 of 5 Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding
DEFAULT

Fixed Length Decoding

Interleaved 2 of 5 — continued

Interleaved 2 of 5 Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Interleaved 2 of 5 barcodes, lengths must be an even number. Additionally, all check and data characters are included in the length calculations.

4. Scan the END barcode.

START / END

PROGRAMMING BAR CODES

Set Length 1

DEFAULT SETTING FOR THIS FEATURE: 006

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 050

Interleaved 2 of 5 — continued

Interleaved 2 of 5 Stitching

Enables/disables stitching for Interleaved 2 of 5 labels. When parts of an Interleaved 2 of 5 barcode are presented to the scanner with this feature enabled, the barcode parts will be assembled by the scanner's software, and the data will be decoded if all barcode proofing requirements are met.

NOTE

Only functions when Fixed Length Decoding is enabled.

START / END

PROGRAMMING BAR CODES

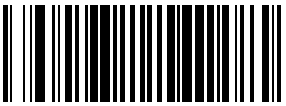
Disable Interleaved 2 of 5 Stitching
DEFAULT

Enable Interleaved 2 of 5 Stitching

Interleaved 2 of 5 — continued

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	**Minimum = 1 Read DEFAULT**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

Codabar

The following options apply to the Codabar symbology.

Disable/Enable Codabar

When this feature is disabled, the scanner will not read Codabar barcodes.

START / END

PROGRAMMING BAR CODES

Disable Codabar
DEFAULT

Enable Codabar

Check Character Verification

When enabled, the scanner will verify the check character of the labels.

START / END

PROGRAMMING BAR CODES

Disable Check Char Verification
DEFAULT

Enable Check Char Verification

Codabar — continued

Check Character Transmit

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

START / END	
PROGRAMMING BAR CODES	
	Disable Check Char Transmission
Enable Check Char Transmission DEFAULT	

Codabar — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

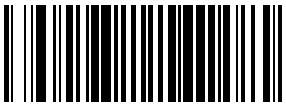
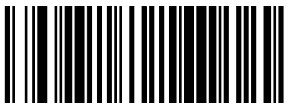
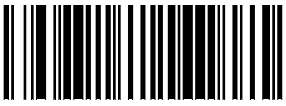
Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

Configuring Fixed Length Decoding:

1. Scan the START barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first fixed length by following the Codabar Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Codabar Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first variable length by following the Codabar Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Codabar Length 1, Length 2 Programming Instructions below.

START / END	
PROGRAMMING BAR CODES	
	**Variable Length Decoding DEFAULT**
Fixed Length Decoding	

Codabar — continued

Codabar Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Codabar barcodes, all start, stop, check and data characters are included in the length calculations.

4. Scan the END barcode.

START / END

PROGRAMMING BAR CODES

DEFAULT SETTING FOR THIS FEATURE: 003

Set Length 1

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 050

Quiet Zones

This feature enable/disables the requirement that quiet zones must be present for Codabar barcodes.

START / END

PROGRAMMING BAR CODES

Don't require Quiet Zones
DEFAULT

Require Quiet Zones

Codabar — continued

Start/Stop Character Type

Codabar has four pairs of Start/Stop patterns. Select one pair to match your application.

START / END	
PROGRAMMING BAR CODES	
	Start/Stop Type: ABCD/TN*E
Start/Stop Type: ABCD/ABCD	
	Start/Stop Type: abcd/tn*e
Start/Stop Type: abcd/abcd DEFAULT	

Start/Stop Character Transmission

The transmission of start and end characters of Codabar is selected below.

START / END	
PROGRAMMING BAR CODES	
	Disable Start/Stop Char Transmission
Enable Start/Stop Char Transmission DEFAULT	

Codabar — continued

Start/Stop Character Match

This feature enables/disables the requirement that start and stop characters match.

START / END

PROGRAMMING BAR CODES

Disable Start/Stop Char Match
DEFAULT

Enable Start/Stop Char Match

Codabar Stitching

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

NOTE **Only functions when Fixed Length Decoding is enabled.**

START / END

PROGRAMMING BAR CODES

Disable Codabar Stitching
DEFAULT

Enable Codabar Stitching

Codabar — continued

Minimum Reads

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

START / END	
PROGRAMMING BAR CODES	
	Minimum = 1 Read **DEFAULT**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

Code 93

The following options apply to the Code 93 symbology.

Disable/Enable Code 93

When this feature is disabled, the scanner will not read Code 93 barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable Code 93 **DEFAULT**
Enable Code 93	

Code 93 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

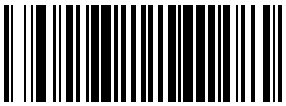
Configuring Fixed Length Decoding:

1. Scan the START/END barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first fixed length by following the Code 93 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Code 93 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START/END barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first variable length by following the Code 93 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Code 93 Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding
DEFAULT

Fixed Length Decoding

Code 93 — continued

Code 93 Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Code 93 barcodes, only the data characters are included in the length calculations.

4. Scan the END barcode.

START / END
PROGRAMMING BAR CODES
DEFAULT SETTING FOR THIS FEATURE: 001 — Set Length 1
Set Length 2 — DEFAULT SETTING FOR THIS FEATURE: 050

Code 93 — continued

Code 93 Stitching

Enables/disables stitching for Code 93 barcodes. When parts of a Code 93 label are presented to the scanner with this feature enabled, the barcode parts will be assembled by the scanner's software, and the data will be decoded if all barcode proofing requirements are met.

START / END
PROGRAMMING BAR CODES
Disable Code 93 Stitching DEFAULT
Enable Code 93 Stitching

Minimum Reads

This feature specifies the minimum number of consecutive times a Code 93 label must be decoded before it is accepted as a good read.

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read DEFAULT
Minimum = 2 Reads
Minimum = 3 Reads
Minimum = 4 Reads

MSI/Plessey

The following options apply to the MSI/Plessey symbology.

