

PSC[®]

QUICKSCAN
1000™

HANDHELD LASER SCANNER



PROGRAMMING GUIDE

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NOTES

Introduction

This manual contains instructions for changing interfaces and bar codes for customizing the scanner's operation. Since the *QuickScan™ 1000* scanner contains software enhancements and characteristics that set it apart from other scanners, it is recommended that this guide be used as the sole source of programming labels and information (except for other *QuickScan 1000* product-specific publications).

The organization of this manual is intended to support a variety of users while making it quick and easy to find the information you need. Look at the descriptions that follow to find where to go from here.

Understanding the Basics

If you do not regularly use bar code labels to configure (program) scanners, it will be very helpful to read the introductory portions of this manual prior to beginning your programming session. In addition to the information that follows, information of specific interest to you is titled:

- Integrating Peripherals with Host Systems
- Changing Interfaces
- Customizing Your Scanner Operation
- Programming Overview
- What is Programming Mode?
- How to Program Using Bar codes
- The Programming Session
- Scanner Response When in Programming Mode
- If You Make A Mistake
- Where to Go From Here

Integrating Peripherals With Host Systems

It's important to understand that the scanner must contain software and hardware that supports a specific interface in order to use that interface. The following pages describe interface hardware and list software interface groups available on current models.

Optimally, you'll want details about how your scanner was configured at the factory before attempting to customize any settings. If you don't have that information, contact your dealer for factory configuration information.

After determining the changes and/or additions you desire, locate the programming labels and follow the related instructions in this manual to adjust the scanner. Once you've completed these steps, you can begin scanning.

Changing Interfaces

To change a scanner's interface...

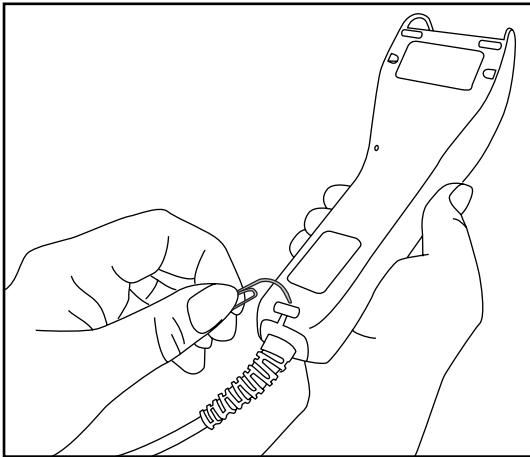
HARDWARE

If necessary, replace the scanner's interface cable to match the new host terminal's connection requirements. To disconnect the cable from the scanner, insert a .050" hex driver or bent paper clip into the CABLE RELEASE hole, and press down to unlock the cable connector. Reference Figure 1.

NOTE

We recommend that you disconnect power before plugging/unplugging cables to avoid any possibility of equipment damage.

Figure 1. Disconnecting the Interface Cable



SOFTWARE

1. Verify that your scanner supports the desired interface¹. The list below indicates interfaces available at the time of this writing. Your scanner comes equipped from the factory with the ability to connect and communicate with at least two major interface types, for example, Keyboard Wedge/RS-232 and Keyboard Wedge/Wand Emulation are two common pairings. Contact your nearest PSC service depot if you don't know your scanner's interface group, or need to have the scanner altered to change to another I/F group.

¹ Contact your dealer if your desired interface is not listed. Interface group definitions are subject to change without notice.

RS-232

- PSC RS-232
- SNI RS-232

IBM

- IBM 4683/84, 4693/94 Port 5B
- 4682/92 Port E
- IBM 4683/84, 4693/94 Port 9A, 9B, 9C, 9E

WandEmulation

KeyboardWedge

- I/F Type A — PC/XT w/foreign keyboard
- I/F Type B — AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/foreign keyboard
- I/F Type C — PS/2 25 and 30 w/foreign keyboard
- I/F Type D — PC/XT w/US keyboard
- I/F Type E — AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/US keyboard
- I/F Type F — PS/2 25 and 30 w/US keyboard
- I/F Type G — IBM 3xxx w/122 keyboard
- I/F Type H — IBM 3xxx w/102 keyboard
- I/F Type I — PS/55 5530T w/104 keyboard
- I/F Type J NEC 9801 keyboard

OCIA

- PSC OCIA
 - NCR 8 bit OCIA
 - NCR 9 bit OCIA
 - SNI OCIA
2. Turn to the appropriate page in this manual and enable the desired interface or interface sub-type by scanning its programming bar code. These interface/interface sub-type selection bar codes are located at the beginning of each of these sections of the manual: *IBM, Wand Emulation, RS-232, Keyboard Wedge, and OCIA*. This will enable the software for the new interface and disable the 'old' interface software. Once enabled, the new interface becomes the default interface that is active whenever power is applied to the scanner.
 3. Scan a bar code to verify that the scanner communicates correctly with the host system. Some sample bar codes are provided on the last pages of this manual. If any changes to the scanner's factory settings are needed, use the instructions titled, *Customizing Your Scanner Operation*.

Customizing Your Scanner Operation

When enabling a new interface, it may be necessary to modify the original factory settings to match your specific host system's communication and symbology requirements. Check with your system administrator to identify your host system's specific interface requirements to ensure that they match the new interface you've selected. Also, the scanner's operational features, such as speaker volume, can be customized to match your unique requirements.

1. Use the labels in this manual to modify the standard configuration to match your specific interface requirements or user preference.

NOTE

Ensure that your planned modifications are compatible with the current interface. For example, baud rate selections are only valid in the RS-232 interface. The scanner will sound an error tone (six rapid beeps) when scanning programming labels for features invalid to the current interface.

2. Enable any additional symbologies as required and exit Programming Mode.
3. Scan a regular bar code label and verify that the scanner and host communicate correctly.
4. You have completed the factory settings change procedure.

If you experience difficulties, have questions or require additional information, contact your local distributor using the listings located on the back cover of this guide.



Programming Overview

This section describes how to set the scanner's programmable features. These features can be configured using the bar code labels contained in this manual or by using commands sent from the host. Refer to Appendix A, *Additional Information*, for host programming details. If you program the scanner using these bar codes, the scanner stores the changes until reprogrammed.

What Is Programming Mode?

To change the scanner's programmed settings, it is necessary to place the scanner in Programming Mode using the special SET label. This ensures that the scanner only recognizes the special programming labels contained in this programming guide.

How To Program Using Bar Codes

The following pages contain special bar code labels that are used to change or enable the scanner's programmable options. All programming sessions follow this order, unless otherwise instructed:

1. **Scan the SET label at the top of the page.** The scanner will emit a 'good read' beep, indicating it has read the label.
2. **Scan the feature label(s) for the programmable options you wish to enable.** With few exceptions¹, the scanner will emit a triple beep each time you scan a valid programming label. (Note that not all features are available for all interfaces and that the scanner will sound an error tone when scanning programming labels for features invalid to the current interface.)
3. **Scan the END label at the bottom of the page** to complete the programming session and exit Programming Mode. The scanner will sound one 'good read' beep upon exiting Programming Mode.
4. It is strongly recommended that you **Maintain a good record of all changes made** to ensure that you know if the original factory settings have been changed.

¹ Some features, such as Minimum Label Length or Label ID, require you to select the length by scanning a series of single-digit bar codes. A single 'good read' beep is sounded when scanning these single digits in Programming Mode. Only the final required digit in the sequence will produce a triple beep when scanned, indicating a successfully programmed feature.

The Programming Session

It is possible to program multiple features during a single programming session (a programming session is defined as the period of time between scanning the “set” label and scanning the “end” label). However, it is recommended that sessions be limited to one feature, as it can be difficult to discover where an error has been made, should you make a mistake in the programming sequence. Additionally, it can be confusing to determine which features may or may not have been successfully set following such a session.

The scanner will not exit Programming Mode unless the END label is scanned. Disconnecting power during Programming Mode, before scanning the END label, will cause the scanner to forget any programming labels scanned during the current programming session and will cause the scanner to return to its previous settings.

Scanner Response When In Programming Mode

As discussed earlier, Programming Mode is entered by scanning a SET label. The green LED will flash continuously at 1Hz duty cycle while the scanner is in Programming Mode. As long as it is in Programming Mode, the scanner will not decode regular bar code labels and will only enable features supported by the currently active interface.

Scanning regular (non-programming) bar code labels — the scanner will reject the label, sounding an error tone (six rapid beeps).

Scanning a valid programming label —

- a. If the feature is supported by the active interface, the scanner will sound three beeps.
- b. If incorrect programming has been entered, the error tone will be sounded (six rapid beeps). Additionally, when programming a feature requiring you to scan single digits to set a multi-digit number, such as Minimum Label Length or Label ID, scanning the END label before completing all input will result in an error tone and cause the scanner to exit Programming Mode. Under these circumstances, the current feature you were trying to set is thrown out; any previous labels scanned during the session will take effect.

If You Make a Mistake...

If, during a programming session, you find that you are unsure of the scanner's settings or wish to re-set the scanner's configuration, use the Return to Factory Settings label on this page to return the scanner's configuration to the factory settings. Scanning this label will also reset any changes made during previous programming sessions.

Return to Factory Settings

Scan this label to return the scanner to the default settings configured at the factory for your scanner's original interface specifications. This label is typically used to return the scanner to a "known" operating state when the present programming status is not known, faulty, or suspect.



CAUTION

Use this label with caution, since it will disable ALL features that may have been programmed since the scanner's installation.



If you don't have a record of your site/system's original configuration, you may need to call your nearest PSC service depot for assistance to return the scanner to normal function. Please be prepared to provide information about the store/chain, location, POS system and other pertinent information about the scanner being repaired.

Where To Go From Here

Programming is easy and straightforward if you follow these steps:

1. If you are changing interfaces, first connect the scanner to the new host using the new interface cable. Scan the interface enable bar code label¹.
2. Scan any feature labels that are unique to the interface you are currently programming. These interface specific programming labels immediately follow each interface selection label.
3. Turn to the Symbology section if you are going to change any bar code symbologies or modify any symbology related features.
4. Turn to the General Features section of this guide if you wish to change or modify any of the scanner's other features.

Once the necessary changes have been made, and you have scanned the END label, you are ready to scan.

1 This step is not necessary for QuickScan 1000 scanners, unless you require a specific interface sub-type such as SNI or IBM sub-type 4682/92 Port E. Interface software is automatically selected when the QuickScan 1000 hardware connection (via a new interface cable) is made.

IBM 4683/84 • 4693/94 Port 5B Interface Selection

Scan this single label to enable the IBM 468x Port 5B interface (do not scan the SET bar code before, or the END bar code after scanning the interface selection bar code).



IBM 4683/84 • 4693/94 Port 5B Settings

Data Format: Send As Code 39 — converts bar code data (UPC/EAN, add-ons, Code 93, Codabar, MSI/Plessey and Code 128) into Code 39 format before sending the data to the host.

These settings are for IBM 4683/84 • 4693/94 Port 5B interface ONLY.

Limit Command Set — is an option that causes the scanner to ignore 'enable scanner' and 'disable scanner' commands sent from the host.

Transmit Unsolicited Status¹ — when enabled, this option causes the scanner to transmit a status message to the host upon receipt of an "SNRM".



¹ For this IBM interface, the setting for Unsolicited Status is normally Enabled.

IBM 4683/84 • 4693/94 Port 9A, 9B, 9C, 9E I/F Selection

Scan this single label to enable the IBM 468x/9x Port 9x interface (do not scan the SET barcode before, or the END barcode after scanning the interface selection barcode).



IBM 4683/84 • 4693/94 Port 9A, 9B, 9C, 9E Settings



Data Format: Send As Code 39 — converts bar code data (UPC/EAN, add-ons, Code 93, Codabar, MSI/Plessey and Code 128) into Code 39 format before sending the data to the host.

These settings are for IBM 4683/84 • 4693/94 Port 9A, 9B, 9C, 9E interface ONLY.


Limit Command Set — is an option that causes the scanner to ignore 'enable scanner' and 'disable scanner' commands sent from the host.

