



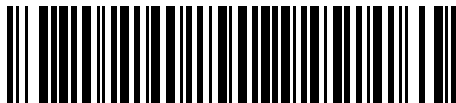
P 300STD/FZY/PRO Scanner



Product Reference Guide



P 300STD/FZY/PRO Scanner Product Reference Guide



72-39417-03
Revision A — October 2000

*P 300STD/FZY/PRO Scanner
Product Reference Guide*

72-39417-03
Revision A
October 2000



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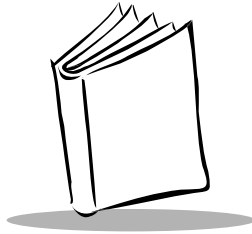
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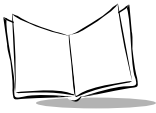
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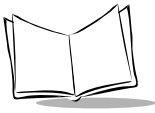


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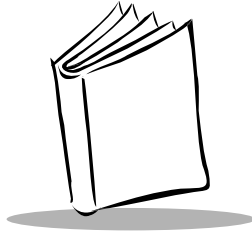
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About This Guide

Introduction

The *P 300STD/FZY/PRO Scanner Product Reference Guide* provides instructions for setting up, programming, using, maintaining and troubleshooting the P 300STD, P 300FZY and P 300PRO scanner.

Chapter Descriptions

[Chapter 1, *Getting Started*](#), provides a product overview and instructions on setting up your scanner. Also included are detailed instruction on scanning 1- and 2-dimensional bar codes, as well as definitions for each of the beeper indications.

[Chapter 2, *Programming the Scanner*](#), contains all the bar codes necessary to program your P 300 scanner.

[Chapter 3, *Advanced Data Formatting \(ADF\)*](#), explains how to customize scanned data before transmission to your host.

[Chapter 4, *Maintenance and Troubleshooting*](#), describes cleaning your scanner, and provides a list of possible problems you may encounter with your scanner, and solutions to these problems.

[Appendix A, *Programming Reference*](#), provides information on AIM identifiers and prefix/suffix values.

[Appendix B, *Keyboard Maps*](#), illustrates the keyboard maps for use with the keyboard wedge interface.

[Appendix C, *ASCII Character Set*](#), provides a table of ASCII character conversions.



[Appendix D, *Technical Specifications*](#), lists the technical specifications for the scanner, and provides illustrations of the decode zones.

Audience

The intended audience for this manual is personnel performing installation/setup, programming and troubleshooting of P 300 Series scanners.

Notational Conventions

The following conventions are used in this document:

- ◆ Italics are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents.
- ◆ Bullets (◆) indicate:
 - ◆ action items
 - ◆ lists of alternatives
 - ◆ lists of required steps that are not necessarily sequential
- ◆ Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.

Related Publications

- ◆ *P 300 (STD/FZY/PRO) Series Quick Reference Guide*, p/n 72-39416-xx, provides instructions on setting up and using the scanner. Default programming parameters are listed as well.
- ◆ *P 300IMG Imager Quick Reference Guide*, p/n 72-40804-xx, provides instructions on setting up and using the imager version of this product.
- ◆ *P 300IMG Imager Product Reference Guide*, p/n 72-40805-xx, provides the setup, maintenance, troubleshooting, programming and operating instructions for the imager version of this product.

Service Information

If you have a problem with your equipment, contact the Symbol Support Center for your region. See [page xi](#) for contact information. Before calling, have the model number, serial number, and several of your bar code symbols at hand.

Call the Support Center from a phone near the scanning equipment so that the service person can try to talk you through your problem. If the equipment is found to be working properly and the problem is symbol readability, the Support Center will request samples of your bar codes for analysis at our plant.

If your problem cannot be solved over the phone, you may need to return your equipment for servicing. If that is necessary, you will be given specific directions.

Note: *Symbol Technologies is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact Symbol to have another sent to you.*

Symbol Support Centers

For service information, warranty information or technical assistance contact or call the Symbol Support Center in:

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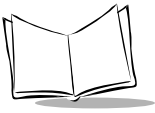
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Wear items and accessories having a Symbol serial number, will carry a 90-day limited warranty. Non-serialized items will carry a 30-day limited warranty.

Warranty Coverage and Procedure

During the warranty period, Symbol will repair or replace defective products returned to Symbol’s manufacturing plant in the US. For warranty service in North America, call the Symbol Support Center at 1-800-653-5350. International customers should contact the local Symbol office or support center.

If warranty service is required, Symbol will issue a Return Material Authorization Number. Products must be shipped in the original or comparable packaging, shipping and insurance charges prepaid.

Symbol will ship the repaired or replacement product freight and insurance prepaid in North America. Shipments from the US or other locations will be made F.O.B. Symbol’s manufacturing plant.

Symbol will use new or refurbished parts at its discretion and will own all parts removed from repaired products. Customer will pay for the replacement product in case it does not return the replaced product to Symbol within 3 days of receipt of the replacement product. The process for return and customer’s charges will be in accordance with Symbol’s Exchange Policy in effect at the time of the exchange.

Customer accepts full responsibility for its software and data including the appropriate backup thereof.

Repair or replacement of a product during warranty will not extend the original warranty term.

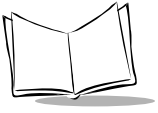
Symbol's Customer Service organization offers an array of service plans, such as on-site, depot, or phone support, that can be implemented to meet customer's special operational requirements and are available at a substantial discount during warranty period.

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Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages, so the proceeding exclusion or limitation may not apply to you.



P 300STDIFZY/PRO Scanner Product Reference Guide



Chapter 1

Getting Started

Introduction

A combination of superb performance and ease of use, the rugged, versatile P 300 series of industrial hand-held scanners offers a wide choice of scanners to meet the demands of your data management tasks in extreme environments.

Here's what each member of the P 300 family offers you:

- ◆ **P 300STD:** undecoded version of the scanner.
- ◆ **P 300FZY:** decodes damaged or poorly printed bar codes; uses multi-interfaces of RS-232, Wand Emulation, Keyboard Wedge, and Synapse.
- ◆ **P 300PRO:** performs one and two-dimensional bar code scanning; uses multi-interfaces of RS-232 and Synapse.
- ◆ **P 300IMG:** performs point-and-shoot image capture, outputs to digital formats of TIFF, JPEG, and BMP. This version is covered in the *P 300IMG Quick Reference Guide*, p/n 72-40804-xx and the *P 300IMG Imager Product Reference Guide*, p/n 72-40805-xx.

Unpacking

Remove the P 300 Series scanner from its packing and inspect it for damage. If the scanner was damaged in transit, call the Symbol Support Center at one of the telephone numbers listed on page [xi](#). **KEEP THE PACKING.** It is the approved shipping container and should be used if you ever need to return your equipment for servicing.



Accessories

Depending on your host system's configuration, the following items may be included with your scanner. These items are also available through your local Symbol representative or business partner.

Cables

- ◆ Power Supply: p/n 50-14001-001
- ◆ DC Power Adapter: p/n 50-16002-009
- ◆ AC Line Cord: (part number is country-specific)
- ◆ Undecoded Cable: p/n 25-38697-01
- ◆ RS-232 Cable: p/n 25-38698-01
- ◆ Keyboard Wedge Cable: 25-38699-01
- ◆ Wand Emulation Cable: 25-39803-01
- ◆ Synapse Cable: 25-38700-01

User Documentation

The following user documentation is provided with your scanner:

- ◆ *P 300 Scanner Quick Reference Guide*, p/n 72-39416-xx
- ◆ *P 300 Scanner Series Product Reference Guide*, p/n 72-39417-xx.

Optional Accessories

Optional accessories include various stands, including an Intellistand, and holders, which are supplied at extra cost. Additional units of standard accessories may also be purchased at extra cost.

Setting Up the P 300 Scanner

Installing the Cable

Insert the cable into the receptacle on the bottom of the scanner, and twist to the right as shown:

Note: Do not pull the trigger while installing a cable on the scanner.

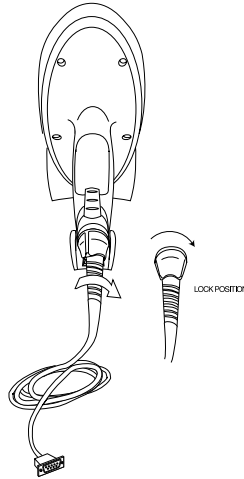


Figure I-1. Installing the Cable

Switching Cables

Different cables are required for different hosts. To change the scanner cable:

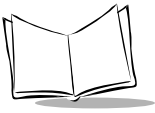
1. Turn the cable counter-clockwise to unlock.
2. Pull the cable out of the receptacle on the bottom of the scanner.
3. Insert a new cable in the receptacle. Press the cable into the receptacle and twist to the right.

Note: *Do not pull the trigger while installing a cable on the scanner.*

Connecting Power

If your host does not provide power to the scanner, you will need to connect external power to the scanner.

1. Connect the interface cable to the bottom of the scanner, as described in [Installing the Cable](#).
2. Connect the DC cable right-angle connector into the power port on the interface cable. Plug the other end of the DC cable into the power supply.
3. Connect the AC line cord into the power supply. Plug the other end into a wall outlet.



Connecting to a Host

The P 300 series scanners support a variety of host interfaces. The P 300FZY uses RS-232, Synapse, Keyboard Wedge and Wand emulation to interface to a host system. The P 300PRO uses RS-232 and Synapse to interface to a host system. This section describes how to make each of these connections.

RS-232 Connection

Both the P 300FZY and P300PRO scanner use RS-232 to interface to a host system. This connection can be made either directly from the scanner to the host, or indirectly through a Synapse adapter cable to the host.

RS-232 Direct Connection

1. Connect the interface cable to the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.
2. Connect the other end of the cable to the serial port on the host.

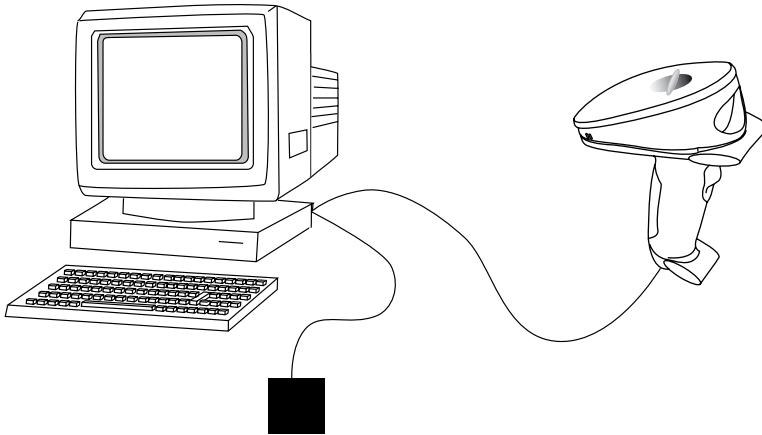


Figure I-2. RS-232 Direct Connection

3. Plug one end of the power supply into the power receptacle on the RS-232 cable. Plug the other end into a wall outlet.

Wand Emulation Connection

To perform Wand emulation, the scanner can be connected to a portable data terminal, or a controller which collects the data as wand data, and interprets it for the host.

1. Connect the wand emulation interface cable (p/n 25-39803-01) to the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.
2. Connect the other end of the interface cable into the COM port on the PDT or Controller.

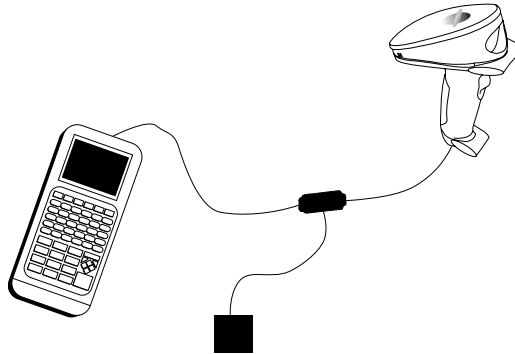


Figure I-3. Wand Emulation Connection

3. Plug one end of the power cable into the power receptacle on the interface cable, and plug the other end into a wall outlet.

Keyboard Wedge Connection

When configured for keyboard wedge input, the host accepts input from the scanner as keystrokes. The P 300 can perform keyboard wedge input using a keyboard wedge cable, or via the Synapse cable.

To connect the keyboard wedge cable:

1. Connect the keyboard wedge interface cable (p/n 25-38699-01) to the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.



2. Connect the male end of the keyboard cable into the female end of the interface cable. Connect the male end of the interface cable into the keyboard port on the host.

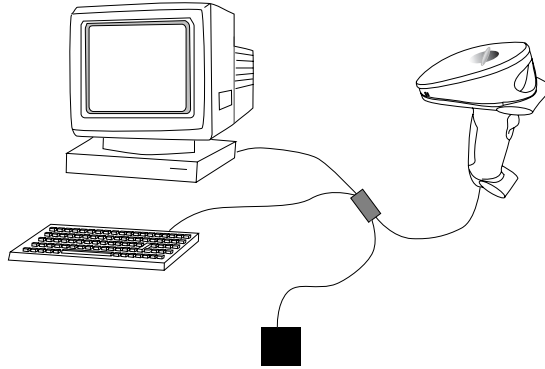


Figure I-4. Keyboard Wedge Connection

3. Plug one end of the power cable into the power receptacle on the interface cable, and plug the other end into a wall outlet.

Synapse Cable Connection

Symbol's Synapse Smart Cables enable interfacing to a variety of hosts. The Synapse cable has the built-in intelligence to detect the host to which it is connected.

1. Connect the Synapse adapter cable into the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.
2. Plug the other end of the Synapse adapter cable into the Synapse Smart Cable.

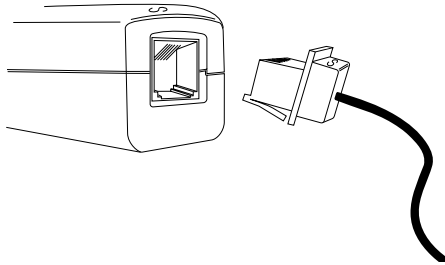


Figure I-5. Synapse Cable Connection

3. Connect the other end of the Synapse smart cable into the host.

RS-232 Connection using Synapse

1. Connect the interface cable to the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.
2. Plug the other end of the interface cable into the Synapse Smart Cable.
3. Connect the other end of the Synapse Smart Cable to the host.

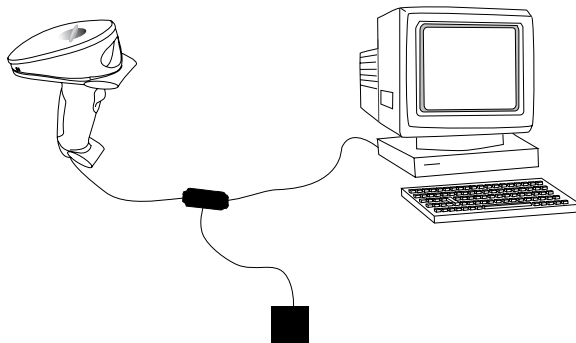


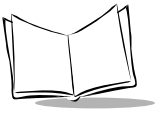
Figure I-6. RS-232 Connection using Synapse

4. If needed, plug one end of the power supply into the power receptacle on the RS-232 cable. Plug the other end into a wall outlet.
5. If needed, plug one end of the power supply into the power receptacle on the RS-232 cable. Plug the other end into a wall outlet.

Keyboard Wedge Connection using Synapse

To connect the Synapse cable with Keyboard Wedge:

1. Connect the interface cable to the bottom of the scanner, as described in [Installing the Cable](#) on page 1-2.
2. Connect the other end of the interface cable into the Synapse cable.



3. The other end of the Synapse cable has 2 “flying leads”. Connect the male end of the lead into the female end of the keyboard cable. Connect the male end of the lead into the keyboard port on the host.

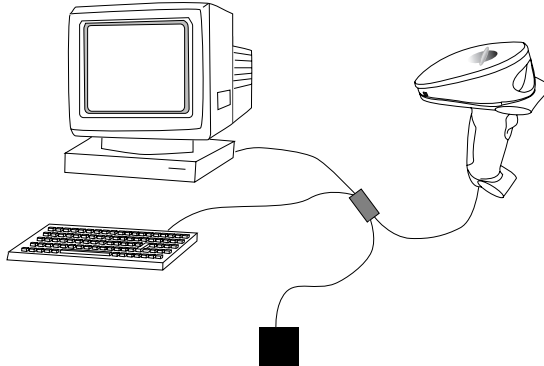


Figure I-7. Keyboard Wedge via Synapse Connection

Programming the Scanner

Once the connections are made to the host, the scanner must be programmed to work with that host. Refer to [Chapter 2, Programming the Scanner](#) for the specific bar code programming information.

P 300PRO Scanning Mode Options

The P 300PRO supports several scanning options:

Smart Raster

The P 300PRO programmable “Smart Raster” capability causes the scanner to emit a raster pattern dynamically adjusted to the particular PDF417 bar code’s height. To increase scanning efficiency and decrease decode time, the scanner determines the height of the bar code, opening at a size optimal for decoding that bar code.

In normal “Smart Raster” operation, a trigger pull causes a slab raster pattern to appear. If the target is a 1-D bar code, the scanner decodes the symbol. If the target bar code is PDF417,

the scanning patterns open up to a full, optimized raster pattern as soon as the scanner is properly aligned over the bar code.

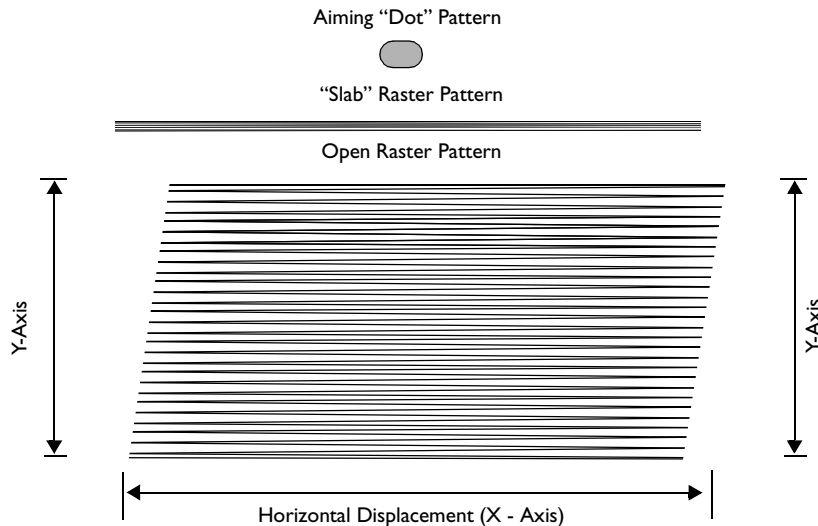


Figure I-8. P 300PRO Aiming and Scanning Patterns

For best operation in Smart Raster mode, keep the scan pattern as parallel to the symbol's rows as possible, keep the scanner as still as possible, and hold the scanner at an angle which does not give specular reflection. Likewise, the symbol should be in good condition.

Unless otherwise programmed, the P 300PRO operates with Smart Raster performance.

Slab Only Raster

Scanner activation creates a slab raster pattern which does not open vertically, regardless of bar code type. This may provide optimal performance on small PDF417 and 1D bar codes.

Always Raster

When programmed to this option, the scanner directly opens the raster pattern to the programmed height and at the programmed expansion speed when the trigger is pulled.