Disable/Enable MSI/Plessey

When this feature is disabled, the scanner will not read MSI/Plessey barcodes.

START / END	
PROGRAMMING BAR CODES	
	Disable MSI/Plessey **DEFAULT**
Enable MSI/Plessey	

Check Digit Verification

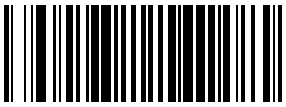
This feature specifies whether one or two check digits are to be calculated and verified.

START / END	
PROGRAMMING BAR CODES	
	Disable Check Digit Verification **DEFAULT**
Enable Check Digit Verification	

MSI/Plessey — continued

Check Digit Transmit

When this option is enabled, the scanner will transmit one-digit or two-digit check digits, depending upon the setting for check digit verification.

START / END 

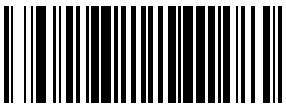
PROGRAMMING BAR CODES

Disable Check Digit Transmission

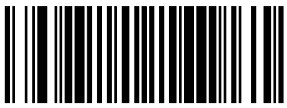
Enable Check Digit Transmission
DEFAULT

Number of Check Characters

Specifies number of MSI/Plessey check characters to be calculated and verified

START / END 

PROGRAMMING BAR CODES



1 Check Character
DEFAULT

2 Check Characters

MSI/Plessey — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

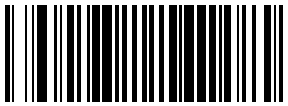
Configuring Fixed Length Decoding:

1. Scan the START/END barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first fixed length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START/END barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first variable length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the MSI/Plessey Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding
DEFAULT

Fixed Length Decoding

MSI/Plessey — continued

MSI/Plessey Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For MSI/Plessey barcodes, all check and data characters are included in the length calculations.

4. Scan the END barcode.

START / END
PROGRAMMING BAR CODES
DEFAULT SETTING FOR THIS FEATURE: 004 — Set Length 1
Set Length 2 — DEFAULT SETTING FOR THIS FEATURE: 016

MSI/Plessey — continued

MSI/Plessey Stitching

Enables/disables stitching for MSI/Plessey barcodes. When parts of an MSI/Plessey label are presented to the scanner with this feature enabled, the barcode parts will be assembled by the scanner's software, and the data will be decoded if all barcode proofing requirements are met.

NOTE

Only functions when Fixed Length Decoding is enabled.

START / END	
PROGRAMMING BAR CODES	
	Disable MSI/Plessey Stitching **DEFAULT**
Enable MSI/Plessey Stitching	

MSI/Plessey — continued

Minimum Reads

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

START / END
PROGRAMMING BAR CODES
Minimum = 1 Read **DEFAULT**
Minimum = 2 Reads
Minimum = 3 Reads
Minimum = 4 Reads

Standard 2 of 5

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

Disable/Enable Standard 2 of 5

When this feature is disabled, the scanner will not read Standard 2 of 5 barcodes.

START / END
PROGRAMMING BAR CODES
Disable Std 2 of 5 **DEFAULT**
Enable Std 2 of 5

Check Digit Verification

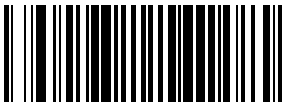
When enabled, the scanner will verify the check digit of the labels.

START / END
PROGRAMMING BAR CODES
Disable Check Digit Verification **DEFAULT**
Enable Check Digit Verification

Standard 2 of 5 — continued

Check Digit Transmit

When this option is enabled, the scanner will transmit the check digit.

START / END	
PROGRAMMING BAR CODES	
	Disable Check Digit Transmission
Enable Check Digit Transmission DEFAULT	

Standard 2 of 5 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

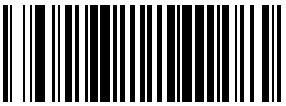
Configuring Fixed Length Decoding:

1. Scan the START/END barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first fixed length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '000' if there is only one fixed length) by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START/END barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the START/END barcode.
4. Set Length 1 to the first variable length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second variable length by following the Standard 2 of 5 Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BAR CODES

Variable Length Decoding DEFAULT

Fixed Length Decoding

Standard 2 of 5 — continued

Standard 2 of 5 Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Appendix C, Alpha-Numeric Pad and scan the three digits (zero padded) representing the length in decimal notation.

NOTE

For Standard 2 of 5 barcodes, all check and data characters are included in the length calculations.

4. Scan the END barcode.

START / END

PROGRAMMING BAR CODES

DEFAULT SETTING FOR THIS FEATURE: 008

Set Length 1

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 050

Standard 2 of 5 — continued

Standard 2 of 5 Stitching

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

NOTE

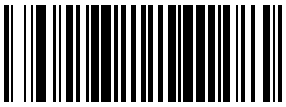
Only functions when Fixed Length Decoding is enabled.

START / END	
PROGRAMMING BAR CODES	
	Disable Std 2 of 5 Stitching **DEFAULT**
Enable Std 2 of 5 Stitching	

Standard 2 of 5 — continued

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 a good read.

START / END	
PROGRAMMING BAR CODES	
	**Minimum = 1 Read DEFAULT**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

NOTES

2D Symbologies & Advanced Decoding Features

NOTE

The features in this section are available ONLY for models with 2D features activated.

2D Symbologies

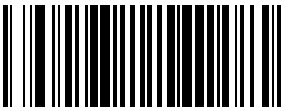
The scanner supports the following 2D symbologies (barcode types): PDF 417 and Datamatrix. Options for each symbology are included in this addendum.

Factory Defaults— for the std. RS-232 interface are indicated in bold text throughout.

PDF 417

Disable/Enable PDF 417

When disabled, the scanner will not read PDF 417 barcodes.