Transmit Unsolicited Status¹ — when enabled, this option causes the scanner to transmit a status message to the host upon receipt of an "SNRM".


SET ----- 


  ----- SEND AS CODE 39


DON'T SEND AS CODE 39 ----- 

 ----- ENABLE LIMIT COMMAND SET

DISABLE LIMIT COMMAND SET ----- 

 ----- TRANSMIT UNSOLICITED STATUS

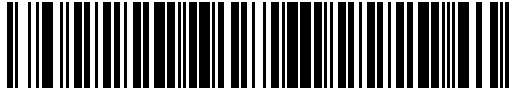
DON'T TRANSMIT UNSOLICITED STATUS -- 

 ----- END

1 For this IBM interface, the setting for Unsolicited Status is normally Disabled.

IBM 4682/92 Port E Interface Selection

Scan this bar code to enable the IBM 468x/9x Port E interface (do not scan the SET bar code before, or the END bar code after scanning this bar code).



IBM 4682/92 Port E Settings

Data Format: Send As Code 39 — converts bar code data (UPC/EAN, add-ons, Code 93, Codabar, MSI/Plessey and Code 128) into Code 39 format before sending the data to the host.

These settings are for IBM 4682/92 Port E interface ONLY.

Limit Command Set — tells the scanner to ignore 'enable scanner' and 'disable scanner' commands sent from the host.

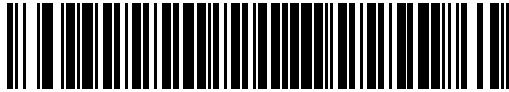
Transmit Unsolicited Status¹ — when enabled, the scanner transmitS a status message to the host upon receipt of an "SNRM".



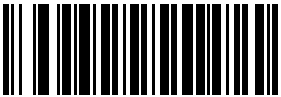
1 For this IBM interface, the setting for Unsolicited Status is normally Disabled.

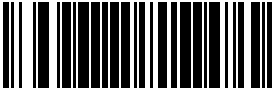

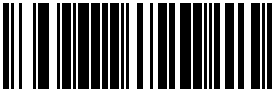

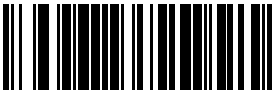
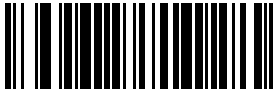


Wand Emulation Interface Selection

Scan this single label to enable the Wand Emulation interface (do not scan the SET bar code before, or the END bar code after scanning the interface selection bar code).

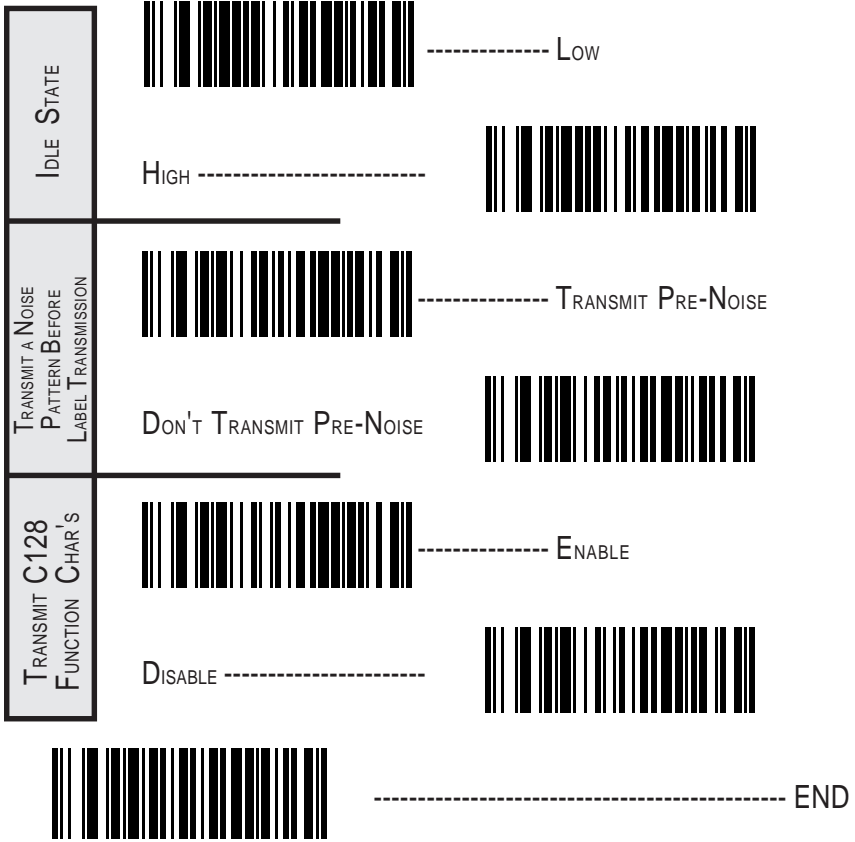


Wand Emulation Settings

SET ----- 

POLARITY	 ----- SPACE LOW, BAR HIGH
	SPACE HIGH, BAR LOW ---- 
SIGNAL SPEED	 ----- Low (660 μs)
	High (330 μs) ----- 
DATA FORMAT	 ----- TRANSMIT IN NORMAL FORMAT
	TRANSMIT IN C39 FORMAT-- 
	 ----- TRANSMIT IN C128 FORMAT
	TRANSMIT IN C39 ----- FULL ASCII 

Wand Emulation Interface - continued



Goto the sections titled *Symbology Selection* and *General Features* in the back of this programming guide if you want to change any other settings for this interface.

PSC RS-232 Interface Selection

Scan this single label to enable the standard PSC RS-232 interface (do not scan the SET bar code before, or the END bar code after scanning the interface selection barcode).



SNI RS-232 Interface Selection

Scan this single label to enable the SNI RS-232 interface (do not scan the SET bar code before, or the END bar code after scanning the interface selection barcode).



RS-232 Communication Parameters

This section contains the following RS-232 communication parameters in the order listed:

- Baud Rate
- Data Bits
- Parity
- Stop Bit(s)
- Hardware Handshaking (CTS/RTS)
- Software Handshaking (Xon/Xoff)
- ACK/NAK Options
- Intercharacter Delay

Go to the sections titled *Symbology Selection* and *General Features* in the back of this programming guide if you want to change any other settings for this interface.

Baud Rate

Use the bar codes on this page to select the communications Baud Rate. Only one Baud Rate selection may be active at any one time. The last Baud Rate label you scan during a programming session will be the setting that is stored when you scan the END label.

SET -----



BAUD RATE

----- BAUD = 1200



BAUD = 2400 -----



----- BAUD = 4800



BAUD = 9600 -----



----- BAUD = 19200



BAUD = 38400 -----



----- END



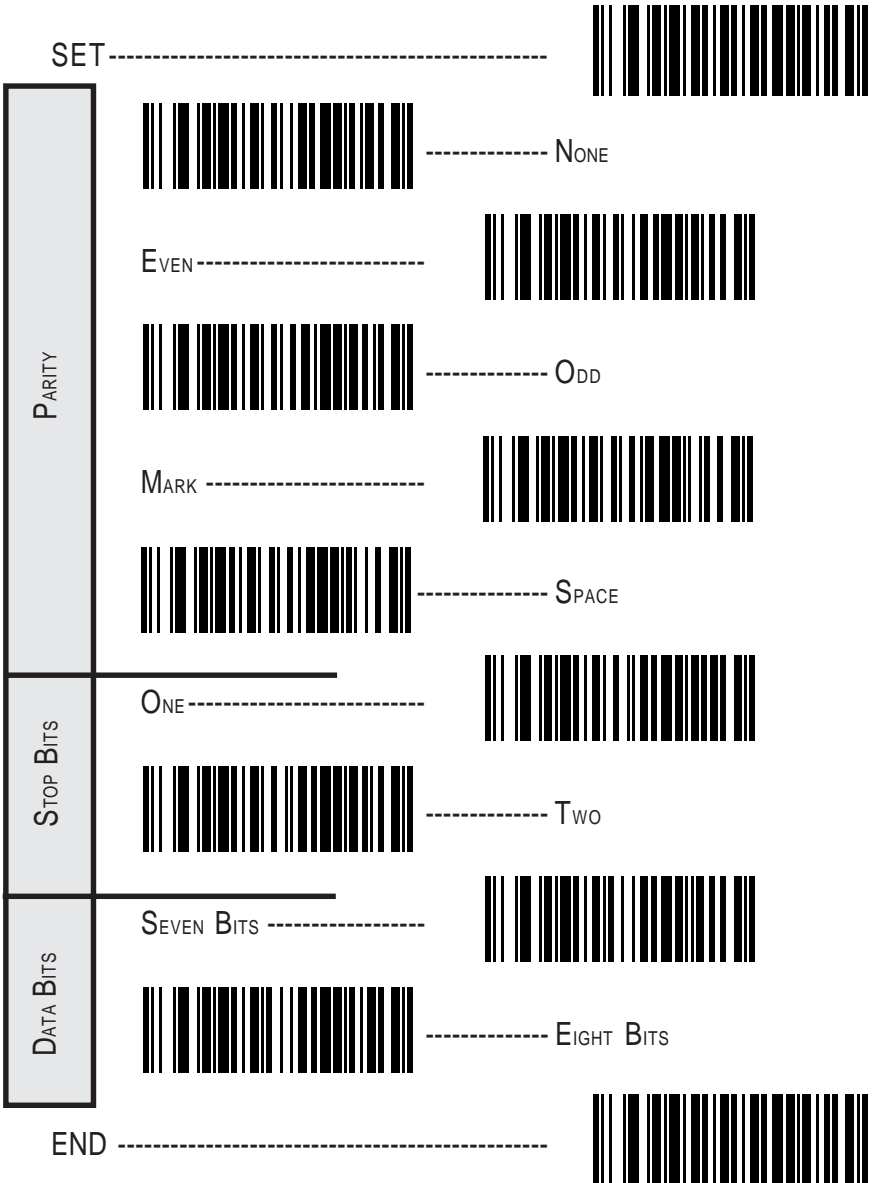
Data Format Table

There are many possible data format configurations for an RS-232 interface. Check your host system manual to find out your system's communications requirements. This table shows the acceptable format options.

Data Bits	Start Bit	Parity Bit(s)	Stop Bit(s)
Seven	1	0	2
Seven	1	1	1
Seven	1	1	2
Eight	1	0	1
Eight	1	0	2
Eight	1	1	1

Data Format Settings

The bar codes on this page can be used to select the data format configuration needed to communicate with your system.

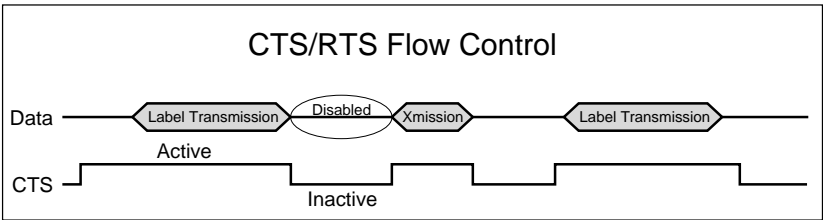


Handshaking

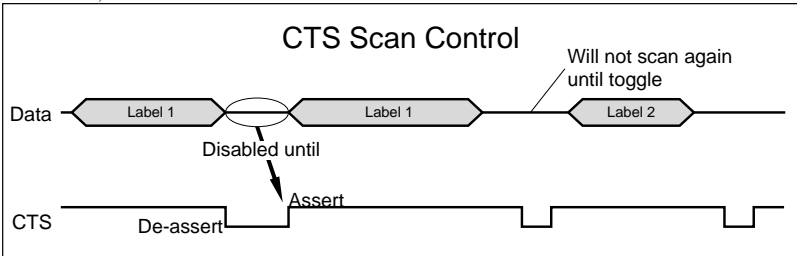
Review your system documentation to identify handshaking requirements, and use these labels to change the settings if required. The following brief descriptions explain each selection.