Programmable Raster

The user programs the height of the raster pattern and the rate at which it expands. Scanner activation creates the slab raster pattern which only opens for PDF417 or MicroPDF417 bar



codes, useful when decoding low-profile 1D and 2D bar codes where over-scanning is not desired. Note that the height and expansion rate are directly, but not linearly, proportional to their respective parameter values.

Aiming Modes

There are two aiming modes: aiming with a dot pattern, or with a slab raster pattern. Note that aiming modes do not work with the Always Raster scanning option.

Aiming Dot Option

A trigger pull creates the single dot aiming pattern, which lasts for a fixed interval. This dot can easily be seen in outdoor or high ambient light environments. A slab raster pattern or an open raster pattern appears next, depending on the programmed scanning option. There are two programmable timeout periods for this option — normal and extended.

Slab Raster Option

A trigger pull creates the slab raster pattern. If the target is a 1-D bar code, the pattern never gets beyond a slab raster. If the target bar code is PDF417, the pattern opens up to an optimized raster pattern as soon as the scanner is properly aligned over the bar code.

Scanning 1D Bar Codes

To scan a 1D bar code:

1. Make sure all connections are secure, and the symbol you want to scan is within the scanning range (refer to [Appendix D, *Technical Specifications*](#)).
2. Aim the scanner at the symbol and press the trigger. The scanning beam remains on for approximately 3.0 seconds (default) or until a successful decode.

The scanner has read the symbol when:

- ◆ You hear a short, high tone beep (if the beeper is enabled).
- ◆ The green LED on the scanner lights.

The green LED stays lit for one second or until the next trigger pull.

Aiming

Scan the Entire Symbol

- ◆ Cross every bar and space of the symbol with the scan beam.
- ◆ Hold the scanner further away for larger bar codes.
- ◆ Hold the scanner closer for symbols with bars that are close together.



Hold at an Angle

Do not hold the scanner directly over the bar code. Laser light reflecting *directly* back into the scanner from the bar code is known as specular reflection. This strong light can temporarily “blind” the scanner and make decoding difficult. The area where specular reflection occurs is known as a “dead zone.”

You can tilt the scanner up to 65° forward or back and still achieve a successful decode Simple practice quickly shows what tolerances to work within.

Scanning PDF417 (2D) Bar Codes (P300 PRO only)

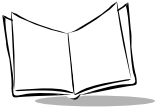
PDF417 scanning is enabled by default in the P 300PRO scanner, and can be disabled or enabled by scanning the corresponding parameter bar code in [Enable/Disable PDF417](#) on page 2-85.

To scan a PDF417 bar code:

1. Aim the scanner at the PDF bar code and press the trigger.
2. Hold the trigger down and keep the scan line parallel to the rows of the symbol overlapping the outside edges of the bar code by about 1/2” on each side.

The beam expands vertically to completely cover the bar code.

- ◆ Check that PDF417 scanning is enabled.
- ◆ Make sure the scan line extends at least 1/2” past the left and right edges of the bar code.



- ◆ Hold the scanner closer for denser symbols, farther away for larger symbols.
- ◆ Make sure you scan to the top and bottom rows of the symbol.
- ◆ Be patient - it may take a few passes to decode the symbol.

The bar code has been completely decoded when you hear a tone, followed by a short, high tone beep. The green LED on the scanner lights. The green LED stays lit for two seconds or until the next trigger pull.



Test Symbols

To ensure your scanner is working properly, try scanning the following bar codes. If you have trouble, refer to [Troubleshooting](#) on page 4-2.



01234567890

CODE 128



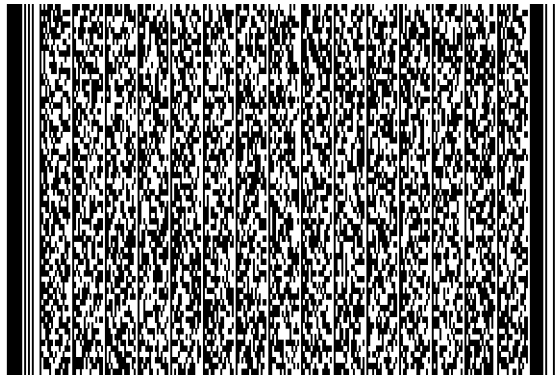
0 12345 67890 5

UPC



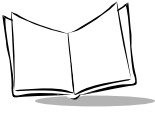
Symbol Technologies, Inc.

PDF417



“The Gettysburg Address”

PDF417



Scan Stand Operation

Scan Stand operation allows hands-free scanning on the P 300FZY and P 300PRO. When the scanner is placed in the stand, the scan pattern begins to blink on the surface below. The red LED lights to indicate scanning activity.

To scan, present the symbol in the path of the scan pattern, but no more than 7" away. Make sure the scan pattern extends at 3/4 inch beyond the symbol's edges. When the symbol is properly oriented, the scan pattern expands vertically to cover the symbol. The LED lights green and a short, high-toned beep sounds to indicate successful decode.

After a successful decode, remove the symbol from the scan path. If the symbol does not decode, or if the pattern does not expand, remove the symbol from the scan path and try again. Make sure the bar code is on a clean, white, non-reflective surface.

Beeper Indications

Table I-1. Beeper Indications

Beeper Sequence	Indication
Standard Use	
Short high tone	A bar code symbol was decoded (if decode beeper is enabled).
Low tone, followed by short high tone	A PDF417 bar code symbol was decoded (if decode beeper is enabled).
4 Beeps - long low tone	A transmission error has been detected in a scanned symbol. The data is ignored. This occurs if a unit is not properly configured. Check option settings.
5 Beeps - low tone	Convert or format error.
Low/high/low tone	ADF transmit error.
High/high/high/low tone	RS-232 receive error.
Parameter Menu Scanning	
Short high tone	Correct entry scanned or correct menu sequence performed.
Low/high tone	Input error, incorrect bar code or "Cancel" scanned, wrong entry, incorrect bar code programming sequence; remain in program mode.
High/low tone	Keyboard parameter selected. Enter value using bar code keypad.
High/low/high/low tone	Successful program exit with change in the parameter setting.

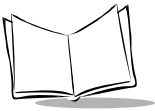


Table I-1. Beeper Indications (Continued)

Beeper Sequence	Indication
Code 39 Buffering	
High/low tone	New Code 39 data was entered into the buffer.
3 Beeps - long high tone	Code 39 buffer is full.
Low/high/low tone	The buffer was erased, or there was an attempt to transmit an empty buffer. When the Code 39 buffer was empty, the scanner read a command to clear or to transmit a Code 39 buffer.
4 Beeps - long low tone	Error in data transmission.
Low/high tone	A successful transmission of buffered data.

Macro PDF

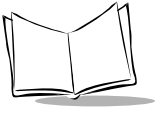
Table 1-2 provides beeper definitions for Macro PDF mode.

Table 1-2. Macro PDF Beeper Indications

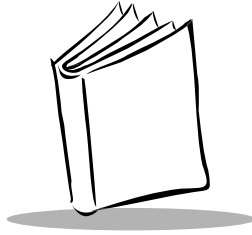
Beeper Sequence	Indication
Error	
1 Low Long	Hi-level decode error caused by incorrect symbol.
2 Low Long	File ID error. A bar code not in the current MPDF sequence was scanned.
3 Low Long	Out of memory. There is not enough buffer space to store the current MPDF symbol.
4 Low Long	Bad symbology. You scanned a 1-D or 2-D bar code in an MPDF sequence, a duplicate MPDF label, an incorrect sequence, or are trying to transmit an empty or illegal MPDF field.
5 Low Long	Flushing buffer.
Fast Warble	Successful parameter scanned.
Decode Beep Sequence	

Table 1-2. Macro PDF Beeper Indications

Beeper Sequence	Indication
Single short	Standard decode and transmit beep for all symbols.
Double short	MPDF symbol is buffered. A single beep indicates transmission of the buffered data.



P 300STDIFZY/PRO Scanner Product Reference Guide



Chapter 2

Programming the Scanner

Introduction

The P 300 Series scanner can be programmed to perform various functions, or activate different features. This chapter describes each feature and provides the programming bar codes necessary for selecting these features for your scanner. Before programming, follow the setup instructions in [Chapter 1, *Getting Started*](#).

The P 300 Series scanner is shipped with the default settings shown in [Table 2-1](#). You can change these default values by scanning the appropriate bar codes included in this chapter. These new values replace the standard default values in memory and are preserved even when the scanner is powered down. The default parameter values can be recalled by scanning the [Set All Defaults](#) bar code on page [2-9](#).

Even if the default parameters suit your needs, you must still select a terminal type. The scanner automatically identifies the host type on power-up. It makes this determination provided the host is powered-up before the scanner is attached to it. You must then select the appropriate terminal type for that host.

The following table lists the defaults for all parameters. If you wish to change any option, scan the appropriate bar code(s). Several of the bar code parameters apply only to the P300FZY, and others apply only to the P300PRO. This is noted in the parameter menus.

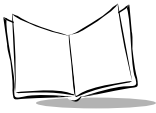


Table 2-1. Default Table

Parameter	P300FZY Default	P 300PRO Default	Page #
Set Default Parameter	All Defaults	All Defaults	2-9
Host Type	RS-232	RS-232	2-12
Beeper Volume	High	N/A	2-13
Beeper Tone	Medium	High	2-14
Laser On Time	3.0 seconds	5.0 seconds	2-15
Power Mode	Continuous	Continuous	2-16
Trigger Mode	N/A	Level	2-17
Beep After Good Decode	Enable	Enable	2-18
Transmit “No Read” Message	Disable	Disable	2-19
Decode Buffering	N/A	Enable	2-19
LRC Checksum	Disable	Disable	2-20
Linear Code Type Security Levels	1	2	2-21
Bi-directional Redundancy	Disable	Disable	2-23
Autodiscriminate Response Time	1.0 second	N/A	2-24
SCAN STAND OPTIONS			
Time Delay to Low Power Mode	N/A	30 seconds	2-25
Time Out Between Same Symbols	N/A	0.6 seconds	2-26
Time Out Between Different Symbols	N/A	0.0 seconds	2-26
UPC/EAN			
UPC-A	Enable	Enable	2-28

Table 2-1. Default Table (continued)

Parameter	P300FZY Default	P 300PRO Default	Page #
UPC-E	Enable	Enable	2-28
UPC-E1	Disable	Disable	2-29
EAN-8	Enable	Enable	2-30
EAN-13	Enable	Enable	2-30
UPC Coupon Code	Disable	N/A	2-31
Bookland EAN	Disable	Disable	2-32
Decode UPC/EAN Supplementals	Ignore	Ignore	2-33
Decode UPC/EAN Supplemental Redundancy	7	7	2-34
Transmit UPC-A Check Digit	Enable	Enable	2-35
Transmit UPC-E Check Digit	Enable	Enable	2-35
UPC-A Preamble	System Character	System Character	2-36
UPC-E Preamble	System Character	System Character	2-37
UPC-E1 Preamble	System Character	System Character	2-38
Convert UPC-E to A	Disable	Disable	2-39
Convert UPC-E1 to UPC-A	Disable	Disable	2-40
Transmit UPC-E1 Check Digit	Enabled	Enable	2-41
UPC/EAN Security Levels	0	0	2-42
EAN-8 Zero Extend	Disable	Disable	2-44
Convert EAN-8 to EAN-13 Type	Disable	Disable	2-45



Table 2-1. Default Table (continued)

Parameter	P300FZY Default	P 300PRO Default	Page #
Code 128			
Code 128	Enable	Enable	2-46
UCC/EAN-128	Enable	Enable	2-47
ISBT-128	Enable	Enable	2-48
Code 39			
Code 39	Enable	Enable	2-50
Trioptic Code 39	Disable	Disable	2-51
Set Length(s) for Code 39	2 to 55	1-55	2-53
Code 39 Check Digit Verification	Disable	Disable	2-54
Transmit Code 39 Check Digit	Disable	Disable	2-55
Code 39 Full ASCII Conversion	Disable	Disable	2-56
Buffer Code 39	Disable	N/A	2-57
Convert Code 39 to Code 32	Disable	Disable	2-60
Code 32 Prefix	Disable	Enabled	2-61
Code 93			
Code 93	Disable	Disable	2-62
Set Length(s) for Code 93	4-55	4-55	2-63
Interleaved 2 of 5			
Interleaved 2 of 5	Enable	Disable	2-65
Set Length(s) for I 2 of 5	14	14	2-66
I 2 of 5 Check Digit Verification	Disable	Disable	2-68

Table 2-1. Default Table (continued)

Parameter	P300FZY Default	P 300PRO Default	Page #
Transmit I 2 of 5 Check Digit	Disable	Disable	2-69
Convert I 2 of 5 to EAN 13	Disable	Disable	2-70
Discrete 2 of 5			
Discrete 2 of 5	Disable	Disable	2-71
Set Length(s) for D 2 of 5	12	12	2-72
Codabar			
Codabar	Disable	Disable	2-74
Set Lengths for Codabar	5-55	5-55	2-75
CLSI Editing	Disable	Disable	2-77
NOTIS Editing	Disable	Disable	2-78
MSI Plessey			
MSI Plessey	Disable	Disable	2-79
Set Length(s) for MSI Plessey	Any Length	Any Length	2-81
MSI Plessey Check Digits	One	One	2-82
Transmit MSI Plessey Check Digit	Disable	Disable	2-83
MSI Plessey Check Digit Algorithm	Mod 10/Mod 10	Mod10/Mod10	2-84
PDF			
Enable/Disable PDF417	N/A	Enable	2-85
Scanning Mode	N/A	Smart Raster	2-89
Raster Height	N/A	15	2-90
Raster Expansion	N/A	11	2-90



Table 2-1. Default Table (continued)

Parameter	P300FZY Default	P 300PRO Default	Page #
Aiming Mode	N/A	Slab Raster	2-92
Micro PDF			
Enable/Disable Micro PDF	N/A	Disable	2-86
Code 128 Emulation	N/A	Enable	2-87
UCC/EAN-128 Emulation	N/A	Ignore	2-88
Data Options			
Transmit Code ID Character	None	None	2-94
Pause Duration	0	0	2-95
Prefix/Suffix Values	7013 (<CR/LF> for serial)	Enter	2-96
Scan Data Transmission Format	Data as is	Data As Is	2-97
RS-232C			
RS-232 Host Type	Standard	Standard	2-12
Baud Rate	9600	9600	2-100
Parity	None	None	2-101
Check Parity	Do Not Check	Check	2-102
Hardware Handshaking	None	None	2-103
Software Handshaking	None	None	2-104
Host Serial Response Time-out	2.0 Sec.	2.0 Sec.	2-106
RTS Line State	Low	Low	2-107
Stop Bit Select	1	1	2-107

Table 2-1. Default Table (continued)

Parameter	P300FZY Default	P 300PRO Default	Page #
ASCII Format	8-Bit	8-Bit	2-108
Beep on <BEL>	Disable	Disable	2-108
Intercharacter Delay	0	0	2-109
Wand Parameters			
Wand Host Interface	Symbollink	N/A	2-110
Wand Emulator Bar Output	Bar High	N/A	2-111
Variable Leading Margin	80 ms.	N/A	2-112
Convert All to Code 39	Disable	N/A	2-114
Keyboard Wedge Parameters			
Host Type	IBM PC/AT	N/A	2-115
National Keyboard Type	North American	N/A	2-116
Fast Transmit	Enabled	N/A	2-118
Intercharacter Delay	0	N/A	2-119
Convert Control Characters	Disable	N/A	2-119
MacroPDF Parameters			
MacroPDF Transmit/Decode Mode Symbols	N/A	Buffer all Symbols; Transmit Macro PDF when complete	2-124
Transmit Symbols in Codeword Format	N/A	Disable	2-126
Escape Characters	N/A	None	2-128
Delete Character Set ECIs	N/A	Enable	2-129



Table 2-1. Default Table (continued)

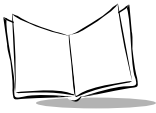
Parameter	P300FZY Default	P 300PRO Default	Page #
ECI Decoder	N/A	Enable	2-130
Transmit Unknown Codewords	N/A	Disable	2-131
Transmit MacroPDF User-Selectable Fields	N/A	Disable	2-132
Flush Macro Buffer	N/A	Disable	2-135
Abort MacroPDF Entry	N/A	Disable	2-135
Transmit Macro PDF User-Selected Field:			
Transmit File Name	N/A	Disable	2-133
Transmit Block Count	N/A	Disable	2-133
Transmit Time Stamp	N/A	Disable	2-133
Transmit Sender	N/A	Disable	2-133
Transmit Addresses	N/A	Disable	2-134
Transmit File Size	N/A	Disable	2-134
Transmit Checksum	N/A	Disable	2-134
Transmit Macro PDF Control Header	N/A	Disable	2-134
Last Block Marker	N/A	Disable	2-134

Set Default Parameter

Scanning this bar code returns all parameters to the default values listed in [Table 2-1 on page 2-2](#).



Set All Defaults



Host Type

RS-232C Host Types

Three RS-232C hosts are set up with their own parameter default settings ([Table 2-2.](#)) Selecting the ICL, Fujitsu, or Nixdorf RS-232C terminal sets the defaults listed below. These defaults take precedence over standard defaults. So if you select Fujitsu RS-232C, then select the standard defaults, the Fujitsu defaults still take precedence.

Table 2-2. Terminal-Specific RS-232C

Parameter	Standard	ICL	FUJITSU	NIXDORF Mode A/ Mode B
Transmit Code ID	No	Yes	Yes	Yes
Data Transmission Format	Data as is	Data/Suffix	Data/Suffix	Data/Suffix
Suffix	CR/LF (7013)	CR (1013)	CR (1013)	CR (1013)
Baud Rate	9600	9600	9600	9600
Parity	None	Even	None	Odd
Hardware Handshaking	None	RTS/CTS Option 3	None	RTS/CTS Option 3
Software Handshaking	None	None	None	None
Serial Response Time-out	2 Sec.	9.9 Sec.	2 Sec.	indefinite
Stop Bit Select	One	One	One	One
ASCII Format	8-Bit	8-Bit	8-Bit	8-Bit
Beep On <BEL>	Disabled	Disabled	Disabled	Disabled
RTS Line State	Low	High	Low	*Low = No data to send

*In the Nixdorf Mode B, if CTS is Low, scanning is disabled. When CTS is High, the user can scan bar codes.

Host Type

RS-232C Host Types

Selecting the ICL, Fujitsu, or Nixdorf RS-232C terminal enables the transmission of the code ID characters listed in [Table 2-3](#). These code ID characters are not programmable; do not enable the Transmit Code ID feature.

Table 2-3. Terminal Specific Code ID Characters

	ICL	FUJITSU	NIXDORF
UPC-A	A	A	A
UPC-E	E	E	C0
EAN-8	FF	FF	B
EAN-13	F	F	A
Code 39	C <len>	None	M
Codabar	N <len>	None	N
Code 128	L <len>	None	K
I 2 of 5	I <len>	None	I
Code 93	None	None	L
D 2 of 5	H <len>	None	H
UCC/EAN 128	L <len>	None	P
MSI/Plessey	None	None	O
Bookland EAN	F	F	A
Trioptic	None	None	None



Host Type

RS-232C Host Types

To select an RS-232C host interface, scan one of the following bar codes.