START / END	
PROGRAMMING BARCODES	
	**Disable PDF 417**
Enable PDF 417	

PDF 417 — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

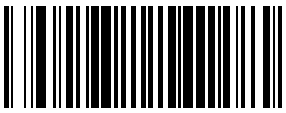
Configuring Fixed Length Decoding:

1. Scan the START barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first fixed length by following the Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the PDF 417 Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the minimum length by following the PDF 417 Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the maximum length by following the PDF 417 Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BARCODES

Variable Length Decoding

Fixed Length Decoding

PDF 417 — continued

PDF 417 Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Alpha-Numeric Pad and scan the four hex digits representing the length in hexidecimal notation.

NOTE

For PDF 417 barcodes, only the data characters are included in the length calculations.

Scan the END barcode.

START / END

PROGRAMMING BARCODES

DEFAULT SETTING FOR THIS FEATURE: 01 (0X0001)

Set Length 1

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 2710 (0x0A96)

PDF 417 — continued

Minimum Reads

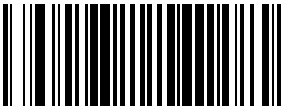
This feature specifies the minimum number of consecutive times a PDF 417 label must be decoded before it is accepted as good read.

START / END	
PROGRAMMING BARCODES	
	Minimum = 1 Read
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

Datamatrix

Disable/Enable Datamatrix

When disabled, the scanner will not read Datamatrix barcodes.

START / END	
PROGRAMMING BARCODES	
	Disable Datamatrix
Enable Datamatrix	

Datamatrix — continued

Length Control

Fixed Length Decoding— When fixed length decoding is enabled, the scanner will decode a barcode if the label length matches one of the configurable fixed lengths.

Variable Length Decoding— When variable length decoding is enabled, the scanner will decode a barcode if the label length falls in the range of the configurable minimum and maximum length.

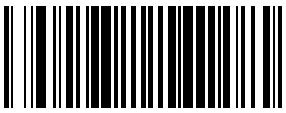
Configuring Fixed Length Decoding:

1. Scan the START barcode.
2. Scan the Fixed Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the first fixed length by following the Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the second fixed length (or to '00' if there is only one fixed length) by following the Datamatrix Length 1, Length 2 Programming Instructions below.

Configuring Variable Length Decoding:

1. Scan the START barcode.
2. Scan the Variable Length Decoding barcode.
3. Scan the END barcode.
4. Set Length 1 to the minimum length by following the Datamatrix Length 1, Length 2 Programming Instructions below.
5. Set Length 2 to the maximum length by following the Datamatrix Length 1, Length 2 Programming Instructions below.

START / END



PROGRAMMING BARCODES

Variable Length Decoding

Fixed Length Decoding

Datamatrix — continued

Datamatrix Length 1, Length 2 Programming Instructions

1. Scan the START barcode.
2. Scan either the Set Length 1 or Set Length 2 barcode.
3. Turn to Alpha-Numeric Pad and scan the four hex digits representing the length in hexidecimal notation.

NOTE

For Datamatrix barcodes, only the data characters are included in the length calculations.

Scan the END barcode.

START / END

PROGRAMMING BARCODES

DEFAULT SETTING FOR THIS FEATURE: 1 (0x0001)

Set Length 1

Set Length 2

DEFAULT SETTING FOR THIS FEATURE: 800 (0x0320)

Datamatrix — continued

Minimum Reads

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

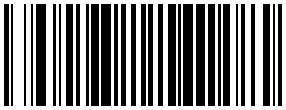
START / END	
PROGRAMMING BARCODES	
	**Minimum = 1 Read**
Minimum = 2 Reads	
	Minimum = 3 Reads
Minimum = 4 Reads	

Image Capture

NOTE

This function is ONLY available for scanners having a button.

Image capture requires that the scanner use the Standard RS-232 or USB COM interface ONLY.

The scanner reverts to default reading mode after image capture and transfer.

How to Capture an Image

To initiate an Image Capture, scan the IMAGE CAPTURE label below, and press the button. A targeting "pointer" will be illuminated while the button is pressed.

Upon release of the button, the image is captured and transmitted to the host. If the button is not pushed within 30 seconds, the scanner will return to barcode reading (scanning) mode.

IMAGE CAPTURE

Captured Image Format

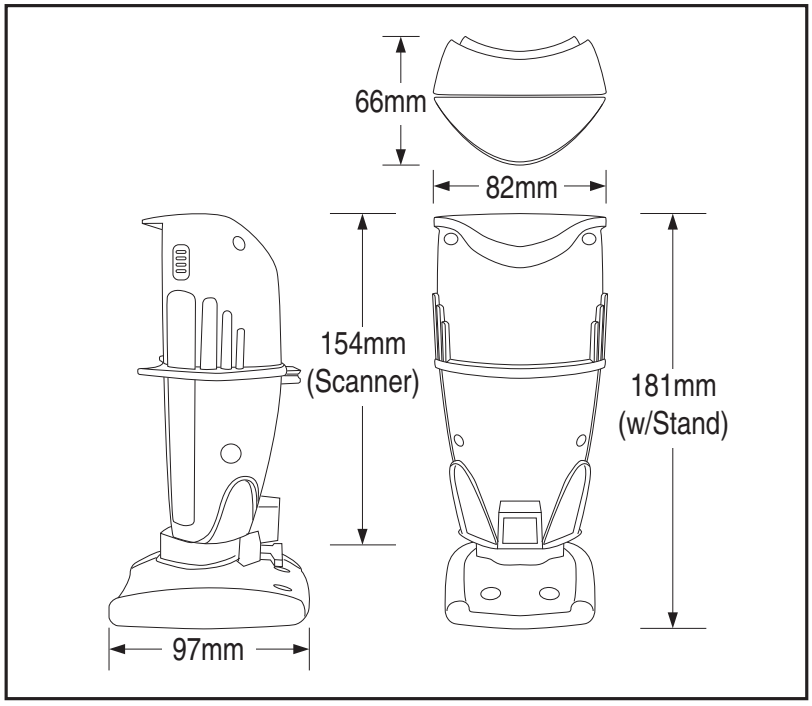
Images are captured as 752 x 480 JPEG format with a pre-defined compression ratio, and are displayed via the host application software.