Hardware Control

CTS/RTS Flow Control — is hardware handshaking. The scanner activates the RTS (Ready to Send) line when it is ready to send data to the host. The scanner waits for an active Clear to Send (CTS) signal from the host before transmitting data. If hardware control is disabled, CTS/RTS communication will not take place. If the host deactivates the CTS line during data transmission, the host will receive additional characters for no more than 2msec¹.



CTSScan Control — is also a hardware control. When scan control is enabled, label transmission is disabled until CTS is asserted and de-asserted.



1 Varies slightly depending upon baud rate selected.

Intercharacter Delay

Intercharacter Delay refers to the pause, if any, between each character before it is sent to the host. This time delay is used to control the flow of data from the scanner, but it should not be required for most applications. Use these labels to select the desired Intercharacter Delay.



Intercharacter Delay - continued



This section contains the following PC Keyboard Wedge communication parameters in the order listed:

Keyboard Wedge Communication Parameters

- Interface Selection
- Connect to Laptop
- Capslock Settings
- Country modes
- Intercharacter Delay

Go to the sections titled *Symbology Selection* and *General Features* in the back of this programming guide if you want to change any other settings.

NOTE

If the transmission parameters are configured such that a label results in no actual data to send, the label will be accepted, beeped, and no data transmitted.

PC Keyboard Wedge Interface Selection

The scanner supports ten¹ PC Keyboard Wedge interfaces. The table below defines the different interface selections.


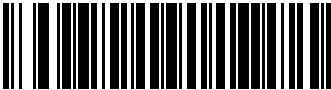
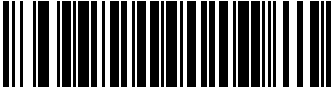
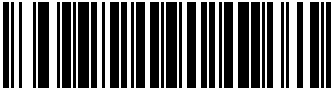

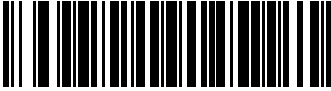





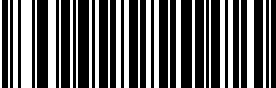
I/F Type	PCs Supported
A	PC/XT w/Alternate Keyboard Encoding
B	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Alternate Keyboard Encoding
C	PS/2 25 and 30 w/Alternate Keyboard Encoding
D	PC/XT w/Standard Key Encoding
E	AT, PS/2 25-286, 30-286, 50, 50Z, 60, 70, 80, 90 & 95 w/Standard Key Encoding
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 keyboard

NOTE

We recommend that you disconnect power before plugging/unplugging cables to avoid any possibility of equipment damage.

PC Keyboard Wedge Interface Selection—continued

The scanner supports ten¹ PC Keyboard Wedge interfaces. The table below defines the different interface selections.

	SET -----	
INTERFACE (I/F) TYPE (SEE TABLE ON PREVIOUS PAGE)	 --- A	
	B -----	
	 ----- C	
	D -----	
	 ----- E	
	F -----	
	 ----- G	
	H -----	
	 ----- I	
	J -----	
 ----- END		

¹ Keyboard Wedge interfaces G through J are only supported by the QuickScan 1000 scanner.

PC Keyboard Wedge – Connect to a Laptop/ No Keyboard Attached

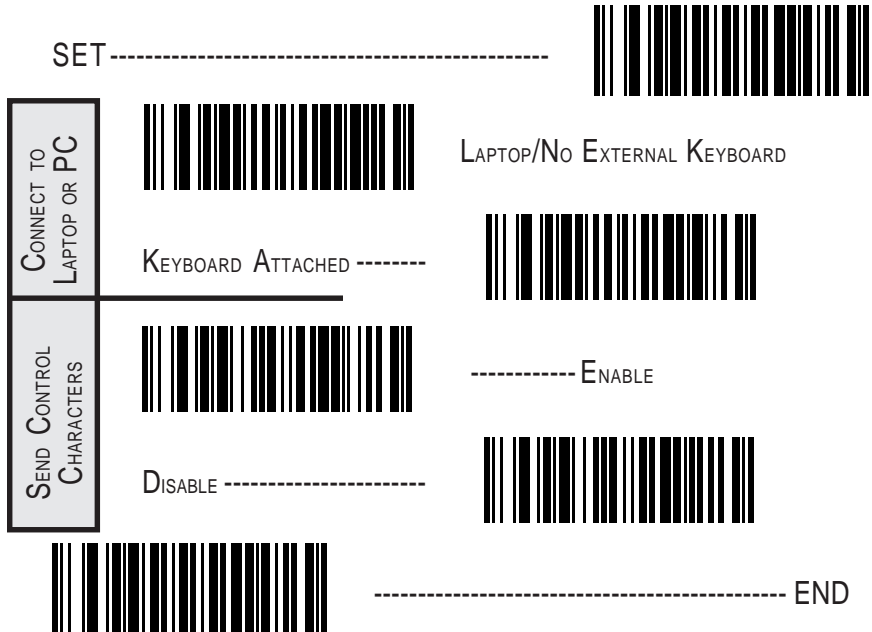
If no keyboard is attached, the scanner must provide the acknowledge signal to the PC. In this case, enable the "Laptop/No External Keyboard" mode. If a keyboard is attached, enable "Keyboard Attached".

Laptop (integrated keyboard)— scan the "Laptop/No External Keyboard" label below when the scanner is connected to a laptop computer or when the scanner is operated with no external keyboard attached.

PC (external keyboard)—if you move the scanner to a standard PC, change the setting to "Keyboard Attached".

Send Control Characters— when this feature is disabled, all ASCII characters except NUL (00h) are transmitted. Enabling this feature limits transmission of ASCII characters to the following:

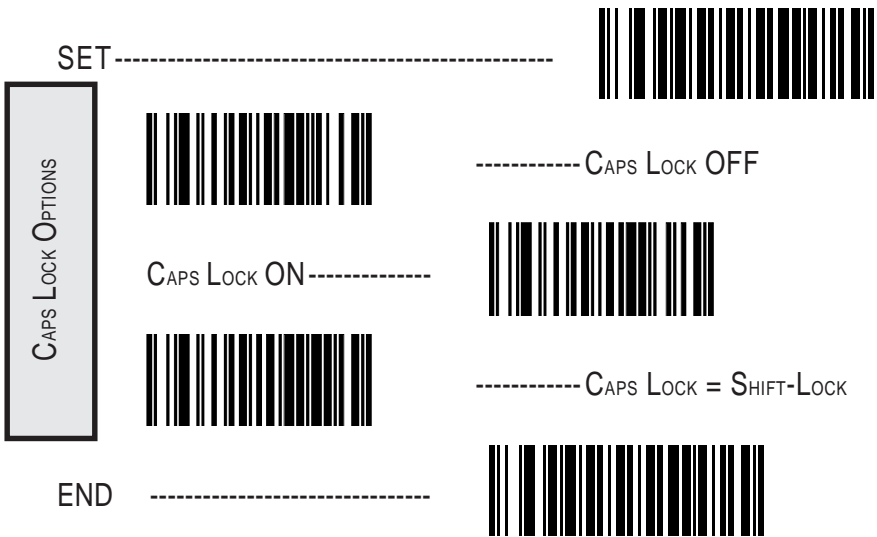
- Only ASCII characters between 20h..127h, plus...
 - Carriage Return (CR=0Dh)
 - BackSpace (BS=08h)
 - Right Tab (HT=09h)
 - Left Tab (0Bh)
 - Esc (1Bh)



Caps Lock

Three caps lock settings are available for the QuickScan 1000™ scanner. These are:

- Caps Lock Off—to send character data (to the host) in normal format.
- Caps Lock On—to send character data (to the host) in reverse case:
(a...z) = (A...Z)
(A...Z) = (a...z)
Use this feature if your caps lock is on.
- Caps Lock = Shift-Lock—to send character data (to the host) in shifted case. Use this feature if your shift lock is on. **For use with interface type G(122-keyboard) ONLY.**



Country Mode

The following country/languages can be selected for the QuickScan 1000™ scanner when configured for I/F Type E only:

- USA
- Belgium
- Britain
- Denmark
- France
- Germany
- Italy
- Norway
- Portugal
- Spain
- Sweden
- Switzerland
- Japanese 106-Key

SET -----



COUNTRY MODE



-----USA

BELGIUM -----



-----BRITAIN

DENMARK -----



-----FRANCE

GERMANY -----



-----ITALY

NORWAY -----



-----PORTUGAL

Country Mode — continued

COUNTRY MODE



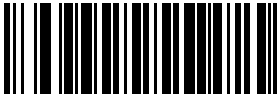
----- SPAIN

SWEDEN -----



----- SWITZERLAND

JAPANESE 106-KEY -----



----- END




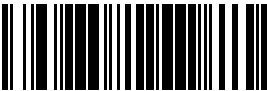


Intercharacter Delay

Intercharacter Delay refers to the pause, if any, between each character before it is sent to the host. This time delay is used to control the flow of data from the scanner, but it should not be required for most applications. Use these labels to select the desired Intercharacter Delay.

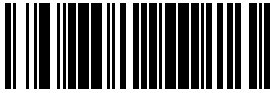
SET -----



INTERCHARACTER DELAY

	----- NONE	
5 MILLISECONDS -----		
	----- 10 MILLISECONDS	
15 MILLISECONDS -----		
	----- 20 MILLISECONDS	
25 MILLISECONDS -----		
	----- 30 MILLISECONDS	
35 MILLISECONDS -----		
	----- 40 MILLISECONDS	
45 MILLISECONDS -----		

INTERCHARACTER DELAY



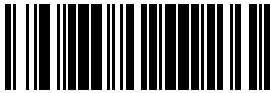
-----50 MILLISECONDS

55 MILLISECONDS -----



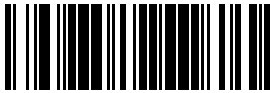
-----60 MILLISECONDS

65 MILLISECONDS -----



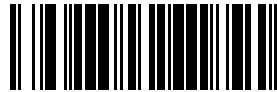
-----70 MILLISECONDS

75 MILLISECONDS -----



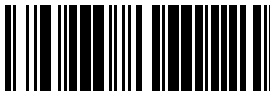
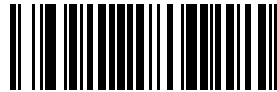
-----80 MILLISECONDS

85 MILLISECONDS -----



-----90 MILLISECONDS

95 MILLISECONDS -----



-----99 MILLISECONDS

END -----



PSC OCIA¹ Interface Selection

Scan this label to enable the PSC OCIA interface.



NCR OCIA Eight Bit (short format) Interface Selection

Scan this label to enable the NCR OCIA (short format) interface.



NCR OCIA Nine Bit (long format) Interface Selection

Scan this label to enable the NCR OCIA Nine Bit (long format) interface.



SNI OCIA Interface Selection

Scan this label to enable the SNI OCIA interface.



1 NOTE: In previous publications, this interface was termed, "SP OCIA".

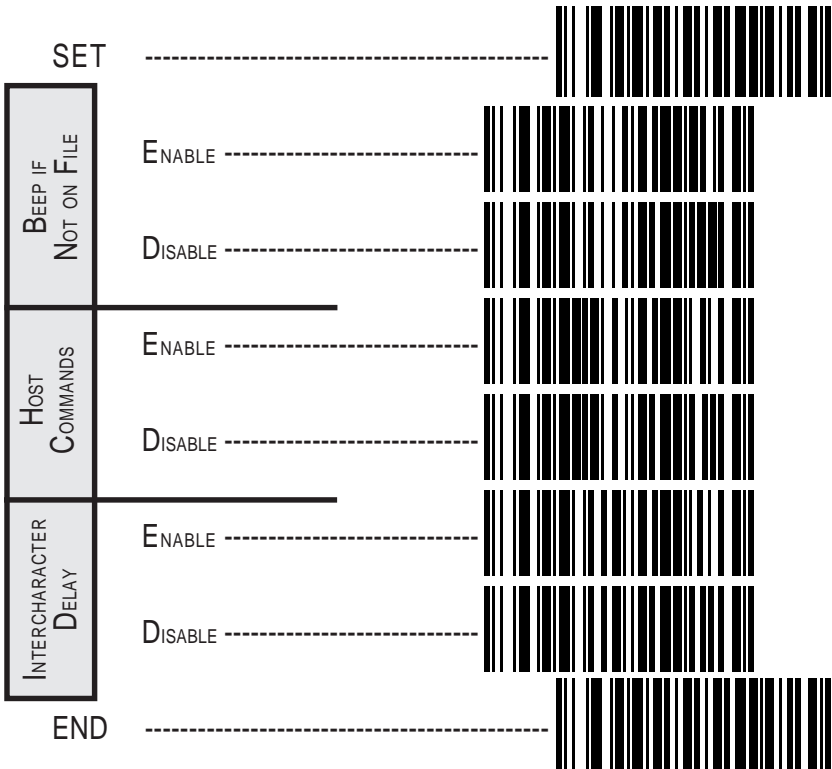
OCIA Options

Use these labels to change the settings as desired. The following brief descriptions explain each selection.