Standard RS-232C



ICL RS-232C



Nixdorf RS-232C Mode A



Nixdorf RS-232C Mode B



Fujitsu RS-232C

Beeper Volume

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



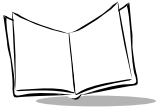
Low Volume



Medium Volume



High Volume



Beeper Tone

This parameter sets the decode beep frequency or tone — low, medium, or high.

Note: *This parameter is used by the P300 FZY and PRO only*



Low Frequency



Medium Frequency



High Frequency

Laser On Time

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

To set a Laser On Time, scan the bar code below. Next scan two numeric bar codes beginning on page [2-120](#) that correspond to the desired time on. Single digit numbers must have a leading zero. For example, to set a Time On of .5 seconds, scan the bar code below, then scan the “0” and “5” bar codes. If you make an error, or wish to change your selection, scan CANCEL on page [2-122](#).



Laser On Time



Power Mode

This parameter determines whether or not power remains on after a decode attempt. When in low power mode, the scanner enters low power consumption mode to preserve battery life after each decode attempt. When in continuous power mode, power remains on after each decode attempt.



Continuous On



Low Power

Trigger Mode

This parameter controls scanner triggering. “Trigger” refers to an external hardware trigger or a scanner trigger.

Note: *This parameter is available on the P 300PRO only.*

- ◆ If Level is selected, a trigger pull activates the laser and decode processing. The laser remains on and decode processing continues until a successful decode, the trigger is released, or the Decode Attempt Duration is reached.
- ◆ If Pulse is selected, a trigger pull activates the laser and decode processing. The laser remains on and decode processing continues until a successful decode or the Decode Attempt Duration is reached.

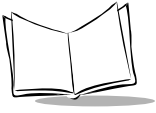
Select either Level or Pulse trigger mode.



Level



Pulse



Beep After Good Decode

Scan this symbol if you want the scanner to beep after a good decode.



Beep After Good Decode

Scan this symbol if you do not want the scanner to beep after a good decode. The beeper still operates during parameter menu scanning and indicates error conditions.



Do Not Beep After Good Decode

Transmit “No Read” Message

When enabled, the scanner transmits “NR” if it does not decode a symbol. Any enabled prefixes or suffixes are appended around this message. When disabled, if a symbol does not read, nothing is sent to the host.



Enable No Read



Disable No Read

Decode Buffering

This option permits the scanner to store decode data until the host device is ready to receive them. If the scanner reaches its capacity to store decoded symbols before the host is ready, subsequent trigger pulls have no effect until a buffer is available.



Enable Decode Buffering



Disable Decode Buffering



LRC Checksum

Enabling this option allows for appending an LRC checksum character at the end of a decode transmission.

When an LRC checksum is enabled, the format of output data is as follows: <STX> <DATA...> <ETX> <LRC>. If <DATA...> contains the special characters STX, ETX, and DLE, a DLE character is used as an escape character and is added before each of those characters so that the receiving side knows not to interpret the special characters in the data as control characters. The LRC character is the exclusive OR of all characters except for the LRC character itself.



Enable LRC Checksum



Disable LRC Checksum

Linear Code Type Security Level

(Does not apply to Code 128)

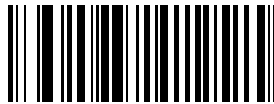
The P 300 Series scanner offers four levels of decode security for linear code types (e.g. Code 39, Interleaved 2 of 5). Select a higher security level for low quality bar codes. As security levels increase, the scanner's aggressiveness decreases.

Select the security level appropriate for your bar code quality.

Linear Security Level 1

The following code types must be successfully read twice before being transmitted.

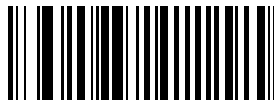
Code Type	Length
Codabar	All
MSI Plessey	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less



Linear Security Level 1

Linear Security Level 2

All code types must be successfully read twice before being transmitted.



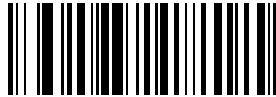
Linear Security Level 2



Linear Security Level 3

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

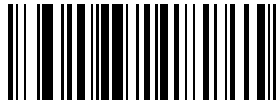
Code Type	Length
MSI Plessey	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less
Codabar	8 or less



Linear Security Level 3

Linear Security Level 4

All code types must be successfully read three times before being transmitted



Linear Security Level 4

Bi-directional Redundancy

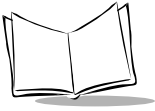
This parameter is only valid when a *Linear Code Type Security Level* (see page 2-21) is enabled. When this parameter is enabled, a bar code must be successfully scanned in both directions (forward and reverse) before being decoded.



Enable Bi-directional Redundancy



Disable Bi-directional Redundancy



Autodiscriminate Response Time

This parameter extends the length of time during which the scanner tries to detect which host it is connected to on power up.

Note: *When connected to an LS 5700/5800 scanner, the 5 second option must be used.*



1 second



5 seconds

Scan Stand Options

Time Delay to Low Power Mode

Note: This parameter is available on the P 300PRO only.

For extending laser life in scan stand mode, select the time the scanner remains active following a successful decode. Selectable options include 30 seconds, 1 minute, 2 minutes, 3 minutes. To awaken the scanner in low power mode, present a symbol to the scan path. A successful decode restores it to normal blinking.



30 Second Delay



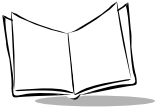
1 Minute Delay



2 Minute Delay



3 Minute Delay



Timeout Between Decodes

Note: *This parameter is available on the P 300PRO only.*

Timeout Between Decodes, Same Symbol is used in scan stand mode to prevent the beeper from continuously beeping when a symbol is left in the scanner's field of view. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The recommended interval is 0.6 seconds.

Timeout Between Decodes, Different Symbols is used in scan stand mode to prevent the beeper from beeping when a different symbol appears in the scanner's field of view before the timeout period between decodes has expired. This is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The recommended value is 0.0 seconds.

Select the timeouts between decodes for the same or different symbols.

1. Scan the option bar code you wish to set.
2. Scan two bar codes on the next page which correspond to the desired interval, in 0.1 second increments.
3. If you make an error, or wish to change your selection, scan CANCEL.



**Timeout Between Decodes -
The Same Symbol**



**Timeout Between Decodes -
Different Symbols**

Timeout Between Decodes (Continued)



0



1



2



3



4



5



6



7



8



9



Cancel

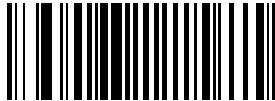


Enable/Disable UPC-E/UPC-A

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



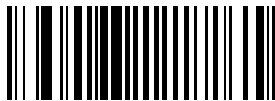
Enable UPC-E



Disable UPC-E



Enable UPC-A



Disable UPC-A

Enable/Disable UPC-EI

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



Enable UPC-EI



Disable UPC-EI

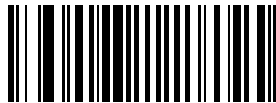


Enable/Disable EAN-8/EAN-13

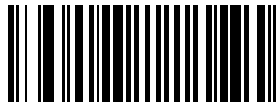
To enable or disable EAN-8 or EAN-13, scan the appropriate bar code below.



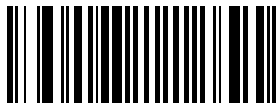
Enable EAN-8



Disable EAN-8



Enable EAN-13



Disable EAN-13

UPC Coupon Code

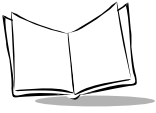
To enable or disable UPC Coupon Code, scan one of the following bar codes:



Enable UPC/EAN Coupon Code



Disable UPC/EAN Coupon Code



Enable/Disable Bookland EAN

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



Enable Bookland EAN



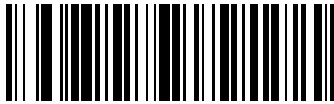
Disable Bookland EAN

Decode UPC/EAN Supplementals

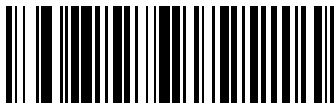
Supplementals are additionally appended characters (2 or 5) according to specific code format conventions (e.g., UPC A+2, UPC E+2, EAN 8+2). Three options are available.

- ◆ If UPC/EAN with supplemental characters is selected, UPC/EAN symbols without supplemental characters are not decoded.
- ◆ If UPC/EAN without supplemental characters is selected, and the P 300 Series scanner is presented with a UPC/EAN plus supplemental symbol, the UPC/EAN is decoded and the supplemental characters ignored.
- ◆ An autodiscriminate option is also available. If this option is selected, choose an appropriate *Decode UPC/EAN Supplemental Redundancy* value from the next page. A value of 5 or more is recommended.

Note: To minimize the risk of invalid data transmission, select whether to read or ignore supplemental characters.



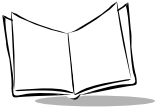
Decode UPC/EAN with Supplementals



Ignore UPC/EAN with Supplementals



Autodiscriminate UPC/EAN Supplemental



Decode UPC/EAN Supplemental Redundancy

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

Scan the bar code below to select a decode redundancy value. Next scan two numeric bar codes beginning on page [2-120](#). Single digit numbers must have a leading zero. If you make an error, or wish to change your selection, scan CANCEL on page [2-122](#).



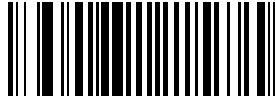
**Decode UPC/EAN
Supplemental Redundancy**

Transmit UPC-A/UPC-E Check Digit

Scan the appropriate bar code below to transmit the symbol with or without the UPC-A or UPC-E check digit.



Transmit UPC-A Check Digit



Do Not Transmit UPC-A Check Digit



Transmit UPC-E Check Digit

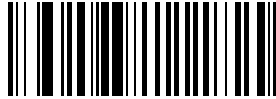


Do Not Transmit UPC-E Check Digit

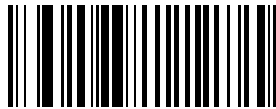


UPC-A Preamble

Three options are given for lead-in characters for UPC-A symbols transmitted to the host device: transmit system character only, transmit system character and country code (“0” for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



No Preamble
(<DATA>)



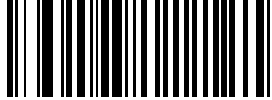
System Character
(<SYSTEM CHARACTER> <DATA>)



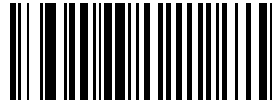
System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

UPC-E Preamble

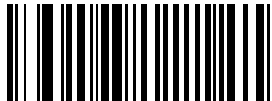
Three options are given for lead-in characters for UPC-E symbols transmitted to the host device: transmit system character only, transmit system character and country code (“0” for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



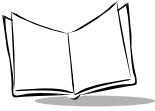
No Preamble
(<DATA>)



System Character
(<SYSTEM CHARACTER> <DATA>)



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



UPC-EI Preamble

Three options are given for lead-in characters for UPC-E1 symbols transmitted to the host device: transmit system character only, transmit system character and country code (“0” for USA), and no preamble transmitted. The lead-in characters are considered part of the symbol.



No Preamble



System Character



System Character and Country Code

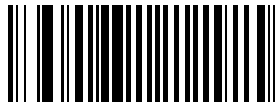
Convert UPC-E to UPC-A

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

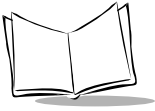
Scanning **DO NOT CONVERT UPC-E TO UPC-A** allows you to transmit UPC-E (zero suppressed) decoded data.



**Convert UPC-E to UPC-A
(Enable)**



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



Convert UPC-EI to UPC-A

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

Scanning **DO NOT CONVERT UPC-E1 TO UPC-A** allows you to transmit UPC-E1 decoded data.



Convert UPC-EI to UPC-A



Do Not Convert UPC-EI to UPC-A

Transmit UPC-EI Check Digit

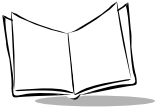
Scan the appropriate bar code below to transmit the symbol with or without the UPC-E1 check digit



Transmit UPC-EI Check Digit



Do Not Transmit UPC-EI Check Digit



UPC/EAN Security Level

The P 300 Series scanner offers four levels of decode security for UPC/EAN bar codes. Select a higher level of security for poor quality bar codes. There is an inverse relationship between security and scanner aggressiveness, so be sure to choose only that level of security necessary for your application.

UPC/EAN Security Level 0

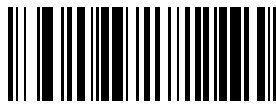
This default setting allows the scanner to operate in its most aggressive state, while providing sufficient security in decoding “in-spec” UPC/EAN bar codes.



UPC/EAN Security Level 0

UPC/EAN Security Level 1

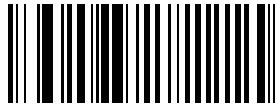
As bar code quality levels diminish, certain characters become prone to misdecodes before others (i.e., 1, 2, 7, 8). If you are experiencing misdecodes of poorly printed bar codes, and the mis-decodes are limited to these characters, select this security level.



UPC/EAN Security Level 1

UPC/EAN Security Level 2

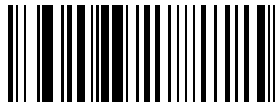
If you are experiencing misdecodes of poorly printed bar codes, and the misdecodes are not limited to characters 1, 2, 7, and 8, select this security level.



UPC/EAN Security Level 2

UPC/EAN Security Level 3

If you have tried Security Level 2, and are still experiencing misdecodes, select this security level. Be advised, selecting this option is an extreme measure against misdecoding severely out of spec bar codes, and security significantly impairs the decoding ability of the scanner. If this level of security is necessary, try to improve the quality of your bar codes.



UPC/EAN Security Level 3



EAN-8 Zero Extend

This parameter adds five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.



**Enable EAN-8 Zero
Extend**



**Disable EAN-8 Zero
Extend**

Convert EAN-8 to EAN-13 Type

When EAN Zero Extend is enabled, this parameter gives you the option of labeling the extended symbol as either an EAN-13 bar code, or an EAN-8 bar code. This affects *Transmit Code ID Character* and *DECODE_DATA* message.

When EAN Zero Extend is disabled, this parameter has no effect on bar code data.



Type Is EAN-8

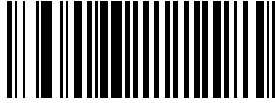


Type Is EAN-13

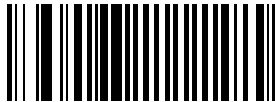


Enable/Disable Code 128

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



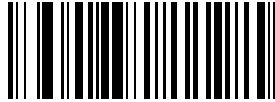
Enable Code 128



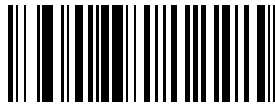
Disable Code 128

Enable/Disable UCC/EAN-128

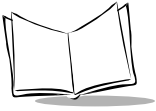
To enable or disable UCC/EAN-128, scan the appropriate bar code below. (See [Appendix A, Programming Reference](#) for details on UCC/EAN128.)



Enable UCC/EAN-128



Disable UCC/EAN-128



Enable/Disable ISBT 128

To enable or disable ISBT 128, scan the appropriate bar code below.



Enable ISBT 128



Disable ISBT 128

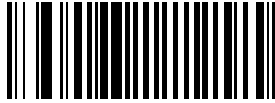
Lengths for Code 128

No length setting is required for Code 128. The default setting is Any Length.

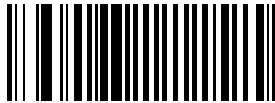


Enable/Disable Code 39

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



Enable Code 39



Disable Code 39

Enable/Disable Trioptic Code 39

Trioptic Code 39 symbols always contain six characters. To enable or disable Trioptic Code 39, scan the appropriate bar code below.



Enable Trioptic Code 39



Disable Trioptic Code 39

Note: *Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If you get an error beep when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again.*



Set Lengths for Code 39

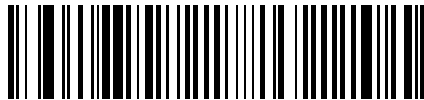
Lengths for Code 39 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters), the code contains, including check digit(s). If Code 39 Full ASCII is enabled, **Length Within a Range**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

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Code 39 One Discrete Length**, then scan **1, 4**, only Code 39 symbols containing 14 characters are decoded. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Code 39 - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Code 39 Two Discrete Lengths**, then scan **0, 2, 1, 4**, only Code 39 symbols containing 2 or 14 characters are decoded. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Code 39 -Two Discrete Lengths

Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 Length Within Range**. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).

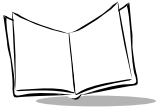


Code 39 - Length within Range

Any Length - Scanning this option allows you to decode Code 39 symbols containing any number of characters.



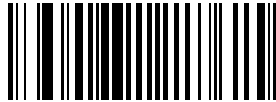
Code 39 - Any Length



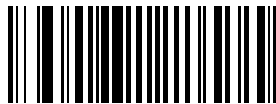
Code 39 Check Digit Verification

When enabled, this parameter checks the integrity of a Code 39 symbol to ensure it complies with specified algorithms.

Only those Code 39 symbols which include a modulo 43 check digit are decoded when this parameter is enabled.



Enable Code 39 Check Digit



Disable Code 39 Check Digit

Transmit Code 39 Check Digit

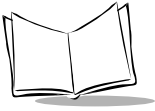
Scan this symbol if you want to transmit the check digit with the data.



**Transmit Code 39 Check Digit
(Enable)**



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



Enable/Disable Code 39 Full ASCII

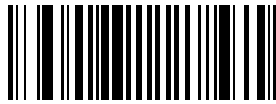
To enable or disable Code 39 Full ASCII, scan the appropriate bar code below.

When enabled, the ASCII character set assigns a code to letters, punctuation marks, numerals, and most control keystrokes on the keyboard.

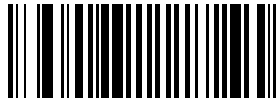
The first 32 codes are non-printable and are assigned to keyboard control characters such as BACKSPACE and RETURN. The other 96 are called printable codes because all but SPACE and DELETE produce visible characters.

Code 39 Full ASCII interprets the bar code special character (\$ + % /) preceding a Code 39 character and assigns an ASCII character value to the pair. For example, when Code 39 Full ASCII is enabled and a +B is scanned, it is interpreted as b, %J as ?, and \$H emulates the keystroke BACKSPACE. Scanning ABC\$M outputs the keystroke equivalent of ABC ENTER. Refer to [Table C-1 on page C-1](#).

The scanner does not autodiscriminate between Code 39 and Code 39 Full ASCII.



Enable Code 39 Full ASCII



Disable Code 39 Full ASCII

Note: *Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If you get an error beep when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again.*

Code 39 Buffering (Scan & Store)

When you select the Buffer Code 39 option, all Code 39 symbols having a leading space as a first character are temporarily buffered in the unit to be transmitted later. The leading space is not buffered.

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

When the Do Not Buffer Code 39 option is selected, decoded Code 39 symbols without leading spaces are transmitted immediately.

Scan and Store affects Code 39 decodes only. If you select scan and store, we recommend that you configure the scanner to decode Code 39 symbology only.



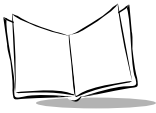
**Buffer Code 39
(Enable)**



**Do Not Buffer Code 39
(Disable)**

While there is data in the transmission buffer, disabling Code 39 buffering via the parameter menu is not allowed. The buffer holds 200 bytes of information.