Chapter A
Product Specifications

Optical and Read Performance Parameters

Parameter	Specification
Scan Volume	80 cubic inches
Scan Pattern	100 lines
Scan Rate	1170 Digital Scan Lines/second
Minimum Resolution	5 mil
Depth of Field (100% UPC Labels)	0 ~ 8”
Minimum Print Contrast Ratio	25%
Skew (Yaw)	± 75°
Pitch	± 65°
Roll	Between 0 and 360°

Scanner Dimensions



Physical Properties

Parameter	Specification
Dimensions (Scanner only):	66mm x 82mm x 154mm (2.6" x 3.23" x 6")
Dimensions (Scanner w/ Stand):	97mmx 82mm x 181mm (3.82" x 3.23" x 7.13")
Weight (Scanner)	9 oz.
Weight (Base Station)	15.7 oz.

Electrical Parameters

Parameter	Specification
Operating Voltage	(Two Models) 5V unit = 5.0V ± 5% 12V unit = 8-14V ± 5%
Input Current Operating (idle) Operating (label read) Surge Current (< 30 ms)	 <350mA <450 mA <650mA

Environmental Parameters

Parameter	Specification
Mechanical Shock	Multi 1.2m drops
Contaminants Water and Dust	 IP52
Temperature Ranges: Operating Storage	 32° F to +104° F (0° C to +40° C) -40° F to +158° F (-40° C to + 70°C)
Ambient Light Indoor	40 - 6000 lux
Ambient Light Outdoor	40 - 86,100 lux
Humidity	5 to 95% non-condensing
Beeper/Speaker	70-85dBA at a distance of 3'-3" (1 meter)
Vibration	Retail/Office

Other Parameters

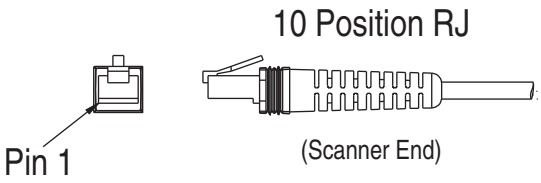
Parameter	Specification
EAS Support	YES (Checkpoint)

Chapter B
Cable Pinouts

Standard Cable Pinouts (Primary Interface Cables)

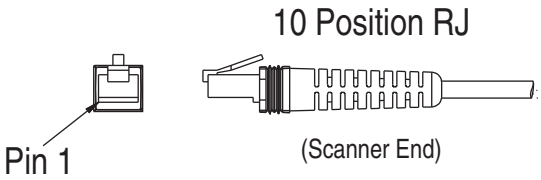
RS-232

1	
2	CTS
3	
4	RTS
5	RXD
6	TXD
7	
8	VCC IN
9	GND
10	



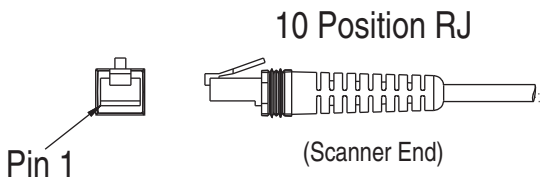
IBM Port 5B/9B/17

1	
2	
3	
4	DATA -
5	
6	DATA +
7	
8	VCC_IN
9	GND
10	



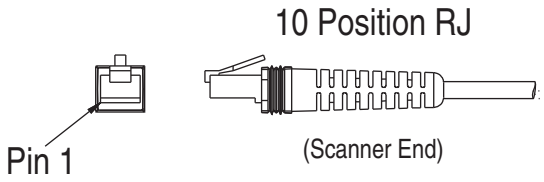
USB-OEM

1	
2	
3	
4	D -
5	
6	D +
7	
8	VIN
9	GND
10	



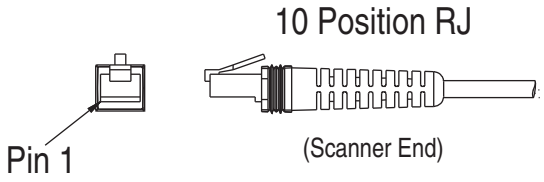
USB, USB Keyboard & USB COM

1	
2	
3	
4	D -
5	
6	D +
7	
8	VBUS_VIN
9	GND
10	



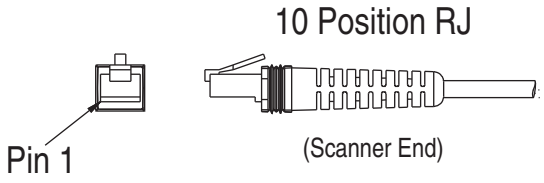
Wand Emulation

1	
2	
3	WAND~
4	
5	
6	
7	
8	VCC_IN
9	GND
10	



Keyboard Wedge

1	
2	KB_DATA
3	AT_CLK
4	KB_CLK
5	
6	AT_DATA
7	
8	VCC_IN
9	GND
10	



Chapter C
Alpha-Numeric Pad

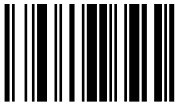

A


B


C


D


E


F

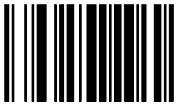
Alpha-Numeric Pad

1

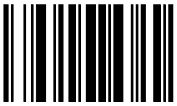
2

3

4



5



6

7

8

9

0

Appendix D
Default Settings

Standard Feature Defaults

The table immediately below lists the default settings for the standard RS-232 interface.