Beep if Not on File — when enabled requires the scanner to beep when a label is scanned that is not on file.

Host Commands — when enabled allows the scanner to accept commands directly from the host.

Intercharacter Delay — refers to a pause, if any, between each character before being sent to the host. This time delay is used to control the flow of data from the scanner, but it should not be required for most applications. When enabled, OCIA intercharacter delay is set at 70 μ s.



Label Transmit Format Configuration Items (RS-232 and Keyboard Wedge Interfaces Only)

If you need to send information in addition to label data, the scanner can be configured to transmit prefixes and/or suffixes as well as symbology specific identifier characters (Label I.D.).

Prefix & Suffix

As the examples below show, none, one or two symbology specific ASCII characters can be added to the beginning of label in addition to multiple prefix and suffix characters.

NOTE

Using this feature requires a thorough understanding of your specific system requirements.

The options available using this feature are:

- symbology specific (0-2) characters + label data
PP + label data
- non-symbology specific characters (1-2) as a prefix + label data
 $C_p C_p$ + label data
- label data + non-symbology specific characters (0-2) as a suffix
label data + $C_s C_s$
- non-symbology specific characters (1-2) as a prefix + symbology specific characters (0-2) + label data
 $C_p C_p$ + PP + label data
- symbology specific characters (0-2) + label data + non-symbology specific characters (1-2) as a suffix
PP + label data + $C_s C_s$

- non- symbology specific characters (1-2) as a prefix + label data + non- symbology specific characters (1-2) as a suffix

$$C_p C_p + \text{label data} + C_s C_s$$

- non- symbology specific characters (1-2) as a prefix + symbology specific characters (0-2) + label data + non- symbology specific characters (1-2) as a suffix

$$C_p C_p + PP + \text{label data} + C_s C_s$$

- non- symbology specific characters (1-2) as a prefix + label data + symbology specific characters + non- symbology specific characters used as suffixes.

$$C_p C_p + \text{label data} + PP + C_s C_s$$

PP = symbology specific characters (Label I.D.)

$C_p C_p$ = non- symbology specific ASCII characters used as prefixes

$C_s C_s$ = non- symbology specific ASCII characters used as suffixes

Setting Non-Symbology Specific Prefix(es)

These characters will be added to the standard label format when your host system has specific and unique requirements for information added to the barcode label data before it is sent to the host. Identify your specific system requirements before adding or modifying these settings, then...

1. Look at the ASCII chart shown on page 38 and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as prefixes.

For example, if you are going to send two prefix characters as 'STX' (start transmit) and 'SP' (Space). The ASCII chart shows that 'STX' equals 02_{hex} and 'SP' equals 20_{hex} .

2. Scan the SET label.
3. Scan the SET PREFIX label on this page.
4. Scan the digits that correspond to the Hex Values.

For the example in step four, scan 0, 2, 2, 0.

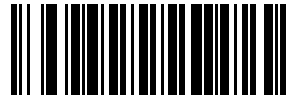
NOTE

If you make a mistake, or lose your place while setting this option, scan the END label to exit Programming Mode. The scanner will sound an error tone (six rapid beeps) to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.

5. Scan END.

You have added a two character prefix to all label data, regardless of label symbology, that will be added to the label data before it is sent to the host.

SET-----



-----SET PREFIX

Go to the second page following this and scan the appropriate characters before scanning the END label to exit programming session.

Setting Non-Symbology Specific Suffix(es)

These characters will be added to the standard label format when your system has specific and unique requirements for information added to the barcode label data before it is sent to the host. Suffix characters follow the label data.

Identify your specific system requirements before adding or modifying these settings, then...

1. Look at the ASCII chart shown on page 38 and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as suffixes.

For example, if you are going to send two suffix characters as 'BEL' (sound host tone) and 'ETX' (end transmission). The ASCII chart shows that 'BEL' equals 07_{hex} and 'ETX' equals 03_{hex}.

2. Scan the SET label.
3. Scan the SET SUFFIX label on this page.
4. Scan the digits that correspond to the Hex Values.

For the example in step five, scan 0, 7, 0, 3.

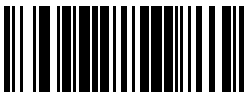
NOTE

If you make a mistake, or lose your place while setting this option, scan the END label to exit Programming Mode. The scanner will sound an error tone (six rapid beeps) to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.

5. Scan END.

You have added a two character suffix to all label data, regardless of label symbology, that will be added to the label data before it is sent to the host.

SET -----



----- SET SUFFIX

Go to the next two pages and scan the appropriate characters before scanning the END label to exit programming session.

Setting A Single Character Prefix or Suffix

To set one ASCII character as a prefix or suffix, follow steps one through four on the previous two pages (select prefix or suffix), then...

1. Scan the two digit Hex Code for that character.
(e.g. 03, 8F, ...FF)

NOTE

If you make a mistake, or lose your place while setting this option, scan the END label to exit Programming Mode. The scanner will sound an error tone (six rapid beeps) to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.

2. Scan the ONE CHARACTER ONLY label on the following page.
3. Scan the END label.

You have set a single character prefix or suffix.

Setting Prefix and/or Suffix Characters

NOTE

You must scan the SET label and either the Set Prefix or Set Suffix label before using the labels on this page.

SET PREFIX AND/OR SUFFIX CHARACTERS

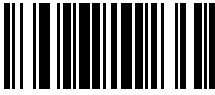
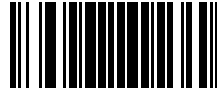
	-----0
1 -----	
	-----2
3 -----	
	-----4
5 -----	

SET PREFIX AND/OR SUFFIX CHARACTERS



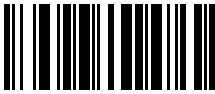
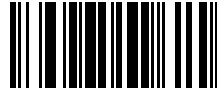
-----6

7-----



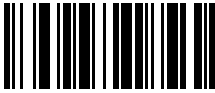
-----8

9-----



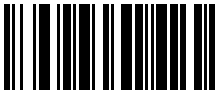
-----A

B-----



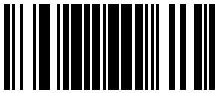
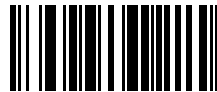
-----C

D-----



-----E

F-----



-----ONE CHARACTER ONLY

END-----



ASCII Character Set

The table on this page shows a set of ASCII characters and their corresponding Hex Values. The Hex Values in this table are needed for setting symbology specific label identifiers, as well as enabling custom prefix and suffix characters.

ASCII CHAR.	HEX VALUE	ASCII CHAR.	HEX VALUE	ASCII CHAR.	HEX VALUE	ASCII CHAR.	HEX VALUE
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
ak	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

Setting Symbology Specific Label Identifiers (Label I.D.)

Symbology-specific label identifiers comprise one or two ASCII characters that can precede or follow barcode label data as it is transmitted to the host. The host uses these characters as a means of distinguishing between symbologies.

Industry standards have been established for symbology-specific label identifiers, and are listed in the table below. Most scanners will have factory default identifiers preset to these standards.

Table 1. Industry Standard Label Identifiers (all are prefixes)

UPC-A ----- 'A'	EAN-8 (5 Add-on)----- 'FF'
UPC-E ----- 'E'	EAN-8 (8 Add-on)----- 'FF'
EAN-8----- 'FF'	EAN-13 (2 add-on) ----- 'F'
EAN-13----- 'F'	EAN-13 (5 Add-on)----- 'F'
UPC-A (2 add-on) ----- 'A'	EAN-13 (8 Add-on)----- 'F'
UPC-A (5 Add-on) ----- 'A'	Code 39 ----- '*'
UPC-A (8 Add-on) ----- 'A'	Codabar ----- '%'
UPC-E (2 add-on) ----- 'E'	Interleaved.2 of 5 ----- 'i'
UPC-E (5 Add-on) ----- 'E'	Code 93 ----- '&'
UPC-E (8 Add-on) ----- 'E'	Code 128 ----- '#'
EAN-8 (2 add-on)----- 'FF'	MSI/Plessey ----- '@'

To set symbology-specific label identifiers:

1. Look at the ASCII chart shown on the previous page and identify the ASCII character(s) and the corresponding Hex Code(s) for the ASCII characters you will use as identifiers. You will also need to determine whether the character(s) will need to be sent as a prefix or a suffix.

For example: You need to change the label identifier prefix for UPC-A to 'A1'.

2. Scan the SET label below.
3. Scan either the TRANSMIT LABEL I.D. AS PREFIX or TRANSMIT LABEL I.D. AS SUFFIX, depending on your requirements.

For our example, the 'transmit as prefix' label would be scanned.

Setting Symbology Specific Label Identifiers (Label I.D.) Continued

4. Scan the label representing the symbology whose label identifier you wish to modify.

In our example, we would scan the 'UPC-A' symbology label.

5. Identify and scan the digits that correspond to the Hex Values.

The hex values from the ASCII chart that correspond to 'A1' from our example are as follows: $41_{\text{hex}} = 'A'$, and $31_{\text{hex}} = '1'$. Thus, we would scan digit programming labels in this order: 4, 1, 3, 1.

6. Scan the END label.

In our example, you have changed the default label identifier prefix for UPC-A from 'A' to 'A1'.

SET-----



SET SYMBOLOGY SPECIFIC LABEL I.D.



DISABLE LABEL I.D. CONTROL

TRANSMIT LABEL I.D. AS PREFIX

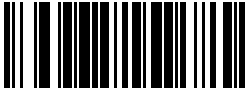


TRANSMIT LABEL I.D. AS SUFFIX



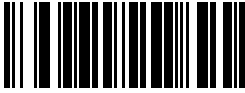
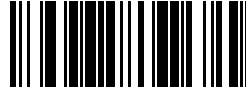
Label I.D. Symbology Selection

SET SYMBOLOGY SPECIFIC LABEL IDENTIFIER FOR:



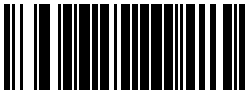
-----UPC-A

UPC-A w/2 DIGIT ADD-ON -



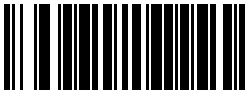
-----UPC-A w/5 DIGIT ADD-ON

UPC-A w/C128 ADD-ON --



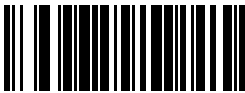
-----UPC-E

UPC-E w/2 DIGIT ADD-ON -



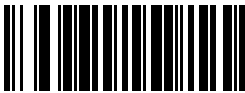
-----UPC-E w/5 DIGIT ADD-ON

UPC-E w/C128 ADD-ON --



-----EAN-8

EAN-8 w/2 DIGIT ADD-ON --



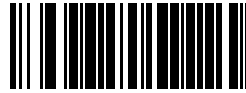
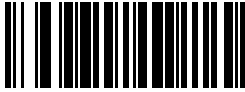
-----EAN-8 w/5 DIGIT ADD-ON

EAN-8 w/C128 ADD-ON



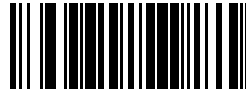
SET SYMBOLOGY SPECIFIC LABEL IDENTIFIER FOR:

EAN-13 -----



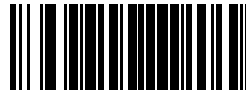
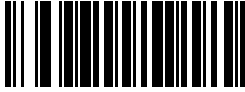
----- EAN-13 w/2 DIGIT ADD-ON

EAN-13 w/5 DIGIT ADD-ON



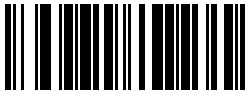
----- EAN-13 w/C128 ADD-ON

CODE 39 -----



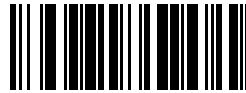
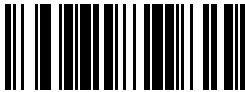
----- CODABAR

INTERLEAVED 2 OF 5 -----



----- STANDARD 2 OF 5

CODE 93 -----



----- CODE 128

MSI/PLESSEY¹ -----



----- END

1 MSI/Plessey may not be supported for your scanner. Contact your distributor, PSC Sales or PSC Technical Support for more information.