To allow disabling of Code 39 buffering, first force the buffer transmission (see [Transmit Buffer](#)) or clear the buffer. Both the CLEAR BUFFER and TRANSMIT BUFFER bar codes are length 1. *Be sure Code 39 length is set to include length 1.*



Buffer Data

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

- ◆ Unless symbol overflows the transmission buffer, the scanner gives a low/high beep to indicate successful decode and buffering. See [Overfilling Transmission Buffer](#).
- ◆ The scanner adds the message, excluding the leading space, to the transmission buffer.
- ◆ No transmission occurs.

Clear Transmission Buffer

To clear the transmission buffer, read a symbol which contains only a start character, a dash (minus), and a stop character.

- ◆ The scanner issues a short high/low/high beep to signal that the transmission buffer has been erased, and no transmission has occurred.
- ◆ The scanner erases the transmission buffer.
- ◆ No transmission occurs.



Clear Buffer

Transmit Buffer

To transmit the buffer, read a symbol containing either the first or second condition:

1. Only a start character, a plus (+), and a stop character.
 - ◆ The scanner signals that the transmission buffer has been sent (a low/high beep).
 - ◆ The scanner sends the buffer.
 - ◆ The scanner clears the buffer.



Transmit Buffer

2. A Code 39 bar code with a leading character other than a space.
 - ◆ The scanner signals a good decode and buffering of that decode has occurred by giving a high/low beep.
 - ◆ The scanner transmits the buffer.
 - ◆ The scanner signals that the buffer has been transmitted with a low/high beep.

Overfilling Transmission Buffer

If a decoded symbol results in an overflow of the transmission buffer:

- ◆ The scanner indicates that the symbol has been rejected by issuing three long, high beeps.
- ◆ No transmission occurs. Data in the buffer is not affected.

Attempt to Transmit an Empty Buffer

If a decoded symbol was the transmit buffer symbol and the Code 39 buffer is empty:

- ◆ A short low/high/low beep signals that the buffer is empty.
- ◆ No transmission occurs.
- ◆ The buffer remains empty.



Convert Code 39 to Code 32

Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32.

Note: *Code 39 must be enabled in order for this parameter to function.*



Convert Code 39 to Code 32



Do Not Convert Code 39 to Code 32

Enable/Disable Code 32 Prefix

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

Note: *Convert Code 39 to Code 32 must be enabled for this parameter to function.*



Code 32 Prefix Enable



Code 32 Prefix Disable



Enable/Disable Code 93

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



Enable Code 93



Disable Code 93

Set Lengths for Code 93

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

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Code 93 One Discrete Length**, then scan **1, 4**, only Code 93 symbols containing 14 characters are decoded. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).

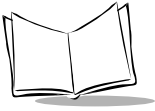


Code 93 - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Code 93 Two Discrete Lengths**, then scan **0, 2, 1, 4**, only Code 93 symbols containing 2 or 14 characters are decoded. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Code 93 -Two Discrete Lengths



Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 Length Within Range**. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Code 93 - Length within Range

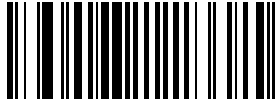
Any Length - Scanning this option allows you to decode Code 93 symbols containing any number of characters.



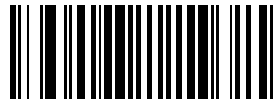
Code 93 - Any Length

Enable/Disable Interleaved 2 of 5

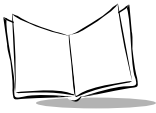
To enable or disable Interleaved 2 of 5, scan the appropriate bar code below.



Enable Interleaved 2 of 5



Disable Interleaved 2 of 5



Set Lengths for Interleaved 2 of 5

Lengths for I 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **I 2 of 5 One Discrete Length**, then scan **1, 4**, the only I 2 of 5 symbols decoded are those containing 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



I 2 of 5 - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **I 2 of 5 Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only I 2 of 5 symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



I 2 of 5 - Two Discrete Lengths

Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 Length Within Range**. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



I 2 of 5 - Length within Range

Any Length - Scanning this option allows you to decode I 2 of 5 symbols containing any number of characters.

Note: Selecting this option may lead to misdecodes for I 2 of 5 codes.



I 2 of 5 - Any Length



I 2 of 5 Check Digit Verification

When enabled, this parameter checks the integrity of an I 2 of 5 symbol to ensure it complies a specified algorithm, either Uniform Symbology Specification (USS), or Optical Product Code Council (OPCC).



Disable



USS Check Digit



OPCC Check Digit

Transmit I 2 of 5 Check Digit

Scan a symbol below to transmit the data with or without the check digit.



**Transmit I 2 of 5 Check Digit
(Enable)**



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



Convert I 2 of 5 to EAN-13

This parameter converts a 14 character I 2 of 5 code into EAN-13, and transmits to the host as EAN-13. In order to accomplish this, the I 2 of 5 code must be enabled, one length must be set to 14, and the code must have a leading zero and a valid EAN-13 check digit.



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



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

Enable/Disable Discrete 2 of 5

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



Enable Discrete 2 of 5



Disable Discrete 2 of 5



Set Lengths for Discrete 2 of 5

Lengths for D 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **D 2 of 5 One Discrete Length**, then scan **1, 4**, the only D 2 of 5 symbols decoded are those containing 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



D 2 of 5 - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **D 2 of 5 Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only D 2 of 5 symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



D 2 of 5 - Two Discrete Lengths

Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 Length Within Range**. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



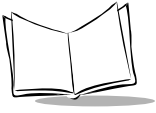
D 2 of 5 - Length within Range

Any Length - Scanning this option allows you to decode D 2 of 5 symbols containing any number of characters.

Note: Selecting this option may lead to misdecodes for D 2 of 5 codes.

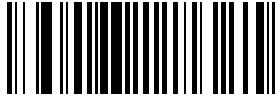


D 2 of 5 - Any Length

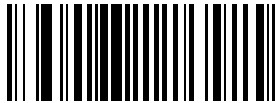


Enable/Disable Codabar

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



Enable Codabar



Disable Codabar

Set Lengths for Codabar

Lengths for Codabar may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains. It also includes any start or stop characters.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **Codabar One Discrete Length**, then scan **1, 4**, the only Codabar symbols decoded are those containing 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Codabar - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **Codabar Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only Codabar symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Codabar - Two Discrete Lengths

Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar Length Within Range**. Then scan **0, 4, 1, and 2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Codabar - Length within Range



Any Length - Scanning this option allows you to decode Codabar symbols containing any number of characters.

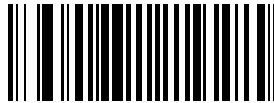


Codabar - Any Length

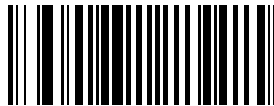
CLSI Editing

When enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol.

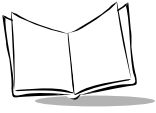
Note: *Symbol length does not include start and stop characters.*



Enable CLSI Editing

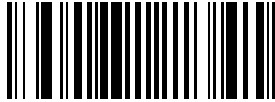


Disable CLSI Editing

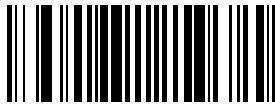


NOTIS Editing

When enabled, this parameter strips the start and stop characters from decoded Codabar symbol.



Enable NOTIS Editing



Disable NOTIS Editing

Enable/Disable MSI Plessey

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



Enable MSI Plessey



Disable MSI Plessey



Set Lengths for MSI Plessey

Lengths for MSI Plessey may be set for any length, one or two discrete lengths, or lengths within a specific range. The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits.

One Discrete Length - This option allows you to decode only those codes containing a selected length. For example, if you select **MSI Plessey One Discrete Length**, then scan **1, 4**, the only MSI Plessey symbols decoded are those containing 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



MSI Plessey - One Discrete Length

Two Discrete Lengths - This option allows you to decode only those codes containing two selected lengths. For example, if you select **MSI Plessey Two Discrete Lengths**, then scan **0, 2, 1, 4**, the only MSI Plessey symbols decoded are those containing 2 or 14 characters. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



MSI Plessey - Two Discrete Lengths

Length Within Range - This option allows you to decode a code type within a specified range. For example, to decode MSI Plessey symbols containing between 4 and 12 characters, first scan **MSI Plessey Length Within Range**. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



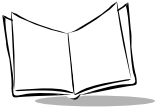
MSI Plessey - Length Within Range

Any Length - Scanning this option allows you to decode MSI Plessey symbols containing any number of characters.

Note: Selecting this option may lead to misdecodes for MSI Plessey codes.



MSI Plessey - Any Length



MSI Plessey Check Digits

These check digits at the end of the bar code verify the integrity of the data. At least one check digit is always required. Check digits are not automatically transmitted with the data.



One MSI Plessey Check Digit



Two MSI Plessey Check Digits

Transmit MSI Plessey Check Digit

Scan a symbol below to transmit the data with or without the check digit.



**Transmit MSI Plessey Check Digit
(Enable)**

Scan this symbol if you want to transmit the data without the check digit.



**Do Not Transmit MSI Plessey Check Digit
(Disable)**



MSI Plessey Check Digit Algorithm

When two MSI Plessey check digits option is selected, an additional verification is required to ensure integrity. Either of the two following algorithms may be selected.



Mod 11/Mod 10



Mod 10/Mod 10

Enable/Disable PDF417

Scan a bar code below to enable or disable PDF417 scanning.

Note: *This parameter is available only on the P 300PRO.*



Enable PDF417



Disable PDF417



Enable/Disable MicroPDF

Scan a bar code below to enable or disable MicroPDF417 scanning.

Note: *This parameter is available only on the P 300PRO.*



Enable MICROPDF417



Disable MICROPDF417

Code 128 Emulation

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

If Code 128 Emulation is enabled, these MicroPDF417 symbols are transmitted with the one of the following prefixes:

]C1 if the first codeword is 903-907, 912, 914, 915

]C2 if the first codeword is 908 or 909

]C0 if the first codeword is 910 or 911

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

]L3 if the first codeword is 903-907, 912, 914, 915

]L4 if the first codeword is 908 or 909

]L5 if the first codeword is 910 or 911

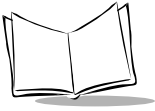
Scan a bar code below to enable or disable Code 128 Emulation.



Enable Code 128 Emulation



Disable Code 128 Emulation



UCC/EAN-128 Emulation

Certain MicroPDF417 symbols can be “linked” with a linear symbol during transmission as if they were one symbol. The MicroPDF417 symbol provides supplemental data to the linear symbol. Three scanning options are offered for these symbols:

- ◆ If Decode Linked Symbol is selected, Code 128, ITF-14 and UPC/EAN symbols are not decoded unless a MicroPDF417 symbol beginning with codeword 906, 907, 912, 914, or 915 is present.
- ◆ If Ignore Linked Symbol is selected, MicroPDF417 symbols beginning with codeword 906, 907, 912, 914, or 915 are ignored.
- ◆ If Autodiscriminate Linked Symbol is selected, the scanner looks for a MicroPDF417 symbol when scanning a 1-D symbol. If a MicroPDF417 symbol is not detected within the timeout period, the 1-D symbol data is transmitted.

The Timeout Between Decodes, Different Symbols parameter must be set to 0 before Ignore Linked Symbol or Autodiscriminate Linked Symbol can be selected.

Select one option for UCC/EAN 128 Emulation by scanning the appropriate bar code.



Decode Linked Symbol



Ignore Linked Symbol



Autodiscriminate Linked Symbol

Scanning Mode

This parameter allows you to select one of the following scanning mode options (see [P 300PRO Scanning Mode Options](#) on page 1-8 for descriptions):

- ◆ Smart Raster
- ◆ Slab Only Raster
- Always Raster
- Programmable Raster

Select a scanning mode.

Note: This parameter is available only on the P 300PRO.



Smart Raster



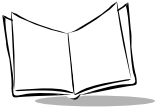
Slab Only Raster



Always Raster



Programmable Raster



Programmable Raster Height And Raster Expansion Speed

Note: *This parameter is available only on the P 300PRO.*

This parameter allows you to select the laser pattern's height and rate of expansion, and is only used when Programmable Raster or Always Raster is enabled. This parameter is intended for very specific applications, and is usually not necessary.

Select the laser pattern's height and/or rate of expansion.

1. Scan the bar code for either **RASTER HEIGHT** or **RASTER EXPANSION SPEED** below.
2. To represent a two-digit value, scan two bar codes from the next page. Valid values are between 01 and 15.
3. If you make an error, or wish to change your selection, scan **CANCEL**.



Raster Height (Default 15)



Raster Expansion Speed (Default 11)

Programmable Raster Height And Raster Expansion Speed (Continued)



0



1



2



3



4



5



6



7



8



9



Cancel



Aiming Mode

Note: This parameter is available only on the P 300PRO.

This parameter allows you to select either an aiming dot or slab raster for aiming. See [Aiming Modes](#) on page 1-10 for descriptions.

Select the aiming mode.

Note: Aiming modes can not be used with the Always Raster scanning option.



Slab Raster



**Aiming Dot
(Normal Timeout)**



**Aiming Dot
(Extended Timeout)**

Transmit Code ID Character

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

The user may select no code ID character, a Symbol Code ID character, or an AIM Code ID character. The Symbol Code ID characters are listed below; see AIM Code Identifiers in [Appendix A, Programming Reference](#).

A = UPC-A, UPC-E, EAN-8, EAN-13

B = Code 39

C = Codabar

D = Code 128

E = Code 93

F = Interleaved 2 of 5

G = Discrete 2 of 5, or Discrete 2 of 5 IATA

J = MSI Plessey

K = UCC/EAN-128

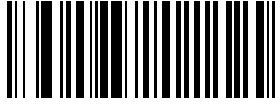
L = Bookland EAN

M = Trioptic Code 39

X = PDF 417



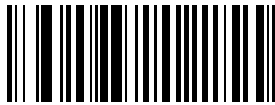
Transmit Code ID Character



Symbol Code ID Character



AIM Code ID Character



None

Pause Duration

This parameter inserts a pause at any point in the data transmission. Pauses are set by scanning a two-digit number (i.e. two bar codes), and are measured in 0.1 second intervals. For example, scanning bar codes “0” and “1” inserts a 0.1 second pause; “0” and “5” gives you a 0.5 second delay. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **DATA FORMAT CANCEL** on page [2-96](#).

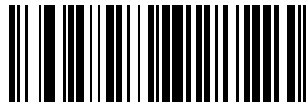


Pause Duration

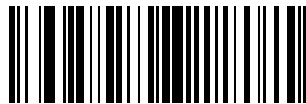


Prefix/Suffix Values

A prefix/suffix may be appended to scan data for use in data editing. These values are set by scanning a four-digit number (i.e., four bar codes) that corresponds to key codes for various terminals. See [Table A-2., AIM Code Identifiers](#) in [Appendix A, Programming Reference](#) for conversion information. Numeric bar codes begin on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Scan Prefix



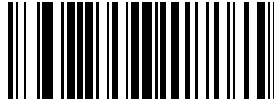
Scan Suffix



Data Format Cancel

Scan Data Transmission Format

To change the Scan Data Transmission Format, scan the **SCAN OPTIONS** bar code below. Then select one of four options. When you have made your selection, scan the **ENTER** bar code on the next page. If you make a mistake, scan the **DATA FORMAT CANCEL** bar code on the next page.



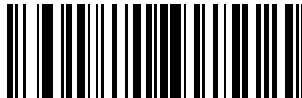
Scan Options



Data As Is



<Data> <Suffix>



<Prefix> <Data>



<Prefix> <Data> <Suffix>



Enter

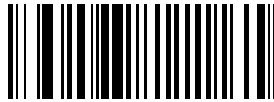


Data Format Cancel

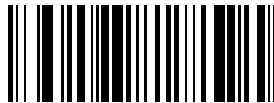
RS-232C Parameters

Baud Rate

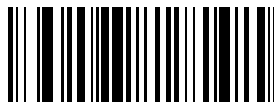
Baud rate is the number of bits of data transmitted per second. The scanner's baud rate setting should match the data rate setting of the host device. If not, data may not reach the host device or may reach it in distorted form.



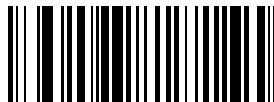
Baud Rate 600



Baud Rate 1200



Baud Rate 2400



Baud Rate 4800



Baud Rate 9600



Baud Rate 19,200

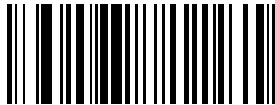


Baud Rate 38,400

Parity

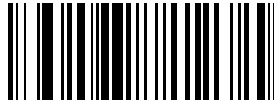
A parity check bit is the most significant bit of each ASCII coded character. Select the parity type according to host device requirements.

- ◆ If you select **ODD** parity, the parity bit has a value 0 or 1, based on data, to ensure than an odd number of 1 bits are contained in the coded character.



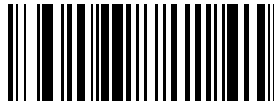
Odd

- ◆ If you select **EVEN** parity, the parity bit has a value 0 or 1, based on data, to ensure than an even number of 1 bits are contained in the coded character.



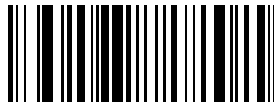
Even

- ◆ Select **MARK** parity and the parity bit is always 1.



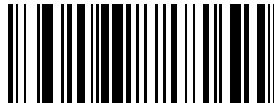
Mark

- ◆ Select **SPACE** parity and the parity bit is always 0.



Space

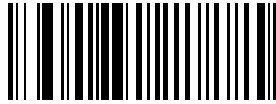
- ◆ If no parity is required, select **NONE**.



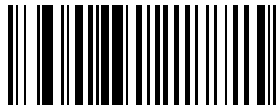
None

Check Parity

Select whether or not the parity, framing, and overrun of received characters are checked. The type of parity used is selectable through the **PARITY** parameter.



Check for Received Errors



Do Not Check for Received Errors

Hardware Handshaking

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

If Standard RTS/CTS handshaking is selected, scan data is transmitted according to the following sequence:

- ◆ The controller reads the CTS line for activity. If CTS is asserted, the controller waits up to 2 seconds for the host to negate the CTS line. If, after 2 seconds (default), the CTS line is still asserted, the scanner sounds a transmit error and any scanned data is lost.
- ◆ When the CTS line is negated, the controller asserts the RTS line and waits up to 2 seconds for the host to assert CTS. When the host asserts CTS, data is transmitted. If, after 2 seconds (default), the CTS line is not asserted, the scanner sounds a transmit error and discards the data.
- ◆ When data transmission is complete, the controller negates RTS 10 msec after sending the last character.
- ◆ The host responds by negating CTS. The controller checks for a negated CTS upon the next transmission of data.

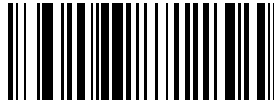
During the transmission of data, the CTS line should be asserted. If CTS is deasserted for more than 50 ms between characters, the transmission is aborted, the scanner sounds a transmission error, and the data is discarded.

If the above communications sequence fails, the scanner issues an error indication. In this case, the data is lost and must be rescanned.

If Hardware Handshaking and Software Handshaking are both enabled, Hardware Handshaking takes precedence.

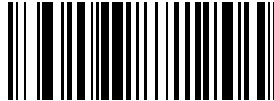
Note: *The DTR signal is jumpered active.*

Scan the bar code below if no Hardware Handshaking is desired.



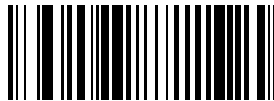
None

Scan the bar code below to select Standard RTS/CTS Hardware Handshaking.