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Double Read Timeout	0.6 Second		2-1
Label Gone Timeout	200 msec		2-2
Sleep Mode	10 minutes		2-3
Power On Alert	Enable		2-5
Good Read: When to Indicate	After Decode		2-6
Good Read Beep Control	Enable		2-7
Good Read Beep Frequency	Medium		2-7
Good Read Beep Length	60 msec		2-8
Good Read Beep Volume	High		2-9
Target Mode: Active Time	Medium Duration		2-11
Target Mode: Linger Time	Medium Duration		2-12
Wake Up Intensity	10%		2-13
Interface Selection	RS-232 Std.	Interface as required IBM Default: IBM Port 9B Wincor/Nixdorf Default: RS-232-WN Keyboard Wedge Default: USB Keyboard	3-3

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Obey/Ignore Host Commands	Obey Host Commands		3-7
Host Transmission Buffers	Buffers=2	IBM: Buffers=1 Wincor/Nixdorf: Buffers=1	3-8
Baud Rate	9600 Baud		3-9
Data Bits	8 Data Bits		3-10
Stop Bits	1 Stop Bit		3-10
Parity	Parity=None	Wincor/Nixdorf: Parity=Odd	3-10
Hardware Flow Control	Disable	Wincor/Nixdorf: CTS Flow Control	3-11
Intercharacter Delay	No Delay		3-12
Software Flow Control	Disable		3-13
Host Echo	Disable		3-14
Host Echo Quiet Interval	10 msec		3-15
Signal Voltage: Normal/TTL	Normal RS-232		3-16
RS-232 Invert	Disable		3-17
Beep on ASCII BEL	Enable		3-17
Beep on Not on File	Enable		3-18
ACK NAK Options	Disable		3-19
ACK Character	ACK		3-20
NAK Character	!		3-20
Retry on ACK NAK Timeout	Enable		3-21
ACK NAK Timeout Value	200 msec		3-21
ACK NAK Retry Count	3		3-22
ACK NAK Error Handling	Ignore Errors Detected		3-23
Transmission Failure Indication	Enable		3-24
USB-OEM Device usage	—	USB-OEM: Configure as Handheld Scanner	3-24

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
IBM Transmit Labels in Code 39 Format	—	IBM: Disable	3-25
Wand Emulation: Bar/Space Polarity	—	Wand Emulation: Bar/ Space = High/Low	3-27
Wand Emulation: Wand Idle State	—	Wand Emulation: Low	3-27
Wand Emulation: Signal Speed	—	Wand Emulation: 660 msec	3-28
Wand Emulation: Transmit Leading Noise	—	Wand Emulation: Enable	3-29
Wand Emulation: Transmit Trailing Noise	—	Wand Emulation: Enable	3-28
Wand Emulation: Symbology Conversion	—	Wand Emulation: No Conversion	3-29
Keyboard Wedge/ USB Keyboard: Keyboard Layout	—	KBW/USB KB: USA	3-30
Keyboard Wedge/ USB Keyboard: Caps Lock State	—	KBW/USB KB: Disable	3-32
Keyboard Wedge/ USB Keyboard: Power-On Simulation	—	KBW/USB KB: Disable	3-33
Keyboard Wedge/ USB Keyboard: Control Characters	—	KBW/USB KB: Disable	3-34
Keyboard Wedge/ USB Keyboard: Wedge Quiet Interval	—	KBW/USB KB: 100 msec	3-35
Keyboard Wedge/ USB Keyboard: Intercharacter Delay	—	KBW/USB KB: No Delay	3-36
Global Prefix	None		4-2
Global Suffix	CR	IBM: No Suffix	4-2
AIM ID	Disable		4-4

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Label ID	Label ID Position: Before Bar Code Data	IBM: Disable Keyboard Wedge: Disable	4-5
UPC-A Label ID	A		4-6
UPC-A w/P2 Addon Label ID	A		4-6
UPC-A w/P5 Addon Label ID	A		4-6
UPC-A w/C128 Addon Label ID	A		4-6
UPC-E Label ID	E	Wincor/Nixdorf: 'C'	4-6
UPC-E w/P2 Addon Label ID	E		4-7
UPC-E w/P5 Addon Label ID	E		4-7
UPC-E w/C128 Addon Label ID	E		4-7
EAN-8 Label ID	FF	Wincor/Nixdorf: 'B'	4-7
EAN-8 w/P2 Addon Label ID	FF		4-7
EAN-8 w/P5 Addon Label ID	FF		4-7
EAN-8 w/C128 Addon Label ID	FF		4-7
EAN-13 Label ID	F	Wincor/Nixdorf: 'F'	4-7
EAN-13 w/P2 Addon Label ID	F		4-8
EAN-13 w/P5 Addon Label ID	F		4-8
EAN-13 w/C128 Addon Label ID	F		4-8
ISBN Label ID	I	Wincor/Nixdorf: 'A'	4-8
GTIN Label ID	G		4-8
GTIN w/P2 addon Label ID	G2		4-8

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
GTIN w/P5 addon Label ID	G5		4-8
GTIN w/C128 addon Label ID	G6		4-9
GS1 DataBar Omnidirectional Label ID	R4	Wincor/Nixdorf: 'E'	4-9
GS1 DataBar Expanded Label ID	RX	Wincor/Nixdorf: 'E'	4-9
Code 39 Label ID	*		4-9
Pharmacode 39 Label ID	A		4-9
Code 128 Label ID	#	Wincor/Nixdorf: 'K'	4-9
I 2 of 5 Label ID	i	Wincor/Nixdorf: 'I'	4-9
Codabar Label ID	%	Wincor/Nixdorf: 'N'	4-10
Code 93 Label ID	&	Wincor/Nixdorf: "L'	4-10
MSI/Plessey Label ID	@	Wincor/Nixdorf: 'O'	4-10
Std 2 of 5 Label ID	i	Wincor/Nixdorf: 'H'	4-10
PDF 417 Label ID	P	Wincor/Nixdorf: 'Q'	4-10
Case Conversion	Disable		4-11
Character Conversion	No Conversion		4-12
Disable/Enable UPC-A	Enable		5-1
UPC-A Check Digit Transmission	Send Check Digit		5-2
Expand UPC-A to EAN-13	Don't Expand to EAN-13		5-2
System Number Transmission	Enable		5-3
UPC-A Minimum Reads	1		5-3