How to Set Single Character Label I.D.

If you only want a single character identifier, follow this modified procedure for setting label identifier.

1. Look at the ASCII chart shown on page 38 and identify the ASCII character and the corresponding Hex Code for the ASCII character you will use as the symbology specific identifier.
2. Scan the SET label.
3. Scan the label identifier label for the symbology identifier that you are going to change.

As an example, assume that you want to change the label identifier for EAN-8 from the default setting FF to the ASCII value 8. Scan the Set Symbology Specific Label Identifier barcode for EAN-8.

5. Identify the hex value that correspond to the ASCII character.

In this example '8' equals 38_{hex}.

Simply follow the hex value for '8' (38_{hex}) with the One Character Only label. This tells the scanner that '8' is a single digit label identifier.

6. Scan the barcodes values.

For the example in step five, scan 3, 8, One Character Only on the following two pages.

NOTE

If you make a mistake, or lose your place while setting this option, scan the END label to exit Programming Mode. The scanner will sound an error tone (six rapid beeps) to indicate that programming was incomplete, and the setting will remain as it was before entering Programming Mode.

7. Scan the END label.


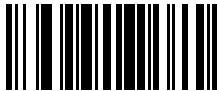




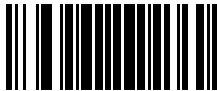
You have changed the default label identifier for EAN-8 from 'FF' to '8'.

Disabling Label I.D. for a Specific Symbology

This procedure is the same as setting a single character symbology identifier, except you should scan two zeros and the One Character Only labels before scanning the END label.

Symbology Specific Label Identifiers Characters

Use the labels on this page to change or modify symbology identifiers.

SET SYMBOLGY SPECIFIC LABEL IDENTIFIERS CHARACTERS		-----0
	1 -----	
		-----2
	3 -----	
		-----4
	5 -----	
		-----6
	7 -----	
		-----8

SET SYMBOLIC SPECIFIC LABEL IDENTIFIERS CHARACTERS



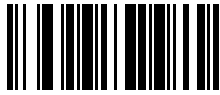
-----9

A -----



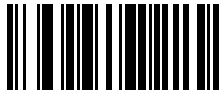
-----B

C -----



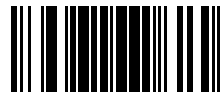
-----D

E -----



-----F

ONE CHARACTER ONLY -----



-----END

Symbologies

Symbology selection (bar code type) determines which symbologies the scanner will decode. Once you have identified the symbologies you wish to enable, turn to the following pages, enable those symbologies and set the data format options (e.g. check digit, start/stop characters) required by your host system for each symbology type. You must enable the symbology format options settings that are compatible with your host system.

The factory settings for each interface were chosen to meet the standard industry requirements and in most cases you will not need to change the symbology format settings. If you are unsure of your system requirements, test the scanner using the factory settings before making any changes.

Symbology Options Overview

Enable All Symbologies — allows the scanner to auto-discriminate between all the symbologies in this list. Use this selection only if you must constantly read a wide variety of symbologies. Turn to the following pages for enabling additional symbology specific options.

Disable All Symbologies — disables all symbologies¹. The scanner will only recognize the programming labels contained in this manual while you are in Programming Mode.

Enable UPC/EAN — tells the scanner to recognize UPC-A, UPC-E, EAN-8, and EAN-13. If you enable this symbology, additional options for symbology expansion and reading add-ons are available. Allows selection of expansion and add-on options.

Enable Code 39 — selects Code 39 as an active symbology. Allows selection of Check Digit, Start/Stop and Single Digit options.

PharmaCode 39 — is a symbology subset of Code 39. Enabling PharmaCode 39 selects this special Italian code as the active Code 39 symbology (superceding standard Code 39 features).

NOTE

Standard Code 39 must be enabled before PharmaCode can be enabled.

Enable Interleaved 2 of 5 — selects Interleaved 2 of 5 as an active symbology. Allows change of Check Digit or label format (fixed or variable length) options.

Enable Standard 2 of 5 — selects Standard 2 of 5 as an active symbology. Options for this symbology are similar to Interleaved 2 of 5 features.

1 Code 128 is always active for the purpose of reading programming bar code labels, however, the scanner does not transmit data to the host when in Programming Mode. Scanning the DISABLE ALL SYMBOLOGIES label will disable Code 128 transmission to the host.

IATA — is a special symbology subset of Standard 2 of 5. Enabling IATA selects this custom code as the active Standard 2 of 5 symbology (superceding any other Standard 2 of 5 features).

NOTE

Standard 2 of 5 must be enabled before IATA can be enabled.

EnableCodabar — selects Codabar as an active symbology. Allows selection of Check Digit, Start/Stop character and format, or label format (fixed or variable length) options.

EnableCode93 — selects Code 93 as an active symbology. The scanner is preset to recognize all Code 93 bar codes that have between 2 and 50 characters. Code 93 has no user selectable options.

EnableCode 128¹ — selects Code 128 as an active symbology. The scanner is preset to recognize all Code 128 bar codes that have between 2 and 50 characters. Code 128 has no user selectable options.

Enable MSI/Plessey² — selects MSI/Plessey as an active symbology. Allows selection of Check Digit or label format (fixed or variable length) options.

Universal Symbology Selection

To set the scanner to read all symbologies, scan the ENABLE ALL SYMBOLOGIES bar code below.

NOTE

DO NOT scan SET or END bar codes when programming universal symbology features. Programming mode is automatically entered and exited when one of the two special bar codes below are scanned.

Enable All Symbologies



Disable All Symbologies¹



-
- 1 Code 128 is always active for the purpose of reading programming bar code labels, however, the scanner does not transmit data to the host when in Programming Mode.
 - 2 MSI/Plessey may not be supported for your scanner. Contact your distributor, PSC Sales or PSC Technical Support for more information.
-

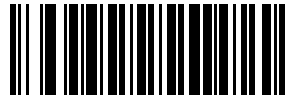
Symbology Selection

The bar code programming labels on the following pages allow you to enable or disable individual symbologies.

NOTE

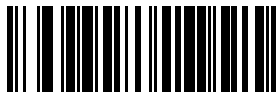
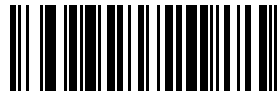
If you enable a symbology that has additional features that should be set, turn to the pages that support that symbology and its programmable features.

SET-----



DISABLE UPC/EAN -----

-----ENABLE UPC/EAN



DISABLE CODE 39 -----

-----ENABLE CODE 39

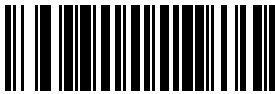


DISABLE PHARMA CODE 39 --

-----ENABLE PHARMA CODE² 39



2 Code 39 must first be enabled for the scanner to read PharmaCode 39 labels. Enabling PharmaCode 39 will convert Code 39 data to PharmaCode format whenever possible.



DISABLE INTERLEAVED 2 OF 5

-----ENABLE INTERLEAVED 2 OF 5



DISABLE STANDARD 2 OF 5 -

-----ENABLE STANDARD 2 OF 5



DISABLE IATA-----

-----ENABLE IATA³



3 Standard 2 of 5 must first be enabled before IATA can be enabled, however, the scanner will not read Standard 2 of 5 labels when IATA is enabled.



-----ENABLE CODABAR

DISABLE CODABAR-----



-----ENABLE CODE 93

DISABLE CODE 93-----



-----ENABLE CODE 128

DISABLE CODE 128⁴-----



-----ENABLE MSI/PLESSEY⁵

DISABLE MSI/PLESSEY-----



-----END

-
- 4 Code 128 is always active for the purpose of reading programming bar code labels. Scanning the DISABLE ALL SYMBOLOGIES or the DISABLE CODE 128 labels disables Code 128 transmission to the host (disables decoding of all C128 non-programming labels).
 - 5 MSI/Plessey may not be supported for your scanner. Contact your distributor, PSC Sales or PSC Technical Support for more information.

UPC/EAN Options

The information below provides a brief description of the programmable UPC/EAN features included on the following pages.

Expand UPC-A to EAN-13 — adds a leading zero to a UPC-A label which 'expands' the label to the EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

Expand UPC-E to UPC-A — expands UPC-E labels to UPC-A data format. Selecting this feature also changes the symbology ID to match those required for UPC-A.

If this feature and Expand UPC-A to EAN-13 are both enabled, label data will be sent to the host in EAN-13 label format.

Expand EAN-8 to EAN-13 — adds five zeros in front of an EAN-8 label. Data is sent in EAN-13 data format. Selecting this feature also changes the symbology ID to match those required for EAN-13.

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

UPC-A or UPC-E and EAN-8 or EAN-13 Two and Five Digit Add-Ons

Optional — scanner will read UPC/EAN bar codes with or without add-ons.

Required — UPC/EAN bar codes must have add-on or label will not be read.

Disable — scanner will not recognize/read add-on portion of UPC/EAN labels, but will read the main body of the label.

Price/Weight Check Digit — provides options for enabling price/weight check digits. The feature includes selections for domestic four or five digit, and European four or five digit, as well as the option to disable the price/weight check.

UPC/EAN Expansion

Use these labels to enable or disable:

- Expand UPC-A to EAN-13
- Expand UPC-E to UPC-A
- Expand EAN-8 to EAN-13
- Expand UPC-E to EAN-13



1 When any expansion feature is enabled, the transmission of the Prefix, Suffix, Check Digit and Number System Digit (NSD) are controlled by your selections for the symbology 'expanded to' rather than the symbology 'expanded from'. For example, if you expand UPC-E to UPC-A, settings for UPC-A determine how the scanner sends a bar code's contents.

UPC/EAN Add-Ons

If you need to scan UPC or EAN labels that include Add-on codes, the selections on this page set the scanner's Add-on feature. There are three Add-on read modes available: optional, required and disabled.

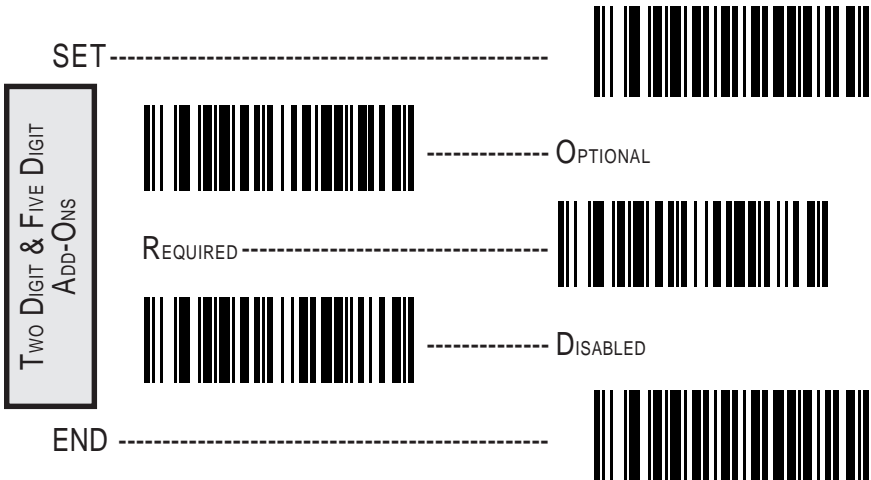
Optional — the scanner will recognize UPC bar codes with or without Add-ons.