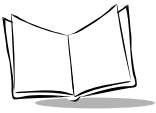
Standard RTS/CTS

When RTS/CTS Option 1 is selected, the scanner asserts RTS before transmitting and ignores the state of CTS. The scanner deasserts RTS when the transmission is complete.



RTS/CTS Option 1

When Option 2 is selected, RTS is always high or low (user-programmed logic level). However, the scanner waits for CTS to be asserted before transmitting data. If CTS is not asserted within 2 seconds (default), the scanner issues an error beep and discards the data.



RTS/CTS Option 2

When Option 3 is selected, the scanner asserts RTS prior to any data transmission, regardless of the state of CTS. The scanner waits up to 2 seconds (default) for CTS to be asserted. If CTS is not asserted during this time, the scanner issues an error beep and discards the data. The scanner deasserts RTS when transmission is complete.



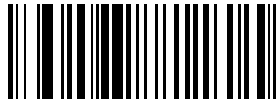
RTS/CTS Option 3

Software Handshaking

This parameter offers control of the data transmission process in addition to, or instead of, that offered by hardware handshaking. There are five options.

If Software Handshaking and Hardware Handshaking are both enabled, Hardware Handshaking takes precedence.

- ◆ None
When this option is selected, data is transmitted immediately.

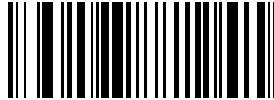


None

- ◆ ACK/NAK
When this option is selected, after transmitting data, the scanner expects either an ACK or NAK response from the host. Whenever a NAK is received, the scanner

transmits the same data again and waits for either an ACK or NAK. After three unsuccessful attempts to send data when NAKs are received, the scanner issues an error beep and discards the data.

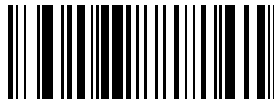
The scanner waits up to the programmable Host Serial Response Time-out to receive an ACK or NAK. If the scanner does not get a response in this time, it issues an error beep and discards the data. There are no retries when a time-out occurs.



ACK/NAK

◆ ENQ

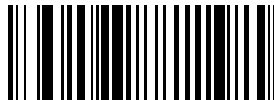
When this option is selected, the scanner waits for an ENQ character from the host before transmitting data. If an ENQ is not received within 2 seconds, the scanner issues an error indication and discards the data. The host must transmit an ENQ character at least every 2 seconds to prevent transmission errors.



ENQ

◆ ACK/NAK with ENQ

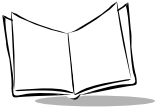
This combines the two previous options.



ACK/NAK with ENQ

◆ XON/XOFF

An XOFF character turns the scanner transmission off until the scanner receives an XON character. There are two situations for XON/XOFF:



- ◆ XOFF is received before the scanner has data to send. When the scanner has data to send, it then waits for an XON character before transmission. The scanner waits up to 2 seconds to receive the XON. If the XON is not received within this time, the scanner issues an error beep and discards the data.
- ◆ XOFF is received during a transmission. Data transmission then stops after sending the current byte. When the scanner receives an XON character, it sends the rest of the data message. The scanner waits indefinitely for the XON.

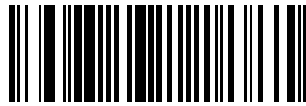


XON/XOFF

Host Serial Response Time-out

This parameter specifies how long the scanner waits for an ACK, NAK, or CTS before determining that a transmission error has occurred. This only applies when in one of the ACK/NAK Software Handshaking modes, or RTS/CTS Hardware Handshaking option.

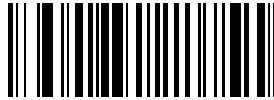
The delay period can range from 0.0 to 9.9 seconds in .1-second increments. After scanning the bar code below, scan two numeric bar codes beginning on page [2-120](#). If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



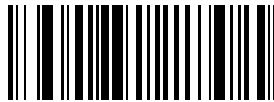
Host Serial Response Time-out

RTS Line State

This parameter sets the idle state of the Serial Host RTS line. Select **Low** or **High** RTS line state.



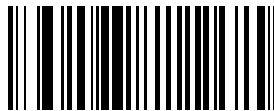
Host: Low RTS



Host: High RTS

Stop Bit Select

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



1 Stop Bit



2 Stop Bits



ASCII Format

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



7-Bit



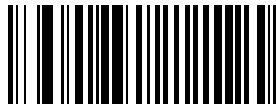
8-Bit

Beep on <BEL>

When this parameter is enabled, the scanner issues a beep when a <BEL> character is detected on the RS-232C serial line. <BEL> alerts the user that an illegal entry or other important event has occurred.



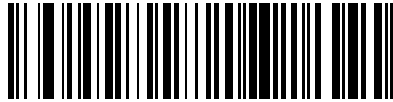
**Beep On <BEL> Character
(Enable)**



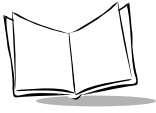
**Do Not Beep on <BEL> Character
(Disable)**

Intercharacter Delay

Select the intercharacter delay option matching host requirements. The intercharacter delay gives the host system time to service its receiver and perform other tasks between characters. The delay period can range from no delay to 99 msec in 1-msec increments. After scanning the bar code below, scan two bar codes beginning on page [2-120](#) to set the desired time-out. If you make an error or wish to change your selection, scan **CANCEL** on page [2-122](#).



Intercharacter Delay



Wand Parameters

Wand Host Interface

Note: *This parameter is available only on the P 300FZY.*

Select the appropriate host by scanning one of the bar codes below.



Sybollink Controller



Symbol Portable Terminal



Norand Terminal

Wand Emulator Bar Output

Note: *This parameter is available only on the P 300FZY.*

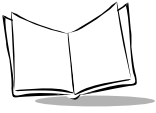
Select the option that matches your host system.



Bar High



Bar Low



Variable Leading Margin

Note: *This parameter is available only on the P 300FZY.*

Select a variable leading margin.



80 msec



110 msec



90 msec



120 msec



100 msec



130 msec

Variable Leading Margin (cont'd)



140 msec



170 msec



150 msec



180 msec



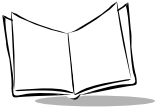
160 msec



190 msec



200 msec



Convert All to Code 39

Note: *This parameter is available only on the P 300FZY.*

Select whether or not to convert the decoded output to Code 39.



Convert All to Code 39



Do Not Convert All to Code 39

Keyboard Wedge Parameters

Host Interfaces

Note: This parameter is available only on the P 300FZY.

Use these bar codes to select your host interface.



IBM PC/AT IBM PS/2-50, 55SX, 60, 70, 80 (Default)



IBM PS/2-30



IBM PC/XT



NCR 7052



National Keyboard Types

Note: *This parameter is available only on the P 300FZY.*

Use these bar codes to select the appropriate national keyboard type.



North American



French



German



French International



Spanish



Italian



Swedish



British



Fast Transmit

Note: *This parameter is available only on the P 300FZY.*

Older systems may require a slower transmission method. If your system still needs additional time to process keyboard data after setting an Intercharacter Delay, scan the DISABLE FAST TRANSMIT bar code.



Enable Fast Transmit

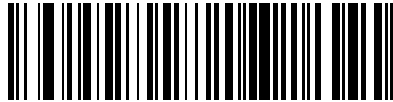


Disable Fast Transmit

Intercharacter Delay

Note: *This parameter is available only on the P 300FZY.*

Select the intercharacter delay option matching host requirements. The intercharacter delay gives the host system time to service its receiver and perform other tasks between characters. The delay period can range from no delay to 99 msec in 1-msec increments. After scanning the bar code below, scan two bar codes beginning on page [2-120](#) to set the desired time-out. If you make an error or wish to change your selection, scan CANCEL on page [2-122](#).



Intercharacter Delay

Convert Control Characters

When enabled, this parameter converts special control character sequences to their corresponding keycodes. It converts the <CTRL> M, <CTRL> I, and <CTRL> [sequences to <Enter>, <Tab>, <Backspace>, and <Esc> respectively.

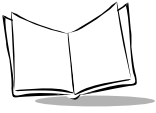
Note: *This parameter is available on the P 300FZY only.*



Disable Convert Control Character



Enable Convert Control Character

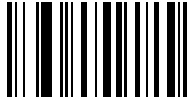


Numeric Bar Codes

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



0



1



2



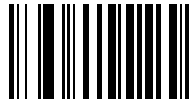
3



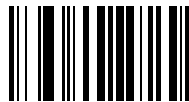
4



5



6



7



8



9



Cancel

If you make an error or wish to change your selection, scan the bar code below.



Cancel

Macro PDF Features

This section discusses programmable Macro PDF features fully supported by the P 300PRO scanner. Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The P 300PRO can decode symbols that are encoded with this feature.

Caution

When printing, keep each Macro PDF sequence separate, for each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning Macro PDF sequences, scan the entire Macro PDF sequence without interruption. If you scan a mixed sequence, you get two long low beeps (Lo Lo) for inconsistent file ID or inconsistent symbology error.

Before programming these special features, follow the physical setup instructions in [Chapter 1, Getting Started](#). Then program the required generic decode and data transmission parameters using the bar codes on the following pages. Use the same programming method for setting Macro PDF features as used for standard features.

Note that all parameter settings are stored in non-volatile memory and so are retained after powerdown.



Macro PDF Transmit / Decode Mode Symbols

Select only one of the four options below for handling the decoding of Macro PDF.

- ◆ **Buffer All Symbols / Transmit Macro PDF When Complete:** This activates transmission of all decode data from an entire Macro PDF sequence. Transmission does not occur until the entire Macro PDF sequence is scanned and decoded. This is the default option.

If the decode data exceeds the limit of the space available in RAM, there is no transmission because the entire sequence has not been scanned, and an error occurs. Use the parameter Flush Macro PDF Buffer to purge the buffer.

- ◆ **Transmit Any Symbol in Set / No Particular Order:** This causes transmission of data from each Macro PDF417 symbol as decoded, whether it is in sequential order or not. Up to 1024 Macro PDF bar codes may be transmitted.
- ◆ **Scan in Sequence Only / Transmit in Sequence Without Buffering:** This causes transmission of data from each symbol within the Macro PDF sequence as decoded, provided the Macro PDF symbols are scanned in order. If you do not scan the symbols in order, an error occurs. Up to 1024 Macro PDF bar codes may be transmitted.
- ◆ **Buffer Scans Out of Order / Transmit Scans in Order:** When enabled, decode data from each symbol within the Macro PDF sequence is transmitted when decoded, provided that the Macro PDF symbols are scanned in order. Decode data from symbols out of order in the Macro PDF sequence is buffered. If the decode data exceeds the limit of the space available in RAM, there is no transmission because the entire sequence has not been scanned, and an error occurs. Use the parameter Flush Macro PDF Buffer to purge the buffer.

Macro PDF Transmit / Decode Mode Symbols (Continued)



**Buffer All Symbols /
Transmit When Complete - Default**



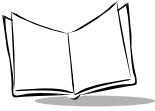
**Transmit Any Symbol In Set /
No Particular Order**



**Scan In Sequence Only /
Transmit In Sequence Without Buffering**



**Buffer Scans Out Of Order/
Transmit Scans In Order**



Transmit Symbols in Codeword Format

Enabling this activates transmission of each PDF symbol as directly decoded data codewords, whether that symbol is part of a macro PDF sequence or not. Note that data is output as *codeword values* — *not as interpreted data*.

“Codeword values” is an ASCII representation of a number from 000 to 928 for each codeword, preceded by an escape character. This escape character is a backslash by default, but the user may change this value. For example, the codeword value 005 is sent to the host in the form of `\005` for GLIs, and `\C005C` for ECIs. This output format is based on the *AIM USA Uniform Symbology Specification* for PDF417 (1994).

All output codewords take up exactly 4 characters for GLIs and 6 characters for ECIs. However, there may be non-decodable characters in the PDF symbol, such as a GLI sequence. This special codeword sequence activates a certain kind of interpretation to the encoded data. Non-decodable codewords like GLIs are embedded in the output stream just like any other codeword, e.g., `\927\001`.

Because GLIs are indistinguishable from other codewords in the output data stream, the host must intelligently recognize them as GLIs and process their interpretations.

Note that when a macro PDF sequence is transmitted, the last character in the last block of data transmitted is always `\922` (if selected). This indicates the end of that macro PDF transmission.

Transmit Symbols in Codeword Format (Continued)

Enable or disable by scanning the appropriate bar code.



Enable Transmit In Codeword Format



Disable Transmit In Codeword Format



Escape Characters

This enables the backslash (\) character as an Escape character for systems that can process transmissions containing special data sequences. Scan a bar code below to either format special data (e.g., GLI escapes, MacroPDF417 Control Block optional fields) according to the GLI (Global Label Identifier) protocol or the ECI (Extended Channel Interpretation) protocol, or to disable this parameter.



ECI Protocol



GLI Protocol



None

Delete Character Set ECIs

This parameter enables the scanner to delete any escape sequences representing Character Set ECIs (also known as GLIs) from its buffer before transmission. In many receiving systems, Character Set ECIs can be removed without affecting the way data is displayed or processed.

When deletion is selected, the scanner transmits data from PDF417 and MicroPDF417 bar codes containing Character Set ECIs, even when the ECI Protocol is disabled.

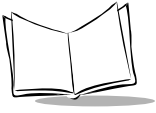
Scan a bar code to delete or transmit character set ECIs.



Delete Character Set ECIs



Transmit Character Set ECIs



ECI Decoder

This parameter enables the scanner to interpret any Extended Channel Interpretations (ECIs) that are supported by the scanner firmware. This parameter has no effect on symbols that were not encoded using ECIs. This version of the product supports ECIs 000900 through 000913, used for efficient encoding of Common Data Syntax Format 00-99. If this parameter is disabled, and a symbol is scanned that was encoded using an ECI escape, the scanner transmits the ECI escape followed by the uninterpreted data.

Scan a bar code to enable or disable this option.



Enable ECI Decoder



Disable ECI Decoder

Transmit Unknown Codewords

This enables using the output codeword format for transmitting any non-GLI or non-macro PDF codeword. If this is *not* enabled and an unknown codeword is found, a decode error beep sounds.

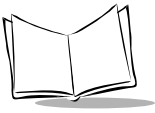
Enable or disable by scanning the appropriate bar code.



Transmit Unknown Codewords



Do Not Transmit Unknown Codewords



Transmit Macro PDF User-Selected Fields

When enabled, the following parameters cause transmission of the specified field in subsequently scanned Macro PDF417 symbols. Unless transmission of a specific field is enabled, it is not transmitted. The options cannot be changed in the middle of a Macro PDF set entry. All user-selected fields are prefixed by \923 for GLIs, and \C923C for ECIs. Tags and examples in the following parameters demonstrate GLI protocol, but the ECI tag (\C923C) can be used instead if ECI protocol is enabled.

- ◆ **Transmit File Name:** Activates transmission of the file name field. The field character tag is \923\000. For example, the filename MANHOURS.WK1 is sent as: \923\000MANHOURS.WK1.
- ◆ **Transmit Block Count:** This activates transmission of the block count field. The field character tag is \923\001. For example, the field may be: \923\0011856.
- ◆ **Transmit Time Stamp:** This activates transmission of the time stamp field. The field character tag is \923\002. For example, the field may be: \923\0022123443243234.
- ◆ **Transmit Sender:** Activates transmission of the sender field. The field character tag is \923\003. For example, the field may be: \923\003Symbol TechnologiesHoltsville, NY.
- ◆ **Transmit Addressee:** Activates transmission of the addressee field. The field character tag is \923\004. For example, the field may be: \923\004AIM USA.
- ◆ **Transmit File Size:** Activates transmission of the file size field. The field character tag is \923\005. For example, the field may be: \923\005179234.
- ◆ **Transmit Checksum:** Activates transmission of the checksum field. The field character tag is \923\006. For example, the field may be: \923\00663823.
- ◆ **Transmit Macro PDF Control Header:** Activates transmission of the control header, which contains the segment index and the file ID. For example, the field may be: \92800000\725\120\343. The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID.
- ◆ **Enable / Disable Last Block Marker:** This enables marking the last block in the set by the codeword \922.

Transmit Macro PDF User-Selected Fields (Continued)

Enable or disable by scanning the appropriate bar code.



Enable File Name Transmit



Disable File Name Transmit



Enable Time Stamp Transmit



Disable Time Stamp Transmit



Enable Block Count Transmit



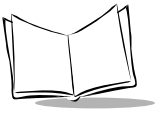
Disable Block Count Transmit



Enable Sender Transmit



Disable Sender Transmit



Transmit Macro PDF User-Selected Fields (Continued)



Enable Addressee Transmit



Disable Addressee Transmit



Enable Checksum Transmit



Disable Checksum Transmit



Enable File Size Transmit



Disable File Size Transmit



**Enable Macro PDF Control
Header Transmit**



**Disable Macro PDF Control
Header Transmit**



Enable Last Block Marker



Disable Last Block Marker

Flush Macro Buffer

This flushes the buffer of all decoded Macro PDF data stored to that point, transmits it to the host device, and aborts from Macro PDF mode.



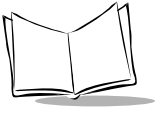
Flush Macro PDF Buffer

Abort Macro PDF Entry

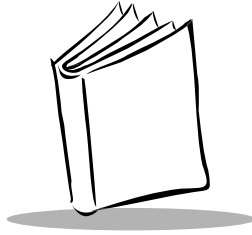
This clears all currently-stored Macro PDF data in the buffer without transmission and aborts from Macro PDF mode.



Abort Macro PDF Entry



P 300STDIFZY/PRO Scanner Product Reference Guide



Chapter 3

Advanced Data Formatting (ADF)

Introduction

Advanced Data Formatting (ADF) is a means of customizing, or editing, the data scanned by the scanner before transmitting the data to your host device. Scanned data can be edited to suit your particular requirements.

ADF is implemented by scanning a related series of bar codes to create rules to apply to the scanned data. These bar codes appear later in this chapter.

Rules: Criteria Linked to Actions

In ADF, data is customized through **rules**. These rules perform specific actions when the data meets certain criteria. One rule may consist of single or multiple actions applied to single or multiple criteria.

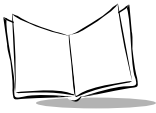
For instance, a data formatting rule could be the following:

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

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

In this example, if a Code 39 bar code of 1299X1559828 is scanned, the following is transmitted: 00001299<space>. If a Code 39 bar code of 1299X15598 is scanned, this rule is ignored because the length (10 characters) does not pass the criteria.

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



Using ADF Bar Codes

When you program a rule, make sure the rule is logically correct. Plan ahead before you start scanning.

To program each data formatting rule:

1. **Start the Rule.** Scan the [Begin New Rule](#) bar code on page 3-11.
2. **Criteria.** Scan the bar codes for all pertinent criteria. Criteria can include code type (e.g., Code 128), code length, or data that contains a specific character string (e.g., the digits “129”). These options are described in [Criteria](#) on page 3-14.
3. **Actions.** Scan all actions related to, or affecting, these criteria. The actions of a rule specify how to format the data for transmission. These options are described in [Actions](#) on page 3-25.
4. **Save the Rule.** Scan the [Save Rule](#) bar code on page 3-11. This places the rule in the “top” position in the rule buffer.

If you make errors during this process, some special-purpose bar codes may be useful: **Erase Criteria and Start Again**, **Erase Actions and Start Again**, **Erase Previously Saved Rule**, and **Erase All Rules**. See [Erase](#) on page 3-12.