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
In-store Minimum Reads	1		5-4
Disable/Enable UPC-E	Enable		5-5
Check Digit Transmission	Send Check Digit		5-5
Number System Digit	Exclude System Number		5-6
Expand to UPC-E to UPC-A	Don't Expand		5-6
Expand UPC-E to EAN13	Don't Expand		5-7
UPC-E Minimum Reads	2		5-7
Disable/Enable GTIN	Disable		5-8
Expand UPC/EAN to GTIN	Don't Expand		5-8
Disable/Enable EAN-13	Enable		5-9
EAN-13 Check Digit Transmission	Send Check Digit		5-9
EAN-13 Flag 1 Character	Transmit		5-10
ISBN	Disable		5-10
EAN-13 Minimum Reads	1		5-11
Disable/Enable EAN-8	Enable		5-12
EAN-8 Check Digit Transmission	Send Check Digit		5-12
Expand EAN-8 to EAN-13	Don't Expand		5-13
EAN-8 Minimum Reads	1		5-13
Enable EAN Two-Label	Disable		5-14
Enable EAN Two-Label Combined	Disable		5-14
Optional 2-Digit Addons	Disable		5-16

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Optional 5-Digit Addons	Disable		5-16
Optional Code 128 Add-ons	Disable		5-16
Disable/Enable GS1 DataBar Omnidirectional	Disable		5-17
GS1 DataBarGS1 DataBar Omnidirectional 128 Emulation	Disable		5-17
GS1 DataBar Omnidirectional Minimum Reads	1		5-18
Disable/Enable GS1 DataBar Expanded	Disable		5-19
GS1 DataBar Expanded 128 Emulation	Disable		5-19
GS1 DataBar Expanded Length Control	Variable Length		5-20
GS1 DataBar Expanded Length 1	1		5-21
GS1 DataBar Expanded Length 2	74		5-21
GS1 DataBar Expanded Minimum Reads	1		5-22
Disable/Enable Code 39	Enable		5-26
Code 39 Check Character Calculation	Disable		5-26
Code 39 Check Character Transmit	Enable		5-27
Code 39 Start/Stop Characters	Don't Transmit		5-27
Code 39 Full ASCII	Disable		5-28
Code 39 Length Control	Variable Length		5-29
Code 39 Length 1	3		5-30

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Code 39 Length 2	50		5-30
Code 39 Quiet Zones	Don't Require		5-30
Code 39 Stitching	Disable		5-31
Code 39 Minimum Reads	1		5-31
Disable/Enable Pharmacode 39	Disable		5-32
Pharmacode 39 Start/Stop Characters	Don't Transmit		5-32
Pharmacode 39 Check Character Transmit	Enable		5-33
Disable/Enable Code 128	Enable		5-34
Transmit UCC/EAN128 labels in EAN 128 data format	Disable		5-34
Code 128 Transmit Function Characters	Don't Transmit		5-35
Code 128 Length Control	Variable Length		5-36
Code 128 Length 1	1		5-37
Code 128 Length 2	80		5-37
Code 128 Conversion to Code 39	Disable		5-37
Code 128 Stitching	Disable		5-38
Code 128 Minimum Reads	1		5-38
Disable/Enable Interleaved 2 of 5	Disable		5-39
I 2 of 5 Check Digit Calculation	Disable		5-39
I 2 of 5 Check Digit Transmit	Enable		5-46
I 2 of 5 Length Control	Variable Length		5-41
I 2 of 5 Length 1	6		5-42
I 2 of 5 Length 2	50		5-42

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
Interleaved 2 of 5 Stitching	Disable		5-43
I 2 of 5 Minimum Reads	1		5-44
Disable/Enable Codabar	Disable		5-45
Codabar Check Character Verification	Disable		5-45
Codabar Check Character Transmit	Enable		5-46
Codabar Length Control	Variable Length		5-47
Codabar Length 1	3		5-48
Codabar Length 2	50		5-48
Codabar Quiet Zones	Don't Require		5-48
Codabar Start/Stop Character Type	Start/Stop Type: abcd/abcd		5-49
Codabar Start/Stop Character Transmission	Enable		5-49
Codabar Start/Stop Character Match	Disable		5-50
Codabar Stitching	Disable		5-50
Codabar Minimum Reads	1		5-51
Disable/Enable Code 93	Disable		5-52
Code 93 Length Control	Variable Length		5-53
Code 93 Length 1	1		5-54
Code 93 Length 2	50		5-54
Code 93 Stitching	Disable		5-55
Code 93 Minimum Reads	1		5-55
Disable/Enable MSI/Plessey	Disable		5-56

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
MSI/Plessey Check Digit Verification	Disable		5-56
MSI/Plessey Check Digit Transmit	1-Digit		5-57
Number of Check Characters	1 Check Character		5-57
MSI/Plessey Length Control	Variable Length		5-64
MSI/Plessey Length 1	4		5-59
MSI/Plessey Length 2	16		5-59
MSI/Plessey Stitching	Disable		5-60
MSI/Plessey Minimum Reads	1		5-61
Disable/Enable Standard 2 of 5	Disable		5-62
Std 2 of 5 Check Digit Verification	Disable		5-62
Std 2 of 5 Check Digit Transmit	Enable		5-63
Std 2 of 5 Length Control	Variable Length		5-64
Std 2 of 5 Length 1	8		5-65
Std 2 of 5 Length 2	50		5-65
Standard 2 of 5 Stitching	Disable		5-66
Std 2 of 5 Minimum Reads	1		5-67
Disable/Enable PDF417	Disable		6-2
PDF417 Length Control	Variable Length		6-3
PDF417 Length 1	1		6-4
PDF417 Length 2	600		6-4
PDF417 Minimum Reads	1		6-5
Disable/Enable Datamatrix			6-6
PDF417 Length Control			6-7

Feature	Std. RS-232 Setting	Interface-Specific Exceptions	Page #
PDF417 Length 1			6-8
PDF417 Length 2			6-8
PDF417 Minimum Reads			6-9

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Appendix E
Keyboard Function Key Mappings

Keyboard Model Cross Reference

Table E-1 summarizes the keyboard models, their defined protocol, scancode set, and some unique features. The remaining tables in this chapter provide the function key maps associated with each of the scancode sets.