NOTE

Due to the structure of Add-on codes, selecting the Optional setting makes it impossible to ensure that the scanner will always read the Add-on portion of the label. PSC makes no guarantee, either written or implied, that scanners with optional Add-on decoding enabled will perform with the speed and accuracy required for any given application.

Required — the scanner will not recognize or decode any UPC/EAN labels that do not contain an Add-on segment.

Disabled — the scanner will not recognize or decode any Add-on segment of UPC/EAN labels. The scanner will read and decode the standard UPC/EAN portion of the label.



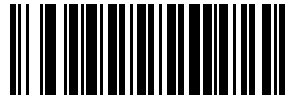
C128 and Custom Add-Ons

A wide array of add-on options are available to streamline your installation to best advantage. Call your salesman or service provider for assistance in customizing your scanner's add-on capabilities to your own unique specifications.

Price/Weight Check Digit

The price/weight check digit selections allow you to specify whether the scanner should calculate an extra check digit based on a four or five-digit price/weight block and compare it with the price/weight check digit contained in the bar code. If the calculated check digit does not match the value of the check digit contained in the bar code, the label will be rejected as invalid. Select domestic four or five digit, European four or five digit, or disable the price/weight check.

SET -----

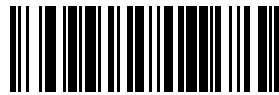


PRICE/WEIGHT CHECK DIGIT



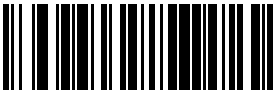
---- DISABLE PRICE/WEIGHT CHECK

ENABLE 4 DIGIT CHECK ----



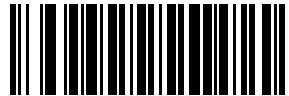
----- ENABLE 5 DIGIT CHECK

ENABLE EURO 4 DIGIT CHECK



---- ENABLE EURO 5 DIGIT CHECK

END -----



UPC Data Format Settings

These settings affect UPC data format when RS-232 is the active interface. Number System Digit (NSD) settings operate with RS-232 and Keyboard Wedge interfaces ONLY.



¹ NSD = Number System Digit. The NSD character is the character that precedes the UPC bar code. The NSD for regular UPC-A bar codes is a zero. Other commonly used Number System Digits used with UPC-A are:

- 2 - used for random weight items such as meat and produce
- 3 - used for the drug and health items
- 4 - used for in-store non-food items
- 5 - used for coupons



² If UPC-E is expanded to UPC-A, the transmission of Check Digit (CD) and NSD will be determined by the UPC-A settings on this page.

EAN Data Format Settings

These settings affect EAN data format when RS-232, Keyboard Wedge is the active interface.



Code 39 Options

The Code 39 symbology has the following programmable features:

Check Digit — calculate the Check Digit to verify that the Check Digit contained in the barcode label is correct. If you enable this feature, your barcodes must contain a Check Digit.

You may also choose to transmit or not transmit the Check Digit independent of whether the Check Digit is calculated by the scanner. If you choose to *Transmit Check Digit*, but not calculate, the scanner sends the Check Digit encoded in the barcode without verifying its accuracy. If you choose *Don't Transmit Check Digit*, the scanner will remove the Check Digit's contents before sending the barcode data to the host.


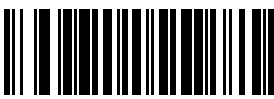

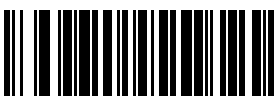

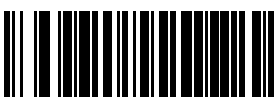

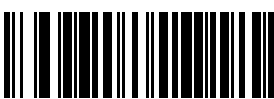


Start/Stop Characters — you can choose either Send or Don't Send depending on your host's interface requirement.

Code 39 Full ASCII — enable or disable the ability to decode Code 39 Full ASCII labels.

Code 39 Minimum Label Length — set the minimum label length required for Code 39 labels (not including the check character). This feature is provided to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Code 39 (continued)

Use these labels to change the Code 39 programmable features.

	SET -----	
CHECK DIGIT		----- DON'T COMPUTE
	COMPUTE -----	
		----- DON'T TRANSMIT
START/STOP	TRANSMIT -----	
		----- DON'T TRANSMIT
CODE 39 FULL ASCII	TRANSMIT -----	
		----- ENABLE
	DISABLE -----	
		----- END

Code 39 (continued)

Follow these steps to set Code 39 Minimum Label Length:

1. Identify the minimum length setting you want to make. The selectable range is 00 to 48 characters¹.
2. Scan the SET label.
3. Scan the SET CODE 39 MINIMUM LABEL LENGTH barcode.

Setting Lengths

If you are setting a length less than ten, you must scan a zero first and then the length digit (04, 06, 08).

4. Set the minimum label length by scanning the correct digits from below and the next page.
5. Scan the END label.

SET -----



----- SET MINIMUM LABEL LENGTH

0 -----



1 -----



2 -----



3 -----



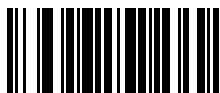
4 -----



CODE 39 MINIMUM LABEL LENGTH

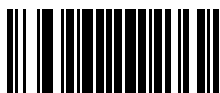
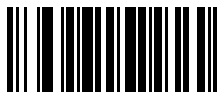
1. The IBM POS Interface is limited to 32 character labels.

CODE 39 MINIMUM LABEL LENGTH



-----5

6-----



-----7

8-----



-----9

END-----



Code 128 Options

AIM Symbology ID Prefix

The Automatic Identification Manufacturers, Inc. of the United States (AIM USA) have standardized the reporting of data sources from barcode reading devices. Sending the AIM symbology prefix identifies the symbology to the host terminal, allowing it to specifically differentiate between UCC-128 (Code 128 with Function Character 1 in the first position) and standard Code 128 symbols. When this feature is disabled, the host cannot differentiate between these symbols.

Scan the labels below to enable or disable the sending of an AIM symbology ID prefix.



Interleaved 2 of 5

The Interleaved 2 of 5 symbology has the following programmable features:

Check Digit — calculates the Check Digit to verify that the Check Digit contained in the barcode label is correct. If you enable this feature, your barcodes must contain a Check Digit.

You may also choose to transmit or not transmit the Check Digit independent of whether the Check Digit is calculated by the scanner. The *Transmit Check Digit* will have no effect unless the *Compute Check Digit* feature is enabled. If you choose *Don't Compute Check Digit*, the scanner sends the Check Digit encoded in the bar code without verifying its accuracy. If you choose both *Compute Check Digit* and *Don't Transmit Check Digit*, the scanner will remove the Check Digit's contents before sending the bar code data to the host.

Label Format — provides the selection between fixed or variable length labels. If your application has labels with specific fixed lengths, we recommend selecting fixed lengths to improve read rate and avoid short reads.

You can select any valid number of digits for reading specific length labels only. Read the following details for specific Interleaved 2 of 5 limits.

Interleaved 2 of 5 Label Lengths

Interleaved 2 of 5 Minimum Label Length — sets the minimum label length required for I2/5 labels (not including the check character). This feature is provided to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Variable Length — if you select variable length, the scanner will recognize labels with an even number of digits between 04 and 50 digits¹.

Fixed Length — if you select fixed length, there are three labels for programming your scanner to read either one or two fixed lengths. The labels are:

- **Set First Fixed Length** — use this label to instruct the scanner that the next two programming labels you scan will define the first fixed label length. This setting can be any even number of digits between 04 and 50 digits¹.

1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

- **SetSecondFixedLength** — use this label to instruct the scanner that the next two programming labels you scan will define the second fixed label length. Again, this setting can be any even number of digits between 04 and 50 digits¹.
- **NoSecondFixedLength** — scan this label after setting the first fixed length to instruct the scanner to recognize only the label length chosen as the first fixed length.

Check Digit and Variable Length Label Selections

These programming labels determine whether you compute and send the check digit contents.

If you want to set the scanner to read only fixed length labels, follow the procedures on the pages immediately following.



1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

Setting Interleaved 2 of 5 Fixed and Minimum Label Lengths

All interfaces that are shipped with the standard factory configuration are set to read variable length labels. If you switch from variable to fixed length labels (by disabling variable lengths on the previous page), the default fixed label lengths are 14 digits and 8 digits. Follow the steps below to change these defaults. All fixed length settings for Interleaved 2 of 5 must be an even number.

Set Fixed

1. Identify the fixed length settings you want to make.
2. Scan the SET label.
3. Scan the ENABLE FIRST FIXED barcode.

Setting Fixed Lengths

If you are setting a length less than ten, you must scan a zero first and then the length digit (04, 06, 08).

4. Set the first fixed label length by scanning the correct digits from the next two pages.

If you need to set a second fixed length, continue with step five. If you do not need to set a second fixed length scan the NO SECOND FIXED LENGTH below and skip to step seven.

5. Scan the SET SECOND FIXED label.
6. Set the second fixed label length by scanning the correct digits from this page.
7. Scan the END label to complete the procedure.

Setting Minimum Label Length

1. Identify the minimum length setting you want to make. The selectable range is 04 to 50 characters¹.
2. Scan the SET label.
3. Scan the SET MINIMUM LABEL LENGTH barcode.

If you are setting a length less than ten, you must scan a zero first and then the length digit (04, 06, 08).

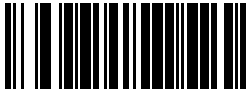
4. Set the minimum label length by scanning the correct digits from the next two pages.
5. Scan the END label.

1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

SET -----

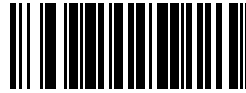


INTERLEAVED 2 OF 5 FIXED AND MINIMUM LABEL LENGTHS



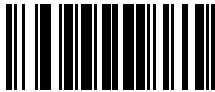
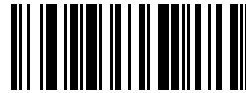
----- SET FIRST FIXED LENGTH

SET SECOND FIXED LENGTH



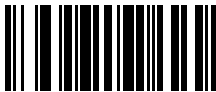
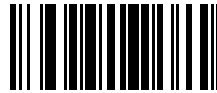
----- NO SECOND FIXED LENGTH

SET MINIMUM LABEL LENGTH



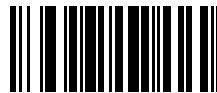
----- 0

1 -----



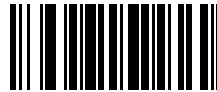
----- 2

3 -----



----- 4

6 -----



----- 8

END -----



Standard 2 of 5

The Standard 2 of 5 symbology has the following programmable features:

CheckDigit — calculates the Check Digit to verify that the Check Digit contained in the bar code label is correct. If you enable this feature, your bar codes must contain a Check Digit.

You may also choose to transmit or not transmit the Check Digit independent of whether the Check Digit is calculated by the scanner. The *Transmit CheckDigit* will have no effect unless the *Compute CheckDigit* feature is enabled. If you choose *Don't Compute CheckDigit*, the scanner sends the Check Digit encoded in the bar code without verifying its accuracy. If you choose both *Compute CheckDigit* and *Don't Transmit CheckDigit*, the scanner will remove the Check Digit's contents before sending the bar code data to the host.

The *Transmit CheckDigit* option has no effect unless the *Compute CheckDigit* option is enabled.

LabelFormat — provides the selection between fixed or variable length labels. If your application has labels with specific fixed lengths, we recommend selecting fixed lengths to improve read rate and avoid short reads.

You can select any valid number of digits for reading specific length labels only. Read the following details for specific Standard 2 of 5 limits.

Standard 2 of 5 Label Lengths

Standard 2 of 5 Minimum Label Length — sets the minimum label length required for Standard 2/5 labels (including the check character). This feature is provided to ignore small label segments, reducing the possibility that a portion of a good label is incorrectly seen as an entire label.