[Beeper Definitions for ADF](#) on page 3-8 help guide you through the programming steps.

ADF Bar Code Menu Example

This section provides an example of how to enter an ADF rule to apply to scanned data.

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

MMMMMPPPPDD

Where: M = Manufacturer ID

P = Part Number

D = Destination Code

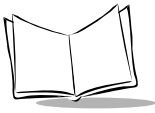
The distribution center uses a PC with dedicated control characters for manufacturer ID <CTRL M>, part number <CTRL P>, and destination code <CTRL D>. At this center the UPC data is treated as manufacturer ID code.

The following rules need to be entered:

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

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

To enter these rules, follow these steps:



Rule 1: The Code 128 Scanning Rule

Table 3-1. Code 128 Scanning Rule

Step	Bar Code	On Page	Beep Indication
1	Begin New Rule	3-11	High High
2	Code 128	3-14	High High
3	Send next 5 characters	3-26	High High
4	Send <CTRL M>	3-51	High High
5	Send next 5 characters	3-26	High High
6	Send <CTRL P>	3-51	High High
7	Send next 2 characters	3-25	High High
8	Send <CTRL D>	3-49	High High
9	Save Rule	3-11	High Low High Low

Rule 2: The UPC Scanning Rule

Table 3-2. UPC Scanning Rule

Step	Bar Code	On Page	Beep Indication
1	Begin New Rule	3-11	High High
2	UPC/EAN	3-15	High High
3	Send all remaining data	3-25	High High
4	Send <CTRL M>	3-51	High High
5	Save Rule	3-11	High Low High Low

If you made any mistakes while entering this rule, scan the [Quit Entering Rules](#) bar code on page 3-12. If you already saved the rule, scan the [Erase Previously Saved Rule](#) bar code on page 3-12.

Alternate Rule Sets

ADF rules may be grouped into one of five alternate sets that can be turned on and off when needed. This is useful when you want to format the same message in different ways. For example, a Code 128 bar code contains the following information:

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

This bar code might look like this:

245671243701500

where:

Class = 24

Stock Number = 56712437

Price = 01500

Ordinarily you would send this data as follows:

24 (class key)

56712437 (stock key)

01500 (enter key)

But, when there is a sale, you may want to send only the following:

24 (class key)

56712437 (stock key)

and the cashier keys the price manually.

To implement this, first enter an ADF rule that applies in the normal situation. This rule may look like this:

When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key, send the data that remains, send the Enter key.

The “sale” rule may look like this:

When scanning a bar code of length 15, send the next 2 characters, send the class key, send the next 8 characters, send the stock key.

To switch between the two sets of rules, a “switching rule” must be programmed. This rule specifies what type of bar code must be scanned to switch between the rule sets. For example,



in the case of the “sale” rule above, the rule programmer wants the cashier to scan the bar code “M” before a sale. To do this, a rule can be entered as follows:

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

Another rule could be programmed to switch back.

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

The switching back to normal rules can also be done in the “sale” rule. For example, the rule may look like this:

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

It is recommended that you scan the **Disable All Rule Sets** bar code after programming a rule belonging to an alternate rule set.

In addition to enabling and disabling rule sets within the rules, you can disable them by scanning the appropriate bar codes in [Disable Rule Set](#) on page 3-13.

Rules Hierarchy (in Bar Codes)

The order of programming individual rules is important. The most general rule should be programmed first.

All programmed rules are stored in a buffer. As they are programmed, they are stored at the “top” of a rules list. If three rules have been created, the list would be configured as follows:

Third Rule

Second Rule

First Rule

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

For example, if the THIRD rule states:

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

And the SECOND rule states:

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

If a Code 128 bar code of length 12 were scanned, the THIRD rule would be in effect. The SECOND rule would appear to not function.

Note also that ADF rules are actually created when you use the standard data editing functions. Scan options are entered as ADF rules, and the hierarchy mentioned above also applies to them. For the P 300, this applies to prefix/suffix programming in the parameter *Scan Data Transmission Format*.

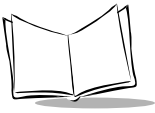
These rules reside in the same “rule list” as ADF Rules, so the order of their creation is also important.

Default Rules

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

When receiving scan data, send all data.

Since this rule always applies, ADF will never go into the default rules.



Beeper Definitions for ADF

The following table defines beep sequences that occur during rule entry.

Table 3-3. Beeper Definitions

Beeper Sequence	Indication
Normal Data Entry. Duration of tones are short.	
High-Low	Entry of a number is expected. Enter another digit. Add leading zeros to the front if necessary.
Low-Low	Entry of an alphabetic character is expected. Enter another character or scan the End of Message bar code.
High-High	Entry of Criterion/Action is expected. Enter another criterion or action, or scan the Save Rule bar code.
High-Low-High-Low	Rule saved. Rule entry mode exited.
High-Low-Low	All criteria or actions were cleared for rule currently being entered; continue entry of rule.
Low	Last saved rule was successfully deleted. The rule presently being entered is left intact.
Low-High-High	All rules are now deleted. The rule presently being entered is left intact. (This beep sequence has a different meaning outside of ADF.)
Error Indications. Duration of tones are very long.	
Low-High-Low-High	Out of rule memory. Erase some existing rules, then try to save rule again. (The current rule need not be re-entered.)
Low-High-Low	Cancel rule entry. Rule entry mode exited because of an error or the user asked to exit rule entry.
Low-High	Entry error, wrong bar code scanned. Re-enter criterion or action. All previously entered criteria and actions are retained. Criteria or action list is too long for a rule.

ADF Bar Codes

The following table helps you locate the bar codes you need to create an ADF rule.

Table 3-4. ADF Bar Codes

Bar Code	Description	Page
Special Commands		
Begin New Rule	Starts data formatting rule.	3-11
Save Rule	Completes and saves rule.	3-11
Erase	Erases criteria, actions, or rules.	3-12
Quit Entering Rules	Quits entering rules.	3-12
Disable Rule Set	Disables rule sets.	3-13
Criteria		
Code Types	Selects code types to be affected by rule.	3-14
Code Lengths	Defines the number of characters each code type must contain.	3-17
Message Containing A Specific Data String	Select whether formatting affects data that begins with or contains a specific character or data string.	3-22
Numeric Keypad	Used for specifying a data string.	3-23
Rule Belongs To Set	Selects which set a rule belongs to.	3-24
Actions		
Send Data	Sends all data that remains, sends all data up to a specific character, or sends N characters.	3-25
Send Pause	Inserts a pause.	3-29
Setup Field(s)	Moves the cursor in relation to a specified character.	3-29
Send Preset Value	Sends prefix and suffix values.	3-36

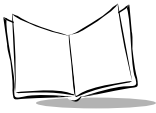


Table 3-4. ADF Bar Codes

Bar Code	Description	Page
Modify Data	Modifies data as follows:	3-36
◆ Remove All Spaces	◆ Removes all spaces in the send commands.	3-36
◆ Crunch All Spaces	◆ Leaves one space between words.	3-36
◆ Stop Space Removal	◆ Stops space removal.	3-37
◆ Remove Leading Zeros	◆ Removes all leading zeros.	3-37
◆ Stop Zero Removal	◆ Stops removal of zeros.	3-37
◆ Pad Data With Spaces	◆ Pads data to the left with spaces.	3-38
◆ Pad Data With Zeros	◆ Pads data to the left with zeros.	3-43
Beeps	Selects beep sequence for each rule.	3-48
Send Keystroke	Specifies control and keyboard characters to send.	3-49
◆ Control Characters	◆ Sends control characters.	3-49
◆ Keyboard Characters	◆ Sends keyboard characters.	3-54
◆ Send ALT Characters	◆ Sends ALT characters.	3-66
◆ Send Command Characters	◆ Sends command characters.	3-70
◆ Send Special Characters	◆ Sends special characters.	3-72
◆ Send Keypad Characters	◆ Sends keypad characters.	3-73
◆ Send Function Keys	◆ Sends function keys.	3-77
Turn On/Off Rule Sets	Turns rule sets on and off.	3-83
Alphanumeric Keyboard	Used to specify characters and strings when creating a rule.	3-84

Special Commands

Bar codes and explanations of the following special commands are provided on the next few pages.

- ◆ Begin New Rule
- ◆ Save Rule
- ◆ Erase
- ◆ Quit Entering Rules
- ◆ Disable Rule Set

Begin New Rule

Scan this bar code to start entering a new data formatting rule.



<FN3>7B1211

Begin New Rule

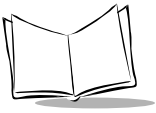
Save Rule

Scan this bar code to complete and save the rule you entered.



<FN3>4

Save Rule



Erase

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



<FN3>6C-

**Erase Criteria And
Start Again**



<FN3>6A-

**Erase Actions And
Start Again**



<FN3>8I

**Erase Previously
Saved Rule**



<FN3>80

Erase All Rules

Quit Entering Rules

Scan this bar code to quit entering rules.



<FN3>6Q

Quit Entering Rules

Disable Rule Set

Use these bar codes to disable rule sets.



<FN3>01

Disable Rule Set 1



<FN3>02

Disable Rule Set 2



<FN3>03

Disable Rule Set 3



<FN3>04

Disable Rule Set 4



<FN3>00

Disable All Rule Sets



Criteria

Code Types

Select any number of code types to be affected. All selected codes must be scanned in succession, prior to selecting other criteria. If you don't select a code type, all code types are affected.



<FN3>6C13D01

Code 39



<FN3>6C13D02

Codabar



<FN3>6C13D03

Code 128



<FN3>6C13D07

Code 93



<FN3>6C13D06

I 2 Of 5



<FN3>6C13D04

D 2 Of 5

Code Types (continued)



<FN3>6C13D08

UPC-A



<FN3>6C13D09

UPC-E



<FN3>6C13D10

UPC-EI



<FN3>6C13D0A

EAN-8



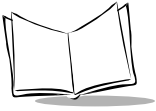
<FN3>6C13D0B

EAN-13



<FN3>6C13D0F

EAN 128



Code Types (continued)



<FN3>6C13D05

IATA 2 Of 5



<FN3>6C13D0E

MSI Plessey



<FN3>6C13D11

Bookland EAN



<FN3>6C13D12

Trioptic Code 39



<FN3>6C13D00

PDF417



<FN3>6C13D1A

ADF for Macro PDF417
(Applies rule to each block in MPDF set.)

Code Lengths

Define the number of characters the selected code type must contain. Select one length per rule only. If you don't select a code length, selected code types of any length are affected.

Note: These codes are used to set the code length only; this is not a keypad.



<FN3>6C13701

1



<FN3>6C13702

2



<FN3>6C13703

3



<FN3>6C13704

4



<FN3>6C13705

5



<FN3>6C13706

6



Code Lengths (continued)



<FN3>6C13707

7



<FN3>6C13708

8



<FN3>6C13709

9



<FN3>6C1370A

10



<FN3>6C1370B

11



<FN3>6C1370C

12

Code Lengths (continued)



<FN3>6C1370D

13



<FN3>6C1370E

14



<FN3>6C1370F

15



<FN3>6C13710

16



<FN3>6C13711

17



<FN3>6C13712

18



Code Lengths (continued)



<FN3>6C13713

19



<FN3>6C13714

20



<FN3>6C13715

21



<FN3>6C13716

22



<FN3>6C13717

23



<FN3>6C13718

24

Code Lengths (continued)



<FN3>6C13719

25



<FN3>6C1371A

26



<FN3>6C1371B

27



<FN3>6C1371C

28



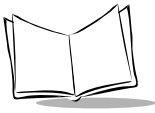
<FN3>6C1371D

29



<FN3>6C1371E

30



Message Containing A Specific Data String

Select whether the formatting affects data that begins with a specific character or data string, or contains a specific character or data string.

Specific String at Start

To apply formatting to data that begins with a specific character or data string:

1. Scan the bar code below.
2. Enter a string representing the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard* beginning on page 3-84.
3. Scan *End Of Message* on page 3-93.



<FN3>6C201

Specific String At Start

Specific String, Any Location

To apply formatting to data that contains a specific character or data string:

1. Scan the bar code below.
2. Scan a two-digit number representing the *position* (include a leading “zero” if necessary) using the *Numeric Keypad* on page 3-23.
3. Enter the desired character or characters (up to a total of 8) using the *Alphanumeric Keyboard* beginning on page 3-84.
4. Scan *End Of Message* on page 3-93.



<FN3>6C200

Specific String Any Location

Any Message OK

By not scanning any bar code, all selected code types are formatted, regardless of information contained.

Numeric Keypad

Bar codes on this page should not be confused with those on the alphanumeric keyboard.



<FN3>A0
0



<FN3>A1
1



<FN3>A2
2



<FN3>A3
3



<FN3>A4
4



<FN3>A5
5



<FN3>A6
6



<FN3>A7
7



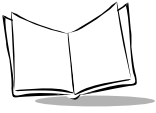
<FN3>A8
8



<FN3>A9
9



<FN3>A-
Cancel



Rule Belongs To Set

Scan a bar code below to select which set a rule belongs to.



<FN3>6C12A1

Rule Belongs To Set 1



<FN3>6C12A2

Rule Belongs To Set 2



<FN3>6C12A3

Rule Belongs To Set 3



<FN3>6C12A4

Rule Belongs To Set 4

Actions

Select how to format the data meeting the defined criteria before transmission.

Send Data

Use the following bar codes to send all data that remains, send all data up to a specific character selected from the *Alphanumeric Keyboard* on page 3-84, or send the next N characters. N = any number from 1 to 254, selected from the *Alphanumeric Keyboard* on page 3-84.



<FN3>6A5211

**Send Data Up To
Character**



<FN3>6A110

**Send All Data
That Remains**



<FN3>6A141001

Send Next Character



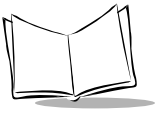
<FN3>6A141002

Send Next 2 Characters



<FN3>6A141003

Send Next 3 Characters



Send Data (continued)



<FN3>6A141004

Send Next 4 Characters



<FN3>6A141005

Send Next 5 Characters



<FN3>6A141006

Send Next 6 Characters



<FN3>6A141007

Send Next 7 Characters



<FN3>6A141008

Send Next 8 Characters



<FN3>6A141009

Send Next 9 Characters



<FN3>6A14100A

Send Next 10 Characters



<FN3>6A14100B

Send Next 11 Characters

Send Data (continued)



<FN3>6A14100C

Send Next 12 Characters



<FN3>6A14100D

Send Next 13 Characters



<FN3>6A14100E

Send Next 14 Characters



<FN3>6A14100F

Send Next 15 Characters



<FN3>6A141010

Send Next 16 Characters



<FN3>6A141011

Send Next 17 Characters



Send Data (continued)



<FN3>6A141012

Send Next 18
Characters



<FN3>6A141013

Send Next 19
Characters



<FN3>6A141014

Send Next 20
Characters



<FN3>6A141032

Send Next 50
Characters



<FN3>6A141064

Send Next 100
Characters



<FN3>6A141096

Send Next 150
Characters



<FN3>6A1410C8

Send Next 200
Characters



<FN3>6A1410FA

Send Next 250
Characters

Send Pause



Setup Field(s)

Use the following bar codes to move the cursor in relation to a specified character.

Note: If there is no match when the rule is interpreted and the rule fails, the next rule is checked.

Move Cursor To a Character

Scan the Move Cursor To Character bar code, then any printable ASCII character from the [Alphanumeric Keyboard](#) on page 3-84. This moves the cursor to the position after the matching character. If the character is not there, the rule fails and ADF tries the next rule.



<FN3>6A5230

Move Cursor To
Character

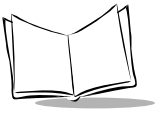
Move Cursor to Start of Data

Scan this bar code to move cursor to the beginning of the data.



<FN3>6A123I

Move Cursor To Start



Move Cursor Past a Character

This parameter moves the cursor past all sequential occurrences of a selected character. Scan the **Move Cursor Past Character** bar code on page 3-30, then select a character from the *Alphanumeric Keyboard* on page 3-84. If the character is not there, the cursor does not move (i.e., has no effect).



<FN3>6A5235

**Move Cursor Past
Character**

Skip Ahead “N” Characters

Scan one of these bar codes to select the number of positions ahead you wish to move the cursor.



<FN3>6A143301

**Skip Ahead 1
Character**



<FN3>6A143302

**Skip Ahead 2
Characters**



<FN3>6A143303

**Skip Ahead 3
Characters**



<FN3>6A143304

**Skip Ahead 4
Characters**

Skip Ahead (continued)



<FN3>6A143305

**Skip Ahead 5
Characters**



<FN3>6A143306

**Skip Ahead 6
Characters**



<FN3>6A143307

**Skip Ahead 7
Characters**



<FN3>6A143308

**Skip Ahead 8
Characters**



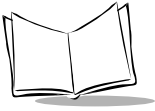
<FN3>6A143309

**Skip Ahead 9
Characters**



<FN3>6A14330A

**Skip Ahead 10
Characters**



Skip Ahead (continued)



<FN3>6A143332

**Skip Ahead 50
Characters**



<FN3>6A143364

**Skip Ahead 100
Characters**



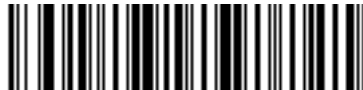
<FN3>6A143396

**Skip Ahead 150
Characters**



<FN3>6A1433C8

**Skip Ahead 200
Characters**



<FN3>6A1433FA

**Skip Ahead 250
Characters**

Skip Back “N” Characters

Scan one of these bar codes to select the number of positions back you wish to move the cursor.



<FN3>6A143401

**Skip Back 1
Characters**



<FN3>6A143402

**Skip Back 2
Characters**



<FN3>6A143403

**Skip Back 3
Characters**



<FN3>6A143404

**Skip Back 4
Characters**



Skip Back (continued)



<FN3>6A143405

**Skip Back 5
Characters**



<FN3>6A143406

**Skip Back 6
Characters**



<FN3>6A143407

**Skip Back 7
Character**



<FN3>6A143408

**Skip Back 8
Characters**



<FN3>6A143409

**Skip Back 9
Characters**



<FN3>6A14340A

**Skip Back 10
Characters**

Skip Back (continued)



<FN3>6A143432

**Skip Back 50
Characters**



<FN3>6A143464

**Skip Back 100
Characters**



<FN3>6A143496

**Skip Back 150
Characters**



<FN3>6A1434C8

**Skip Back 200
Characters**



<FN3>6A1434FA

**Skip Back 250
Characters**



Send Preset Value

Use these bar codes to send preset values.



<FN3>6A1271

Send Value 1



<FN3>6A1272

Send Value 2

Modify Data

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

Remove All Spaces

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



<FN3>6A1260

Remove All Spaces

Crunch All Spaces

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



<FN3>6A1261

Crunch All Spaces

Stop Space Removal

Scan this bar code to disable space removal.



<FN3>6A1262

Stop Space Removal

Remove Leading Zeros

Scan this bar code to remove all leading zeros.



<FN3>6A1264

**Remove Leading
Zeros**

Stop Zero Removal

Scan this bar code to disable the removal of zeros.



<FN3>6A1265

Stop Zero Removal



Pad Data With Spaces

To pad data to the left, scan the bar code containing the desired number of spaces. This parameter is activated by Send commands.