. Keyboard Model Cross Reference

Model Type	I/F ID	Trans-mission Protocol	Scancode Set	Func. Key Map Support	Use Country Mode
PC/XT Foreign ALT Mode	Wedge A	PC/XT	Scan Set 1	No	No
AT; PS/2 25-286; PS/2 30-286; PS/2 50, 50Z; PS/2 60,70,80,90,95 Foreign ALT Mode	Wedge B	AT/PS2	Scan Set 2	No	No
PS/2 25 and 30 Foreign ALT Mode	Wedge C	AT/PS2	Scan Set 1	No	No
PC/XT U.S. Mode	Wedge D	PC/XT	Scan Set 1	Yes	No
AT; PS/2 25-286; PS/2 30-286; PS/2 50, 50Z; PS/2 60,70,80,90,95 U.S. Mode + specific country support	Wedge E	AT/PS2	Scan Set 2	Yes	Yes
PS/2 25 and 30 U.S. Mode	Wedge F	AT/PS2	Scan Set 1	Yes	No
IBM 3xxx Terminals (122-key keyboard)	Wedge G	AT/PS2	Scan Set 3	Yes	No
IBM 3xxx Terminals (102-key keyboard)	Wedge H	AT/PS2	Scan Set 3	Yes	No
PS55 5530T with JAPANESE DOS (TDOS)	Wedge I	AT/PS2	Japanese DOS	Yes	No
NEC 9801	Wedge J	NEC 9801	NEC 9801	Yes	No

. Scanset 1 Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	E0h 38h
01	SOH	ALT right Break	E0h B8h
02	STX	ALT left Make	38h
03	ETX	ALT left Break	B8h
04	EOT	CTRL left Make	1Dh
05	ENQ	CTRL left Break	9Dh
06	ACK	CTRL right Make	E0h 1Dh
07	BEL	CTRL right Break	E0h 9Dh
08	BS	BS	0Eh
09	HT	TAB right	0Fh
0A	LF	RIGHT arrow (inner keypad)	4Dh + E0
0B	VT	TAB left	0Fh + S
0C	FF	Enter (inner keypad)	1Ch + E0
0D	CR	CR	1Ch
0E	SO	INSERT (inner keypad)	52h + E0
0F	SI	PAGE UP (inner keypad)	49h + E0
10	DLE	PAGE DOWN (inner keypad)	51h + E0
11	DC1	HOME (inner keypad)	47h + E0
12	DC2	LEFT arrow (inner keypad)	4Bh + E0
13	DC3	DOWN arrow (inner keypad)	50h + E0
14	DC4	UP arrow (inner keypad)	48h + E0

. Scanset 2 Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	E0h 11h
01	SOH	ALT right Break	E0h F0h 11h
02	STX	ALT left Make	11h
03	ETX	ALT left Break	F0h 11h
04	EOT	CTRL left Make	14h
05	ENQ	CTRL left Break	F0h 14h
06	ACK	CTRL right Make	E0h 14h
07	BEL	CTRL right Break	E0h F0h 14h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	74h + E0
0B	VT	TAB left	0Dh + S
0C	FF	Enter (right keypad)	5Ah + E0
0D	CR	CR	5Ah
0E	SO	INSERT (inner keypad)	70h + E0
0F	SI	PAGE UP (inner keypad)	7Dh + E0
10	DLE	PAGE DOWN (inner keypad)	7Ah + E0
11	DC1	HOME (inner keypad)	6Ch + E0
12	DC2	LEFT arrow (inner keypad)	6Bh + E0
13	DC3	DOWN arrow (inner keypad)	72h + E0
14	DC4	UP arrow (inner keypad)	75h + E0
15	NAK	F6	0Bh
16	SYN	F1	05h
17	ETB	F2	06h

18	CAN	F3	04h
19	EM	F4	0Ch
1A	SUB	F5	03h
1B	ESC	ESC	76h
1C	FS	F7	83h
1D	GS	F8	0Ah
1E	RS	F9	01h
1F	US	F10	09h

. Scanset 3, 102-Key Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT right Make	39h
01	SOH	ALT right Break	F0h 39h
02	STX	ALT left Make	19h
03	ETX	ALT left Break	F0h 19h
04	EOT	CTRL left Make	11h
05	ENQ	CTRL left Break	F0h 11h
06	ACK	CTRL right Make	58h
07	BEL	CTRL right Break	F0h 58h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	6Ah
0B	VT	TAB left	0Dh + S
0C	FF	Enter (inner keypad)	79h
0D	CR	CR	5Ah
0E	SO	INSERT (inner keypad)	67h
0F	SI	PAGE UP (inner keypad)	6Fh
10	DLE	PAGE DOWN (inner keypad)	6Dh
11	DC1	HOME (inner keypad)	6Eh
12	DC2	LEFT arrow (inner keypad)	61h
13	DC3	DOWN arrow (inner keypad)	60h
14	DC4	UP arrow (inner keypad)	63h
15	NAK	F6	2Fh
16	SYN	F1	07h
17	ETB	F2	0Fh
18	CAN	F3	17h
19	EM	F4	1Fh
1A	SUB	F5	27h
1B	ESC	ESC	08h
1C	FS	F7	37h
1D	GS	F8	3Fh
1E	RS	F9	47h
1F	US	F10	4Fh