Variable Length — if you select variable length, the scanner will recognize labels with a number of digits between 04 and 50 digits¹.

Note: The Variable Length Label feature must be DISABLED in order that Fixed Label Length features can work.

Fixed Length — if you select fixed length, there are three labels for programming your scanner to read either one or two fixed lengths. The labels are:

- **Set First Fixed Length** — use this label to instruct the scanner that the next two programming labels you scan will define the first fixed label length. This setting can be any number of digits between 04 and 50 digits¹ (including check character).

1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

- **Set Second Fixed Length** — use this label to instruct the scanner that the next two programming labels you scan will define the second fixed label length. Again, this setting can be any number of digits between 04 and 50 digits¹ (including check character).
- **No Second Fixed Length** — scan this label after setting the first fixed length to instruct the scanner to recognize only the label length chosen as the first fixed length.

Check Digit and Variable Length Label Selections

These programming labels determine whether you compute and send the check digit contents.

If you want to set the scanner to read only fixed length labels, follow the procedures on the pages immediately following.

SET ----- 

CHECK DIGIT		----- DON'T COMPUTE
	COMPUTE ----- 	
		----- DON'T TRANSMIT
	TRANSMIT ----- 	
VARIABLE LENGTH LABELS		----- ENABLE
	DISABLE ----- 	

 ----- END

1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

Setting Standard 2 of 5 Fixed and Minimum Label Lengths

All interfaces that are shipped with the standard factory configuration are set to read variable length labels. If you switch from variable to fixed length labels, the default fixed label lengths are 14 digits and 8 digits. Follow the steps below to change these defaults.

Set Fixed

1. Identify the fixed length settings you want to make.
2. Scan the SET label.
3. Scan the ENABLE FIRST FIXED bar code.

Setting Fixed Lengths

If you are setting a length less than ten, you must scan a zero first and then the length digit (04, 07, 08).

4. Set the first fixed label length by scanning the correct digits from the next two pages.

If you need to set a second fixed length, continue with step five. If you do not need to set a second fixed length scan the NO SECOND FIXED LENGTH below and skip to step seven.

5. Scan the SET SECOND FIXED label.
6. Set the second fixed label length by scanning the correct digits from this page.
7. Scan the END label to complete the procedure.

Setting Minimum Label Length

1. Identify the minimum length setting you want to make. The selectable range is 01 to 50 characters¹.
2. Scan the SET label.
3. Scan the SET MINIMUM LABEL LENGTH bar code.

If you are setting a length less than ten, you must scan a zero first and then the length digit (04, 07, 08).

4. Set the minimum label length by scanning the correct digits from the next two pages.
5. Scan the END label.

¹ The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

SET -----

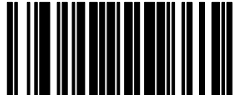


STANDARD 2 OF 5 FIXED AND MINIMUM LABEL LENGTHS



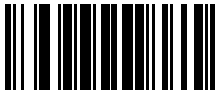
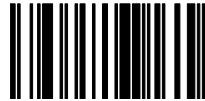
----- SET FIRST FIXED LENGTH

SET SECOND FIXED LENGTH



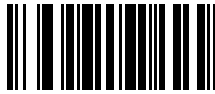
----- NO SECOND FIXED LENGTH

SET MINIMUM LABEL LENGTH



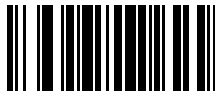
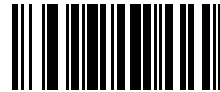
----- 0

1 -----



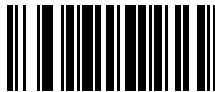
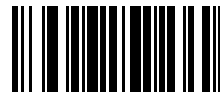
----- 2

3 -----



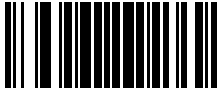
----- 4

5 -----



----- 6

STANDARD 2 OF 5 FIXED AND
MINIMUM LABEL LENGTHS



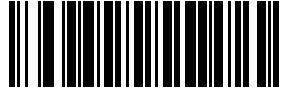
-----7

8-----



-----9

END-----



Codabar Options

The Codabar symbology has the following programmable features:

Check Digit — calculates the Check Digit to verify the label's contents have been read correctly. If you enable this feature, your bar codes must include a Check Digit. You may also choose to transmit or not transmit the Check Digit.

Start/Stop Characters — you can choose either Send or Don't Send depending on your host's interface requirement.

Start/Stop Format — if you need to send the Start/Stop characters, there are four standard format options that you can select from; ABCD/TN*E, ABCD/ABCD, abcd/tn*e, or abcd/abcd. This setting must match your system requirements. If you select one of these options, it determines how the ASCII characters A, B, C, D that are used for Start/Stop characters, will be translated before being sent to the host.

Start/Stop Match — the requirement that the Start and Stop characters must match (be identical) can be enabled or disabled.

Label Format — provides the selection between fixed or variable length labels. If your application has labels with specific fixed length, we recommend selecting fixed lengths to improve read rate.

If you select variable length, the scanner will recognize labels with between 03 and 47 digits¹ (not including the optional check digit).

Set First Fixed Length — if you select fixed length, use this feature to set a first fixed label length to a setting between 03 and 50⁺ digits.

Set Second Fixed Length — if you select fixed length, use this feature to set a second fixed label length to a setting between 03 and 50 digits¹.

No Second Fixed Length — scan this label after setting the first fixed length to instruct the scanner to recognize only the label length chosen as the first label length.

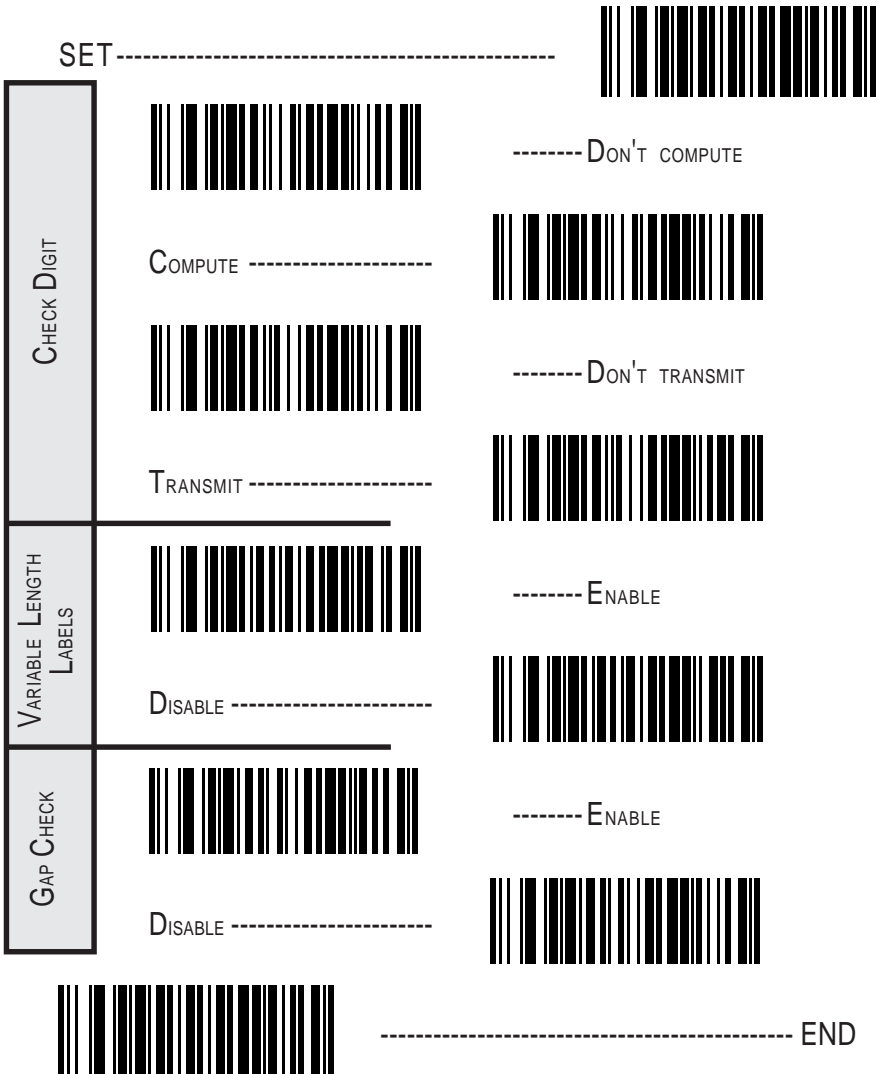
Gap Check — allows the scanner to combine two label halves printed in close proximity to each other that may have been printed at different times and perhaps different locations.

1 The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

Codabar Check Digit & Variable Length

These programming labels determine whether you compute and send the check digit contents and enables variable length.

If you want to set the scanner to read only fixed length labels, follow the procedures on the following pages.



Codabar Start/Stop Character

These bar codes allow you to set the Start/Stop character format and transmission. Refer to your host user's manual to identify your system requirements, then use these labels to select which characters are transmitted.

	SET -----	
START/STOP FORMAT & TRANSMISSION SPECIFICATIONS		----- MATCH NOT REQUIRED
	MATCH REQUIRED -----	
		----- DON'T TRANSMIT
	TRANSMIT ¹ -----	
		----- FORMAT = ABCD/TN*E
	FORMAT = abcd/tn*e ----	
		----- FORMAT = ABCD/ABCD
FORMAT = abcd/abcd ----		
	----- END	

¹ Choosing Transmit *Start/Stop* characters requires selecting one of these four data format selections: ABCD/TN*E, abcd, tn*e, ABCD/ABCD, or abcd/abcd. Refer to Appendix A, *Standard Factory Settings*, to identify the default setting for your scanner's interface type.

Codabar Fixed Length

Most scanners shipped from the factory are set to read variable length labels for Codabar. If you switch from variable to fixed length labels, the factory set fixed label lengths are 14 and 08. Follow the steps below to change these defaults.

Enable Fixed

1. Identify the fixed length settings you want to make.
2. Scan the SET label.
3. Scan the SET FIRST FIXED LENGTH label.

Setting Lengths

If you are setting a length less than ten, you must scan a zero first and then the length digit (02, ...09).

4. Set the first fixed length label by scanning the correct digits from the next page. The selectable range is from 03 to 50 digits¹.

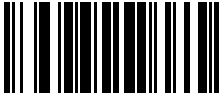
If you need to set a second fixed length, continue with step five. If you do not need to set a second fixed length, scan the NO SECOND FIXED LENGTH label below and skip to step seven.



¹ The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

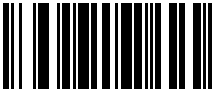
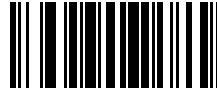
5. Scan the SET SECOND FIXED LENGTH label.
6. Set the second fixed label length by scanning the correct digits from this page. The selectable range is from 03 to 50 digits¹.
7. Scan the END label to complete the procedure.

CODABAR SET FIXED LENGTHS



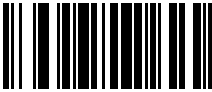
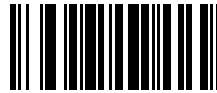
-----0

1 -----



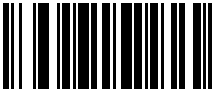
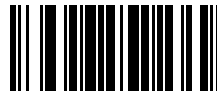
-----2

3 -----



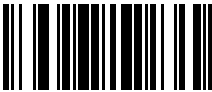
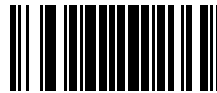
-----4

5 -----



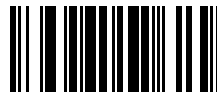
-----6

7 -----



-----8

9 -----



----- END

¹ The scanner will decode up to 50 characters, but the actual length read will vary depending upon bar code size and quality. The IBM POS interface is limited to 32 character labels.

MSI/Plessey Check Digit

NOTE

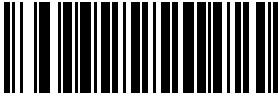
MSI/Plessey may not be supported for your scanner. Contact your distributor, PSC Sales or PSC Technical Support for more information.