<FN3>6A146301

**Pad Spaces To
Length 1**



<FN3>6A146302

**Pad Spaces To
Length 2**



<FN3>6A146303

**Pad Spaces To
Length 3**



<FN3>6A146304

**Pad Spaces To
Length 4**



<FN3>6A146305

**Pad Spaces To
Length 5**



<FN3>6A146306

**Pad Spaces To
Length 6**

Pad Data with Spaces (continued)



<FN3>6A146307

**Pad Spaces To
Length 7**



<FN3>6A146308

**Pad Spaces To
Length 8**



<FN3>6A146309

**Pad Spaces To
Length 9**



<FN3>6A14630A

**Pad Spaces To
Length 10**



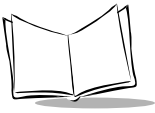
<FN3>6A14630B

**Pad Spaces To
Length 11**



<FN3>6A14630C

**Pad Spaces To
Length 12**



Pad Data with Spaces (continued)



<FN3>6A14630D

**Pad Spaces To
Length 13**



<FN3>6A14630E

**Pad Spaces To
Length 14**



<FN3>6A14630F

**Pad Spaces To
Length 15**



<FN3>6A146310

**Pad Spaces To
Length 16**



<FN3>6A146311

**Pad Spaces To
Length 17**



<FN3>6A146312

**Pad Spaces To
Length 18**

Pad Data with Spaces (continued)



<FN3>6A146313

**Pad Spaces To
Length 19**



<FN3>6A146314

**Pad Spaces To
Length 20**



<FN3>6A146315

**Pad Spaces To
Length 21**



<FN3>6A146316

**Pad Spaces To
Length 22**



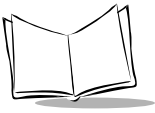
<FN3>6A146317

**Pad Spaces To
Length 23**



<FN3>6A146318

**Pad Spaces To
Length 24**



Pad Data with Spaces (continued)



<FN3>6A146319

**Pad Spaces To
Length 25**



<FN3>6A14631A

**Pad Spaces To
Length 26**



<FN3>6A14631B

**Pad Spaces To
Length 27**



<FN3>6A14631C

**Pad Spaces To
Length 28**



<FN3>6A14631D

**Pad Spaces To
Length 29**



<FN3>6A14631E

**Pad Spaces To
Length 30**



<FN3>6A146300

Stop Pad Spaces

Pad Data With Zeros

To pad data to the left, scan the bar code containing the desired number of zeros. This parameter is activated by Send commands. Use these bar codes to pad data with zeros.



<FN3>6A146601

**Pad Zeros To
Length 1**



<FN3>6A146602

**Pad Zeros To
Length 2**



<FN3>6A146603

**Pad Zeros To
Length 3**



<FN3>6A146604

**Pad Zeros To
Length 4**



<FN3>6A146605

**Pad Zeros To
Length 5**



<FN3>6A146606

**Pad Zeros To
Length 6**



Pad Data With Zeros (continued)



<FN3>6A146607

Pad Zeros To
Length 7



<FN3>6A146608

Pad Zeros To
Length 8



<FN3>6A146609

Pad Zeros To
Length 9



<FN3>6A14660A

Pad Zeros To
Length 10



<FN3>6A14660B

Pad Zeros To
Length 11



<FN3>6A14660C

Pad Zeros To
Length 12

Pad Data With Zeros (continued)



<FN3>6A14660D

**Pad Zeros To
Length 13**



<FN3>6A14660E

**Pad Zeros To
Length 14**



<FN3>6A14660F

**Pad Zeros To
Length 15**



<FN3>6A146610

**Pad Zeros To
Length 16**



<FN3>6A146611

**Pad Zeros To
Length 17**



<FN3>6A146612

**Pad Zeros To
Length 18**



Pad Data With Zeros (continued)



<FN3>6A146613

**Pad Zeros To
Length 19**



<FN3>6A146614

**Pad Zeros To
Length 20**



<FN3>6A146615

**Pad Zeros To
Length 21**



<FN3>6A146616

**Pad Zeros To
Length 22**



<FN3>6A146617

**Pad Zeros To
Length 23**



<FN3>6A146618

**Pad Zeros To
Length 24**

Pad Data With Zeros (continued)



<FN3>6A146619

**Pad Zeros To
Length 25**



<FN3>6A14661A

**Pad Zeros To
Length 26**



<FN3>6A14661B

**Pad Zeros To
Length 27**



<FN3>6A14661C

**Pad Zeros To
Length 28**



<FN3>6A14661D

**Pad Zeros To
Length 29**



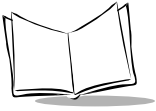
<FN3>6A14661E

**Pad Zeros To
Length 30**



<FN3>6A146600

Stop Pad Zeros



Beeps

Select a beep sequence for each ADF rule.



<FN3>6A13A01

Beep Once



<FN3>6A13A02

Beep Twice



<FN3>6A13A03

Beep Three Times

Send Keystroke (Control Characters and Keyboard Characters)

Scan the “Send ___” bar code for the keystroke you wish to send.

Control Characters

Scan these bar codes to send control characters.



<FN3>6A144100

Send Control 2



<FN3>6A144101

Send Control A



<FN3>6A144102

Send Control B



<FN3>6A144103

Send Control C



<FN3>6A144104

Send Control D



<FN3>6A144105

Send Control E



Control Characters (continued)



<FN3>6A144106

Send Control F



<FN3>6A144107

Send Control G



<FN3>6A144108

Send Control H



<FN3>6A144109

Send Control I



<FN3>6A14410A

Send Control J



<FN3>6A14410B

Send Control K

Control Characters (continued)



<FN3>6A14410C

Send Control L



<FN3>6A14410D

Send Control M



<FN3>6A14410E

Send Control N



<FN3>6A14410F

Send Control O



<FN3>6A144110

Send Control P



<FN3>6A144111

Send Control Q



Control Characters (continued)



<FN3>6A144112

Send Control R



<FN3>6A144113

Send Control S



<FN3>6A144114

Send Control T



<FN3>6A144115

Send Control U



<FN3>6A144116

Send Control V



<FN3>6A144117

Send Control W



<FN3>6A144118

Send Control X

Control Characters (continued)



<FN3>6A144119

Send Control Y



<FN3>6A14411A

Send Control Z



<FN3>6A14411B

Send Control [



<FN3>6A14411C

Send Control \



<FN3>6A14411D

Send Control]



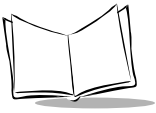
<FN3>6A14411E

Send Control 6



<FN3>6A14411F

Send Control -



Keyboard Characters

Use these bar codes to send keyboard characters.



<FN3>6A144120

Send Space



<FN3>6A144121

Send !



<FN3>6A144122

Send "



<FN3>6A144123

Send #



<FN3>6A144124

Send \$



<FN3>6A144125

Send %



<FN3>6A144126

Send &



<FN3>6A144127

Send '

Keyboard Characters (continued)



<FN3>6A144128

Send (



<FN3>6A144129

Send)



<FN3>6A14412A

Send *



<FN3>6A14412B

Send +



<FN3>6A14412C

Send ,



<FN3>6A14412D

Send -



<FN3>6A14412E

Send .



<FN3>6A14412F

Send /



Keyboard Characters (continued)



<FN3>6A144130

Send 0



<FN3>6A144131

Send 1



<FN3>6A144132

Send 2



<FN3>6A144133

Send 3



<FN3>6A144134

Send 4



<FN3>6A144135

Send 5



<FN3>6A144136

Send 6



<FN3>6A144137

Send 7

Keyboard Characters (continued)



<FN3>6A144138

Send 8



<FN3>6A144139

Send 9



<FN3>6A14413A

Send :



<FN3>6A14413B

Send ;



<FN3>6A14413C

Send <



<FN3>6A14413D

Send =



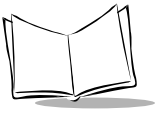
<FN3>6A14413E

Send >



<FN3>6A14413F

Send ?



Keyboard Characters (continued)



<FN3>6A144140

Send @



<FN3>6A144141

Send A



<FN3>6A144142

Send B



<FN3>6A144143

Send C



<FN3>6A144144

Send D



<FN3>6A144145

Send E



<FN3>6A144146

Send F



<FN3>6A144147

Send G

Keyboard Characters (continued)



<FN3>6A144148

Send H



<FN3>6A144149

Send I



<FN3>6A14414A

Send J



<FN3>6A14414B

Send K



<FN3>6A14414C

Send L



<FN3>6A14414D

Send M



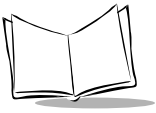
<FN3>6A14414E

Send N



<FN3>6A14414F

Send O



Keyboard Characters (continued)



<FN3>6A144150

Send P



<FN3>6A144151

Send Q



<FN3>6A144152

Send R



<FN3>6A144153

Send S



<FN3>6A144154

Send T



<FN3>6A144155

Send U



<FN3>6A144156

Send V



<FN3>6A144157

Send W

Keyboard Characters (continued)



<FN3>6A144158

Send X



<FN3>6A144159

Send Y



<FN3>6A14415A

Send Z



<FN3>6A14415B

Send [



<FN3>6A14415C

Send \



<FN3>6A14415D

Send]



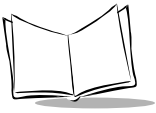
<FN3>6A14415E

Send ^



<FN3>6A14415F

Send _



Keyboard Characters (continued)



<FN3>6A144160

Send '



<FN3>6A144161

Send a



<FN3>6A144162

Send b



<FN3>6A144163

Send c



<FN3>6A144164

Send d



<FN3>6A144165

Send e



<FN3>6A144166

Send f



<FN3>6A144167

Send g

Keyboard Characters (continued)



<FN3>6A144168

Send h



<FN3>6A144169

Send i



<FN3>6A14416A

Send j



<FN3>6A14416B

Send k



<FN3>6A14416C

Send l



<FN3>6A14416D

Send m



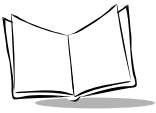
<FN3>6A14416E

Send n



<FN3>6A14416F

Send o



Keyboard Characters (continued)



<FN3>6A144170

Send p



<FN3>6A144171

Send q



<FN3>6A144172

Send r



<FN3>6A144173

Send s



<FN3>6A144174

Send t



<FN3>6A144175

Send u



<FN3>6A144176

Send v



<FN3>6A144177

Send w

Keyboard Characters (continued)



<FN3>6A144178

Send x



<FN3>6A144179

Send y



<FN3>6A14417A

Send z



<FN3>6A14417B

Send {



<FN3>6A14417C

Send |



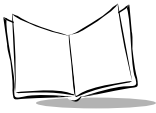
<FN3>6A14417D

Send }



<FN3>6A14417E

Send ~



Send ALT Characters

Use these bar codes to send ALT characters



<FN3>6A144240

Send ALT 2



<FN3>6A144241

Send ALT A



<FN3>6A144242

Send ALT B



<FN3>6A144243

Send ALT C



<FN3>6A144244

Send ALT D



<FN3>6A144245

Send ALT E



<FN3>6A144246

Send ALT F



<FN3>6A144247

Send ALT G

Send ALT Characters (continued)



<FN3>6A144248

Send ALT H



<FN3>6A144249

Send ALT I



<FN3>6A14424A

Send ALT J



<FN3>6A14424B

Send ALT K



<FN3>6A14424C

Send ALT L



<FN3>6A14424D

Send ALT M



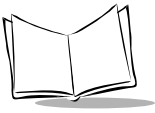
<FN3>6A14424E

Send ALT N



<FN3>6A14424F

Send ALT O



Send ALT Characters (continued)



<FN3>6A144250

Send ALT P



<FN3>6A144251

Send ALT Q



<FN3>6A144252

Send ALT R



<FN3>6A144253

Send ALT S



<FN3>6A144254

Send ALT T



<FN3>6A144255

Send ALT U



<FN3>6A144256

Send ALT V



S<FN3>6A144257

end ALT W

Send ALT Characters (continued)



<FN3>6A144258

Send ALT X



<FN3>6A144259

Send ALT Y



<FN3>6A14425A

Send ALT Z



<FN3>6A14425B

Send ALT [



<FN3>6A14425C

Send ALT \



<FN3>6A14425D

Send ALT]



<FN3>6A14425E

Send ALT 6



<FN3>6A14425F

Send ALT -



Send Command Characters



<FN3>6A144301

Send PA 1



<FN3>6A144302

Send PA 2



<FN3>6A144303

Send CMD 1



<FN3>6A144304

Send CMD 2



<FN3>6A144305

Send CMD 3



<FN3>6A144306

Send CMD 4

Send Command Characters (continued)



<FN3>6A144307

Send CMD 5



<FN3>6A144308

Send CMD 6



<FN3>6A144309

Send CMD 7



<FN3>6A14430A

Send CMD 8



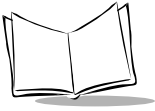
<FN3>6A14430B

Send CMD 9



<FN3>6A14430C

Send CMD 10



Send Special Characters



<FN3>6A14430D

Send Yen Character



<FN3>6A14430E

Send Pound Sterling Character



<FN3>6A14430F

Send Bomb Character



<FN3>6A144310

Send Hook Character



<FN3>6A144311

Send Bullet Character



<FN3>6A144312

Send 1/2 Character



<FN3>6A144313

Send Paragraph Character



<FN3>6A144314

Send Section Character



<FN3>6A144315

Send Vertical Character

Send Keypad Characters



<FN3>6A14462A

Send Keypad *



<FN3>6A14462B

Send Keypad +



<FN3>6A14462D

Send Keypad -



<FN3>6A14462E

Send Keypad .



<FN3>6A14462F

Send Keypad /



<FN3>6A144630

Send Keypad 0



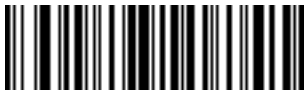
<FN3>6A144631

Send Keypad 1



<FN3>6A144632

Send Keypad 2



<FN3>6A144633

Send Keypad 3



<FN3>6A144634

Send Keypad 4



Send Keypad Characters (continued)



<FN3>6A144635

Send Keypad 5



<FN3>6A144636

Send Keypad 6



<FN3>6A144637

Send Keypad 7



<FN3>6A144638

Send Keypad 8



<FN3>6A144639

Send Keypad 9



<FN3>6A14463A

Send Keypad ENTER



<FN3>6A14463B

Send Keypad
NUM LOCK

Send Keypad Characters (continued)



<FN3>6A144701

Send Break Key



<FN3>6A144702

Send Delete Key



<FN3>6A144703

Send Page Up Key



<FN3>6A144704

Send End Key



<FN3>6A144705

Send Page Down Key



<FN3>6A144706

Send Pause Key



<FN3>6A144707

Send Scroll Lock Key



<FN3>6A144708

Send Backspace Key



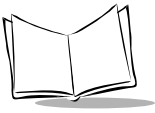
<FN3>6A144709

Send Tab Key



<FN3>6A14470A

Send Print Screen Key



Send Keypad Characters (continued)



<FN3>6A14470B

Send Insert Key



<FN3>6A14470C

Send Home Key



<FN3>6A14470D

Send Enter Key



<FN3>6A14470E

Send Escape Key



<FN3>6A14470F

Send Up Arrow Key



<FN3>6A144710

Send Down Arrow Key



<FN3>6A144711

Send Left Arrow Key



<FN3>6A144712

Send Right Arrow Key



<FN3>6A144713

Send Back Tab Character

Send Function Keys



<FN3>6A144501

Send F1 Key



<FN3>6A144502

Send F2 Key



<FN3>6A144503

Send F3 Key



<FN3>6A144504

Send F4 Key



<FN3>6A144505

Send F5 Key



<FN3>6A144506

Send F6 Key



<FN3>6A144507

Send F7 Key



<FN3>6A144508

Send F8 Key



<FN3>6A144509

Send F9 Key



<FN3>6A14450A

Send F10 Key



Send Function Keys (continued)



<FN3>6A14450B

Send F11 Key



<FN3>6A14450C

Send F12 Key



<FN3>6A14450D

Send F13 Key



<FN3>6A14450E

Send F14 Key



<FN3>6A14450F

Send F15 Key



<FN3>6A144510

Send F16 Key



<FN3>6A144511

Send F17 Key



<FN3>6A144512

Send F18 Key



<FN3>6A144513

Send F19 Key



<FN3>6A144514

Send F20 Key

Send Function Keys (continued)



<FN3>6A1445I5

Send F21 Key



<FN3>6A1445I6

Send F22 Key



<FN3>6A1445I7

Send F23 Key



<FN3>6A1445I8

Send F24 Key



<FN3>6A1445I9

Send F25 Key



<FN3>6A1445IA

Send F26 Key



<FN3>6A1445IB

Send F27 Key



<FN3>6A1445IC

Send F28 Key



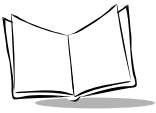
<FN3>6A1445ID

Send F29 Key



<FN3>6A1445IE

Send F30 Key



Send Function Keys (continued)



<FN3>6A144401

Send PF1 Key



<FN3>6A144402

Send PF2 Key



<FN3>6A144403

Send PF3 Key



<FN3>6A144404

Send PF4 Key



<FN3>6A144405

Send PF5 Key



<FN3>6A144406

Send PF6 Key



<FN3>6A144407

Send PF7 Key



<FN3>6A144408

Send PF8 Key



<FN3>6A144409

Send PF9 Key



<FN3>6A14440A

Send PF10 Key

Send Function Keys (continued)



<FN3>6A14440B

Send PF11 Key



<FN3>6A14440C

Send PF12 Key



<FN3>6A14440D

Send PF13 Key



<FN3>6A14440E

Send PF14 Key



<FN3>6A14440F

Send PF15 Key



<FN3>6A144410

Send PF16 Key



<FN3>6A144411

Send PF17 Key



<FN3>6A144412

Send PF18 Key



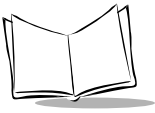
<FN3>6A144413

Send PF19 Key



<FN3>6A144414

Send PF20 Key



Send Function Keys (continued)



<FN3>6A144415

Send PF21 Key



<FN3>6A144416

Send PF22 Key



<FN3>6A144417

Send PF23 Key



<FN3>6A144418

Send PF24 Key



<FN3>6A144419

Send PF25 Key



<FN3>6A14441A

Send PF26 Key



<FN3>6A14441B

Send PF27 Key



<FN3>6A14441C

Send PF28 Key



<FN3>6A14441D

Send PF29 Key



<FN3>6A14441E

Send PF30 Key

Turn On/Off Rule Sets

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



<FN3>6A13911

Turn On Rule Set 1



<FN3>6A13921

Turn On Rule Set 2



<FN3>6A13931

Turn On Rule Set 3



<FN3>6A13941

Turn On Rule Set 4



<FN3>6A13910

Turn Off Rule Set 1



<FN3>6A13920

Turn Off Rule Set 2



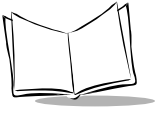
<FN3>6A13930

Turn Off Rule Set 3



<FN3>6A13940

Turn Off Rule Set 4



Alphanumeric Keyboard



<FN3>B20

Space



<FN3>B23

#



<FN3>B24

\$



<FN3>B25

%



<FN3>B2A

*



<FN3>B2B

+



<FN3>B2D

-



<FN3>B2E

.

Alphanumeric Keyboard (continued)



<FN3>B2F

/



<FN3>B2I

!