. Scanset 3 122-Key Function Key Map

ASCII (hex)	ASCII code	Key	Scancode
00	NUL	ALT Right Make	39h
01	SOH	ALT Right Break	F0h 39h
02	STX	ALT left Make	19h
03	ETX	ALT left Break	F0h 19h
04	EOT	CTRL left (RESET) Make only	11h
05	ENQ	CTRL left (RESET) Make/Break	11h F0h 11h
06	ACK	ONLINE Enter Make only	58h
07	BEL	ONLINE Enter Make/Break	58h F0h 58h
08	BS	BS	66h
09	HT	TAB right	0Dh
0A	LF	RIGHT arrow (inner keypad)	6Ah
0B	VT	TAB left	0Dh + S
0C	FF	CR (FIELD EXIT) Make only	5Ah F0h 5Ah
0D	CR	CR (FIELD EXIT) Make/Break	5Ah
0E	SO	INSERT (inner keypad)	65h
0F	SI	FIELD +	79h
10	DLE	FIELD -	7Ch
11	DC1	HOME (inner keypad)	62h
12	DC2	LEFT arrow (inner keypad)	61h
13	DC3	DOWN arrow (inner keypad)	60h
14	DC4	UP arrow (inner keypad)	63h
15	NAK	F6	2Fh
16	SYN	F1	07h
17	ETB	F2	0Fh
18	CAN	F3	17h
19	EM	F4	1Fh
1A	SUB	F5	27h
1B	ESC	ESC	08h
1C	FS	F7	37h
1D	GS	F8	3Fh
1E	RS	F9	47h
1F	US	F10	4Fh

. Japanese DOS Function Key Map

ASCII value	ASCII code	Key	Scancode
00h	NUL	ALT right Make	31h
01h	SOH	ALT right Break	B1h
02h	STX	ALT left Make	31h
03h	ETX	ALT left Break	B1h
04h	EOT	CTRL left Make	41h
05h	ENQ	CTRL left Break	C1h
06h	ACK	CTRL right Make	41h
07h	BEL	CTRL right Break	C1h
08h	BS	BS	3Eh
09h	HT	TAB right	3Ch
0Ah	LF	RIGHT arrow (inner keypad)	4Dh
0Bh	VT	TAB left	3Ch + S
0Ch	FF	Enter (right keypad)	60h
0Dh	CR	CR	3Bh
0Eh	SO	INSERT (inner keypad)	52h
0Fh	SI	PAGE UP (inner keypad)	49h
10h	DLE	PAGE DOWN (inner keypad)	51h
11h	DC1	HOME (inner keypad)	4Ch
12h	DC2	LEFT arrow (inner keypad)	4Bh
13h	DC3	DOWN arrow (inner keypad)	4Ah
14h	DC4	UP arrow (inner keypad)	4Eh
15h	NAK	F6	6Dh
16h	SYN	F1	68h
17h	ETB	F2	69h
18h	CAN	F3	6Ah
19h	EM	F4	6Bh
1Ah	SUB	F5	6Ch
1Bh	ESC	ESC	3Dh
1Ch	FS	F7	6Eh
1Dh	GS	F8	6Fh
1Eh	RS	F9	70h
1Fh	US	F10	71h

. NEC 9801-Key Function Key Map

ASCII value	ASCII code	Key	Scancode
00h	NUL	unused	n/a
01h	SOH	CR	1Ch
02h	STX	CAPS LOCK ON (make)	71h
03h	ETX	CAPS LOCK OFF (break)	F1h
04h	EOT	CTRL left Make	74h
05h	ENQ	CTRL left Break	F4h
06h	ACK	CTRL-C	60h
07h	BEL	n/a	n/a
08h	BS	BS	0Eh
09h	HT	TAB right	0Fh
0Ah	LF	RIGHT arrow (inner keypad)	3Ch
0Bh	VT	TAB left	0Fh + S
0Ch	FF	DELETE	39h
0Dh	CR	CR	1Ch
0Eh	SO	INSERT (inner keypad)	38h
0Fh	SI	KATAKANA LOCK ON (Make)	72h
10h	DLE	KATAKANA LOCK OFF (Break)	F2h
11h	DC1	HOME (inner keypad)	3Eh
12h	DC2	LEFT arrow (inner keypad)	3Bh
13h	DC3	DOWN arrow (inner keypad)	3Dh
14h	DC4	UP arrow (inner keypad)	3Ah
15h	NAK	F6	67h
16h	SYN	F1	62h
17h	ETB	F2	63h
18h	CAN	F3	64h
19h	EM	F4	65h
1Ah	SUB	F5	66h
1Bh	ESC	ESC	00h
1Ch	FS	F7	68h
1Dh	GS	F8	69h
1Eh	RS	F9	6Ah
1Fh	US	F10	6Bh

Chapter F
Host Commands

Accepting RS-232 Commands

The scanner responds to the following RS-232 commands:

COMMAND	ASCII	HEX	COMMENT
Enable Scanner	E	0x45	
Disable Scanner	D	0x44	
Reset Scanner	R	0x52	
Not On File Indication	F	0x46	Long series of beeps
Beep Good Read Tone	B	0x42	Beeps if Good Read Beep is enabled
Force Good Read Tone		0x01	Beeps regardless of beep setting
Bel		0x07	Force Good Read Tone
Identification request	i	0x69	Returns long response[a]
Health request	h	0x68	Returns long response[a]
Status request	s	0x73	Returns long response[a]

a. Call Tech Support for information.

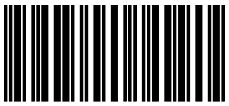
If one of the above commands is received, the scanner will perform the steps indicated for the command. Host commands for other interfaces are also available. Contact Tech Support for more details.

NOTES

Chapter G
Sample Symbols

UPC-A

Interleaved 2 of 5



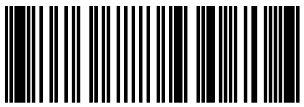
Code 128

EAN-13

Code 39

Codabar

Code 93



Code 2 of 5

Sample Symbols

GS1 DataBar Omnidirectional

(01)00123456789012

GS1 DataBar Expanded

0100123456789050

NOTES

NOTES

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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