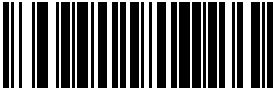
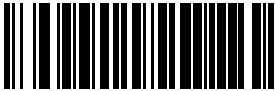



MSI/Plessey Check Digit options include:


Check Digit Calculation — calculates the Check Digit to verify the labels contents have been read correctly. If you enable this feature, your barcodes must include a Check Digit. You may also choose to transmit or not transmit the Check Digit.

Transmit Check Digit — enables or disables transmission of MSI/Plessey Check Digit(s).

Number of Check Digits — specifies either one or two Check Digits.

SET ----- 

MSI/P LESSEY CHECK DIGIT SELECTIONS		----- CALCULATE CHECK DIGIT
	DON'T CALCULATE CHECK DIGIT 	
		----- TRANSMIT CHECK DIGIT
	DON'T TRANSMIT CHECK DIGIT 	
		----- ONE CHECK DIGIT
	TWO CHECK DIGITS ----- 	

 ----- END

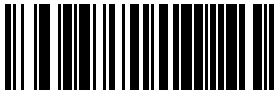
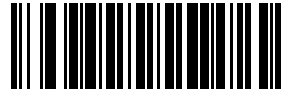
MSI/Plessey Fixed Length

With the *QuickScan™ 1000* scanner, you now have the option of requiring MSI/Plessey labels to have one or two fixed length(s).

To set fixed length(s) for MSI/Plessey labels:

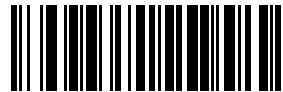
1. Identify the fixed length setting(s) you wish to make. Fixed lengths can be set from four to fifteen, including check character(s).
2. Scan the SET label.
3. Scan the ENABLE MSI/PLESSEY FIXED label.
4. Scan the SET FIRST FIXED LENGTH label.
5. Set the first fixed label length by scanning the correct digits on the following page. If you are setting a length less than ten, you must scan a zero first and then the length digit (e.g., 04, 06, 09). If a second fixed length is not needed, skip to Step 8.
6. If a second fixed length is desired, scan the SET SECOND FIXED LENGTH label.
7. Set the second fixed label length by scanning the correct digits on the following page. Remember, if you're setting a length less than ten, you must scan a zero first and then the length digit.
8. Scan the END label.

SET -----

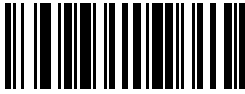


----- ENABLE MSI/PLESSEY FIXED

DISABLE MSI/PLESSEY FIXED -----



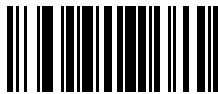
MSI/PLESSEY SET FIXED LENGTHS



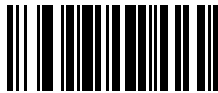
SET SECOND FIXED LENGTH



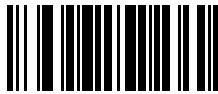
0 -----



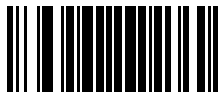
2 -----



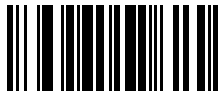
4 -----



6 -----



8 -----

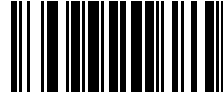


END -----

----- SET FIRST FIXED LENGTH



----- NO SECOND FIXED LENGTH



----- 1



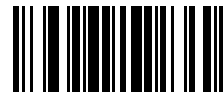
----- 3



----- 5



----- 7



----- 9



General Features

The following section contains the general features that are common to all interfaces. These features allow modification of the scanner's behavior to accommodate user preferences.

Good Read Beeper Settings

These labels provide options for the scanner's audible 'beep' signal.

Audible Signal—enables/disables the beep upon completion of a good read.

NOTE

It is strongly recommended that this feature remain enabled, as the good read beep provides the best scanning status feedback to the user. Error tones are always enabled and cannot be disabled.

Power-up Beep—when enabled, beeps upon scanner power-up.

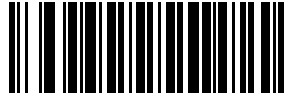
Beeper Volume—allows setting of the beeper to NORMAL or HIGH volume.

Good Read Beep Duration—can be adjusted to short (100msec), medium (250msec), or long (500msec) durations.

When to Beep—may be programmed to announce a 'good read' upon completion of one of the following events:

- Decode of a barcode label
- Transmission from the scanner to the host
- CTS activation at the host terminal (RS-232 models ONLY)

SET-----



AUDIBLE SIGNAL

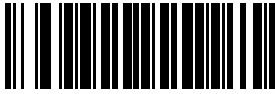


-----OFF

ON-----



POWER-UP BEEP

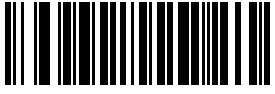


-----ENABLE

DISABLE-----

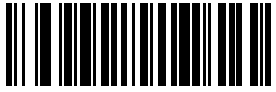


BEEPER VOLUME



-----NORMAL

LOUD-----

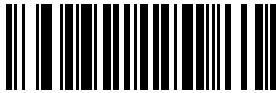


BEEP DURATION



-----SHORT

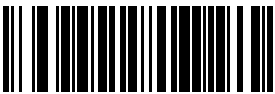
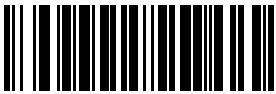
MEDIUM-----



-----LONG

WHEN TO BEEP

AFTER DECODE-----



-----AFTER LABEL X-MISSION

AFTER CTS ACTIVATION----



-----END

Read Verification

QuickScan™ 1000 programming has been improved to allow selection of read verification "minimum read" requirements by symbology type, as well as universally. This means that the scanner needn't waste valuable time verifying high-confidence symbologies, while offering the security of multiple read verification on less reliable codes.

NOTE

The more times the scanner is required to read and compare the bar codes data, the longer it will take to complete a good read cycle.

Universal Read Verification

To set read requirements universally (read requirements will be in effect for all symbologies), scan one of the selections below for one, two, three or four reads required before a bar code's data can be transmitted to the host.

NOTE

DO NOT scan SET or END bar codes when programming these features. Programming mode is automatically entered and exited when one of the four bar codes below are scanned.

Verify 1 Read, all symbologies



Verify 2 Reads, all symbologies



Verify 3 Reads, all symbologies



Verify 4 Reads, all symbologies



UNIVERSAL READ VERIFICATION

Read Verification by Symbology

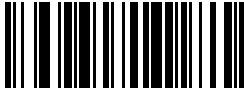
To set the minimum read requirement for a desired symbology:

1. Scan the SET label.
2. Scan one symbology label below to select the symbology to be verified.
3. Scan the label on the following page representing the amount of times you wish a bar code label of that symbology type to be read before transmission to the host.
4. Repeat steps one through three above until read verification has been selected for all symbologies you desire to be verified.
5. Scan the END label.

SET -----

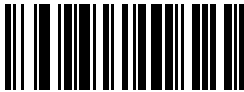


READ VERIFICATION SYMBOLOGY TYPE



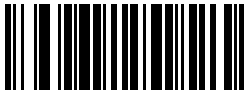
----- VERIFY UPC-A

VERIFY UPC-E -----



----- VERIFY EAN-8

VERIFY EAN-13 -----



----- VERIFY INSTORE LABEL¹

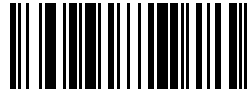
VERIFY CODE 39 -----



¹ Instore labels are UPC-A bar codes with a number system character of 2 or 4, and EAN-8 and EAN-13 bar codes with a Flag 1 character of 2.

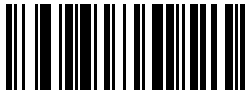
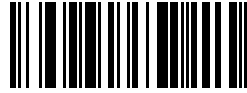
READ VERIFICATION SYMBOLOGY TYPE

VERIFY INTERLEAVED 2 OF 5



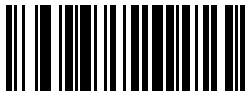
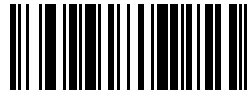
----- VERIFY STANDARD 2 OF 5

VERIFY CODABAR -----



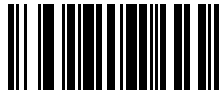
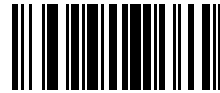
----- VERIFY CODE 93

VERIFY CODE 128 -----



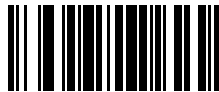
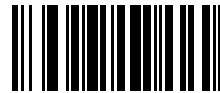
----- VERIFY MSI/PLESSEY

ONE READ -----



----- TWO READS

THREE READS -----



----- FOUR READS

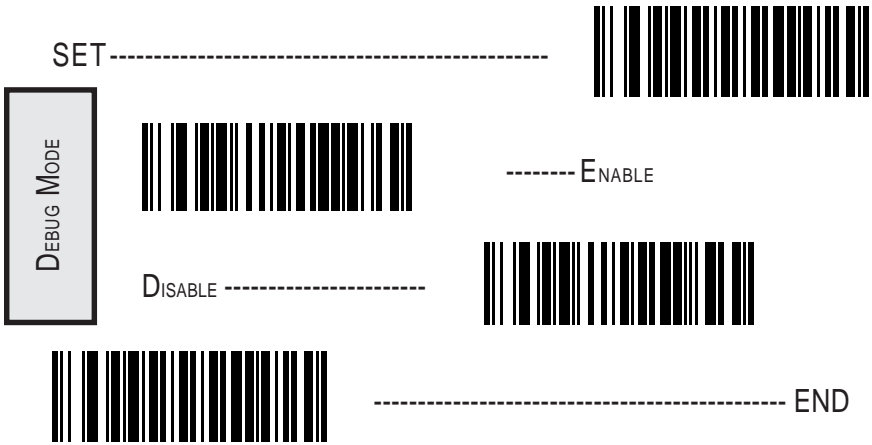
END -----



VERIFY READS
(APPLIES TO ALL SYMBOLOGIES ABOVE)

Debug Mode

When enabled, this mode will cause any product labels that are read to be discarded with no attempt made to transmit them to a host. Any host scanning control will also be disabled while this option is in effect. This mode may be enabled in conjunction with any of the defined host interfaces. All other programmable options that are set for that interface will remain in effect while in debug mode.



Laser Timeout

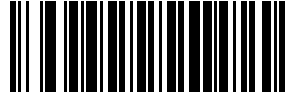
This feature turns the laser off if the scanner has been idle beyond the selectable amount of time set below.



Double Read Timeout

Use this feature to require the scanner to delay (for the selectable amount of time below) before reading the same barcode twice.

SET -----



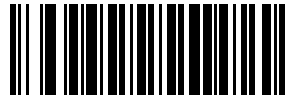
----- 400 MILLISECONDS

600 MILLISECONDS -----



----- 800 MILLISECONDS

END -----





Appendix A

Additional Information

Host Programming

Some interfaces and host systems include the ability to configure the scanner by sending commands to the scanner. Consult your host system manual for more information about this feature.

Creating MultiFunction Labels

The term, multifunction label, describes a programming label that contains multiple programming features in one programming label. These labels can be created with label making software that supports Code 128.

Need More Information?

If you require more information about using your host system to change the scanner's programmable features or detailed instructions about creating multifunction labels, contact your local dealer or distributor or call (in the U.S. or Canada) PSC Technical Support at 1-800-547-2507.

Appendix B

Sample Bar Codes

CODE 128



CODE 39



INTERLEAVED 2 OF 5



CODABAR



CODE 93



UPC-A



UPC-A w/2 digit Add-on



UPC-A w/ 5 digit Add-on



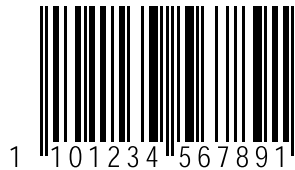
UPC-E



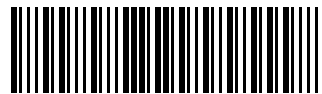
EAN-8 (JAN-8)



EAN-13 (JAN-13)



MSI/Plessey



14476925



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