<FN3>B22

“



<FN3>B26

&



<FN3>B27

‘



<FN3>B28

(



<FN3>B29

)



<FN3>B3A

:



Alphanumeric Keyboard (continued)



<FN3>B3B

;



<FN3>B3C

<



<FN3>B3D

=



<FN3>B3E

>



<FN3>B3F

?



<FN3>B40

@

Alphanumeric Keyboard (continued)



<FN3>B5B

[



<FN3>B5C

\



<FN3>B5D

]



<FN3>B5E

^



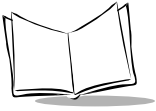
<FN3>B5F

-



<FN3>B60

`



Alphanumeric Keyboard (continued)

Bar codes on this page should not be confused with those on the numeric keypad.



<FN3>B30

0



<FN3>B31

1



<FN3>B32

2



<FN3>B33

3



<FN3>B34

4



<FN3>B35

5

Alphanumeric Keyboard (continued)

Bar codes on this page should not be confused with those on the numeric keypad.



<FN3>B36

6



<FN3>B37

7



<FN3>B38

8



<FN3>B39

9



Alphanumeric Keyboard (continued)



<FN3>B41

A



<FN3>B42

B



<FN3>B43

C



<FN3>B44

D



<FN3>B45

E



<FN3>B46

F



<FN3>B47

G



<FN3>B48

H

Alphanumeric Keyboard (continued)



<FN3>B49

I



<FN3>B4A

J



<FN3>B4B

K



<FN3>B4C

L



<FN3>B4D

M



<FN3>B4E

N



<FN3>B4F

O



<FN3>B50

P



Alphanumeric Keyboard (continued)



<FN3>B51

Q



<FN3>B52

R



<FN3>B53

S



<FN3>B54

T



<FN3>B55

U



<FN3>B56

V

Alphanumeric Keyboard (continued)



<FN3>B57

W



<FN3>B58

X



<FN3>B59

Y



<FN3>B5A

Z



<FN3>B-

Cancel



<FN3>B+

End Of Message



Alphanumeric Keyboard (continued)



<FN3>B61

a



<FN3>B62

b



<FN3>B63

c



<FN3>B64

d



<FN3>B65

e



<FN3>B66

f



<FN3>B67

g



<FN3>B68

h

Alphanumeric Keyboard (continued)



<FN3>B69

i



<FN3>B6A

j



<FN3>B6B

k



<FN3>B6C

l



<FN3>B6D

m



<FN3>B6E

n



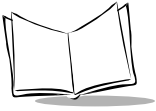
<FN3>B6F

o



<FN3>B70

p



Alphanumeric Keyboard (continued)



<FN3>B71

q



<FN3>B72

r



<FN3>B73

s



<FN3>B74

t



<FN3>B75

u



<FN3>B76

v



<FN3>B77

w



<FN3>B78

x

Alphanumeric Keyboard (continued)



<FN3>B79

y



<FN3>B7A

z



<FN3>B7B

{



<FN3>B7C

|



<FN3>B7D

}

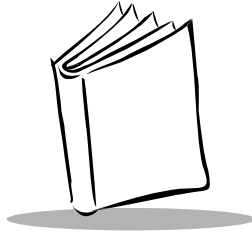


<FN3>B7E

~



P 300 STDIFZYIPRO Scanner Product Reference Guide



Chapter 4

Maintenance and Troubleshooting

Maintenance

Cleaning the scanner exit window is the only maintenance required.

- ◆ Do not allow any abrasive material to touch the window.
- ◆ Remove any dirt particles with a damp cloth.
- ◆ Wipe the window using a damp cloth, and if necessary, a non-ammonia based detergent.

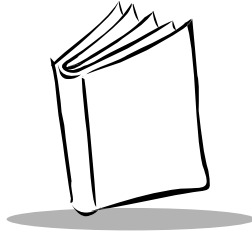


Troubleshooting

Table 4-1. Troubleshooting

Problem	Possible Cause	Possible Solutions
Nothing happens when you follow the operating instructions.	No power to the scanner. Scanner is not programmed for the correct host. Scanner is not programmed for the correct bar code type. Interface/power cables are loose. Bar code symbol is unreadable.	Check the system power. Ensure the power supply is connected if your configuration requires a power supply. Be sure the scanner is programmed for the terminal in use. Be sure the scanner is programmed to read the type of bar code you are scanning. Check for loose cable connections. Check the symbol to make sure it is not defaced. Try scanning test symbols of the same bar code type.
Symbol is decoded, but not transmitted to the host terminal.	Scanner is not programmed for the correct host type.	Be sure the proper host type is selected. (See Chapter 2, Programming the Scanner.)
Scanned data is incorrectly displayed on the terminal.	Scanner is programmed to work with the wrong keyboard type. RS-232 host setup is wrong. Scanner is programmed to work with the wrong host type. Scanner is programmed with the wrong editing options.	For a keyboard wedge configuration, ensure the system is programmed for the correct keyboard type, and the CAPS LOCK key is off. Ensure the scanner's communication parameters match the host terminal's settings. Be sure the proper host is selected. Be sure editing options (e.g., UPC-E to UPC-A Conversion) are properly programmed.

Note: *If, after performing these checks, the problem is not corrected, contact your distributor or call the Symbol Support Centers. See [Service Information](#) on page *x* for contact information.*



Appendix A

Programming Reference

UCC/EAN-128

UCC/EAN-128 is a convention for printing data fields with standard Code 128 bar code symbols. UCC/EAN-128 symbols are distinguished by a leading FNC 1 character as the first or second character in the symbol. Other FNC 1 characters are used to delineate fields.

When EAN-128 symbols are read, they are transmitted after special formatting strips off the leading FNC 1 character and replaces other FNC 1 characters with the ASCII 29 GS control character.

When AIM symbology identifiers are transmitted, the modifier character indicates the position of the leading FNC 1 character according to AIM guidelines. For example, `Jc1` indicates a UCC/EAN-128 symbol with a leading FNC1 character.

Standard Code 128 bar codes which do not have a leading FNC 1 may still be used but are not encoded according to the EAN-128 convention. Standard Code 128 and UCC/EAN-128 may be mixed in an application. The P 300FZY and P 300PRO scanner autodiscriminates between these symbols, and can enable or disable one or both code types via bar code menus. [Table A-1](#) indicates the behavior of the P 300FZY and P 300PRO in each of the possible parameter settings.

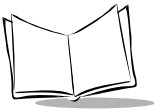


Table A-1. Reading Standard Code 128 & UCC/EAN 128

Standard Code 128	UCC/EAN-128	Effect and Example
Disable	Disable	No Code 128 symbols can be read.
Disable	Enable	Read only symbols with leading FNC 1. Examples: $FNC1ABCD^{FNC1}E$ are read as $ABCD^{29}E$ $A^{FNC1}BCD^{FNC1}E$ are read as $ABCD^{29}E$ $FNC1FNC1ABCD^{FNC1}E$ are read as $ABCD^{29}E$ $ABCD^{FNC1}E$ cannot be read $ABCDE$ cannot be read
Enable	Disable	Read only symbols without leading FNC 1. Examples: $FNC1ABCD^{FNC1}E$ cannot be read $A^{FNC1}BCD^{FNC1}E$ cannot be read $FNC1FNC1ABCD^{FNC1}E$ cannot be read $ABCD^{FNC1}E$ is read as $ABCD^{29}E$ $ABCDE$ is read as $ABCDE$
Enable	Enable	Read both types of symbols. Examples: $FNC1ABCD^{FNC1}E$ are read as $ABCD^{29}E$ $A^{FNC1}BCD^{FNC1}E$ are read as $ABCD^{29}E$ $FNC1FNC1ABCD^{FNC1}E$ are read as $ABCD^{29}E$ $ABCD^{FNC1}E$ is read as $ABCD^{29}E$ $ABCDE$ is read as $ABCDE$

AIM Code Identifiers

Each AIM Code Identifier contains the three-character string]cm where:

-] = Flag Character (ASCII 93)
- c = Code Character (see [Table A-2](#))
- m = Modifier Character (see [Table A-3](#))

Table A-2. AIM Code Identifiers

Code Identifiers	Code Type
A	Code 39
C	Code 128
E	UPC/EAN
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
L	PDF417
M	MSI Plessey
S	D2 of 5, IATA 2 of 5
X	Code 39 Trioptic
X	Bookland EAN
X	Coupon Code



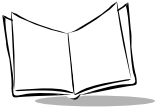
The modifier character is the sum of the applicable option values based on [Table A-3](#).

Table A-3. Modifier Characters

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, A+I+MI+DW , is transmitted as JA7 AimId where $7 = (3+4)$.	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as JX0 412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character in the first position, FNC1 Aim Id is transmitted as JC1 AimId	
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as JI0 4123	
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
	Example: A Codabar bar code without check digit, 4123, is transmitted as JF0 4123	

Table A-3. Modifier Characters (Continued)

Code Type	Option Value	Option
Code 93		
	0	No options specified at this time. Always transmit 0.
		Example: A Code 93 bar code 012345678905 is transmitted as JG0012345678905
MSI Plessey	0	Single check digit checked.
	1	Two check digits checked.
	2	Single check digit verified and stripped before transmission.
	3	Two check digits verified and stripped before transmission.
		Example: An MSI Plessey bar code 4123, with a single check digit checked, is transmitted as JM04123
D 2 of 5	0	No options specified at this time. Always transmit 0.
		Example: A D 2 of 5 bar code 4123, is transmitted as JS04123
UPC/EAN	0	Standard packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	1	Two-digit supplement data only.
	2	Five-digit supplement data only.
	4	EAN-8 data packet.
		Example: A UPC-A bar code 012345678905 is transmitted as JE00012345678905
Bookland EAN	0	No options specified at this time. Always transmit 0.
		Example: A Bookland EAN bar code 123456789X is transmitted as JX0123456789X



Prefix / Suffix Values

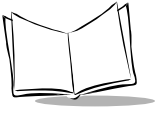
The following values can be assigned as prefixes or suffixes for ASCII character data transmission. If you're using a keyboard interface, refer to the *Synapse "Smart Cable" Interface Guide* for keystroke prefix/suffix values.

Table A-4. Prefix/Suffix Values

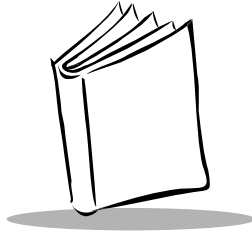
Prefix/Suffix Value	Full ASCII Code 39 Encode Char.	ASCII Character	Prefix/Suffix Value	Full ASCII Code 39 Encode Char.	ASCII Character
1000	%U	NUL	1030	%D	RS
1001	\$A	SOH	1031	%E	US
1002	\$B	STX	1032	Space	Space
1003	\$C	ETX	1033	/A	!
1004	\$D	EOT	1034	/B	"
1005	\$E	ENQ	1035	/C	#
1006	\$F	ACK	1036	/D	\$
1007	\$G	BELL	1037	/E	%
1008	\$H	BCKSPC	1038	/F	&
1009	\$I	HORIZ TAB	1039	/G	'
1010	\$J	LF/NW LN	1040	/H	(
1011	\$K	VT	1041	/I)
1012	\$L	FF	1042	/J	*
1013	\$M	CR/ENTER	1043	/K	+
1014	\$N	SO	1044	/L	,
1015	\$O	SI	1045	-	-
1016	\$P	DLE	1046	.	.
1017	\$Q	DC1	1047	/	/
1018	\$R	DC2	1048	0	0
1019	\$S	DC3	1049	1	1
1020	\$T	DC4	1050	2	2
1021	\$U	NAK	1051	3	3
1022	\$V	SYN	1052	4	4
1023	\$W	ETB	1053	5	5
1024	\$X	CAN	1054	6	6
1025	\$Y	EM	1057	7	7
1026	\$Z	SUB	1056	8	8
1027	%A	ESC	1057	9	9
1028	%B	FS	1058	/Z	:
1029	%C	GS	1059	%F	;

Table A-3. Prefix/Suffix Values (continued)

Prefix/Suffix Value	Full ASCII Code 39 Encode Char.	ASCII Character	Prefix/Suffix Value	Full ASCII Code 39 Encode Char.	ASCII Character
1060	%G	<	1095	%O	¯
1061	%H	=	1096	%W	`
1062	%I	>	1097	+A	a
1063	%J	?	1098	+B	b
1064	%V	@	1099	+C	c
1065	A	A	1100	+D	d
1066	B	B	1101	+E	e
1067	C	C	1102	+F	f
1068	D	D	1103	+G	g
1069	E	E	1104	+H	h
1070	F	F	1105	+I	i
1071	G	G	1106	+J	j
1072	H	H	1107	+K	k
1073	I	I	1108	+L	l
1074	J	J	1109	+M	m
1075	K	K	1110	+N	n
1076	L	L	1111	+O	o
1077	M	M	1112	+P	p
1078	N	N	1113	+Q	q
1079	O	O	1114	+R	r
1080	P	P	1115	+S	s
1081	Q	Q	1116	+T	t
1082	R	R	1117	+U	u
1083	S	S	1118	+V	v
1084	T	T	1119	+W	w
1085	U	U	1120	+X	x
1086	V	V	1121	+Y	y
1087	W	W	1122	+Z	z
1088	X	X	1123	%P	{
1089	Y	Y	1124	%Q	
1090	Z	Z	1125	%R	}
1091	%K	[1126	%S	~
1092	%L	\	1127		Undefined
1093	%M]			
1094	%N	^	7013		ENTER



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Appendix B

Keyboard Maps

The keyboard maps on the following pages are provided for prefix/suffix keystroke parameters, and are used only with scanners that support data formatting. To program the prefix/suffix values, see the bar codes on page [2-96](#).

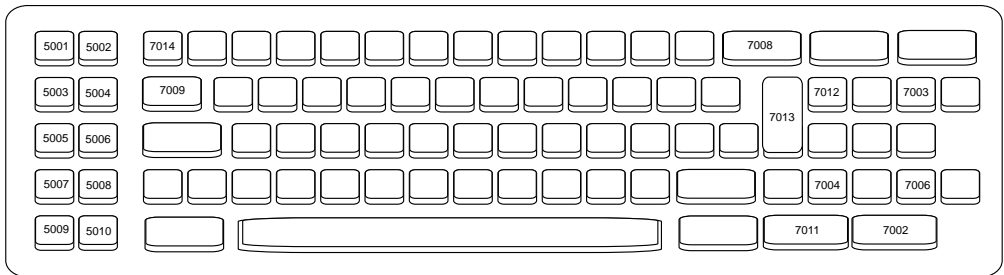


Figure B-1. IBM PC/XT Keyboard

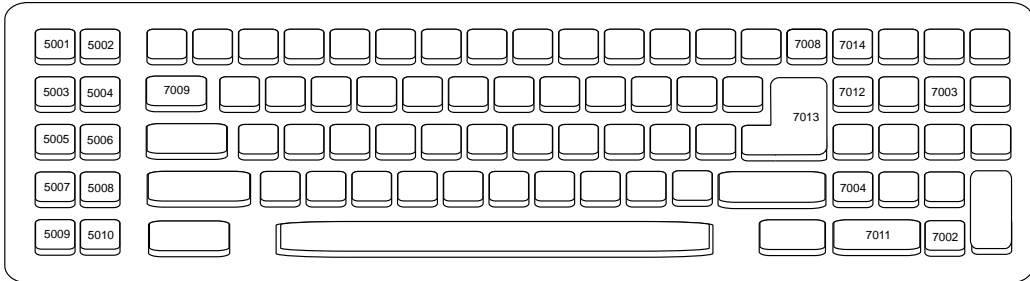
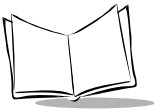


Figure B-2. IBM PC/AT Keyboard

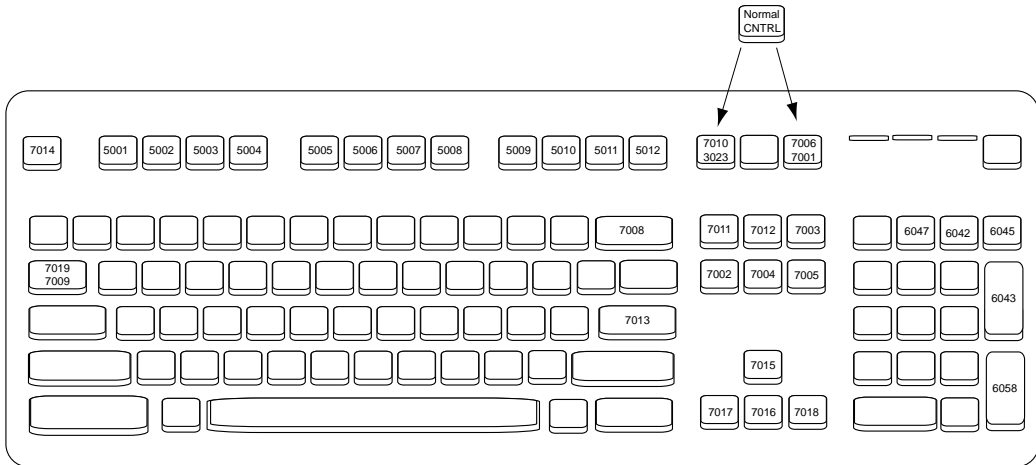


Figure B-3. IBM PS2 Keyboard

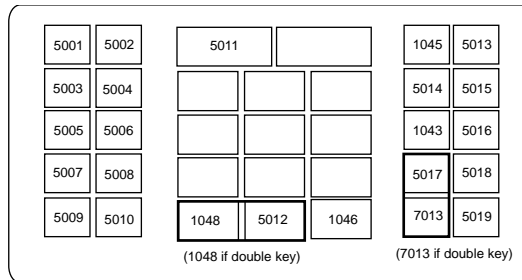


Figure B-4. NCR 7052 32-Key Keyboard

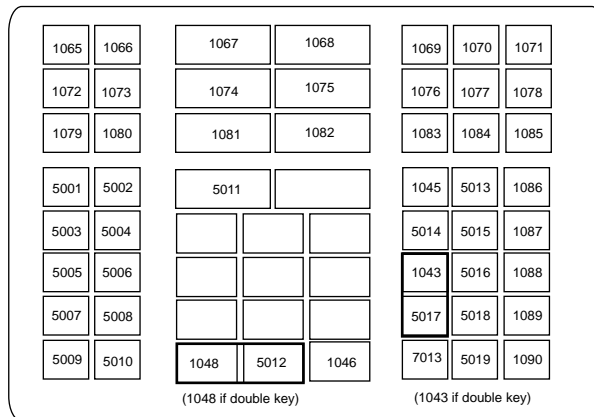
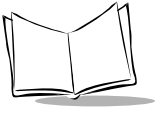
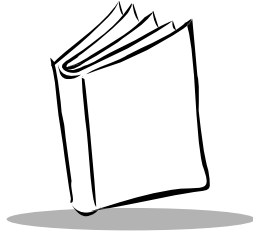


Figure B-5. NCR 7052 58-Key Keyboard



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Appendix C

ASCII Character Set

Table C-1. ASCII Character Set

ASCII Value	Full ASCII Code 39 Encode Char.	Keystroke
1000	%U	CTRL 2
1001	\$A	CTRL A
1002	\$B	CTRL B
1003	\$C	CTRL C
1004	\$D	CTRL D
1005	\$E	CTRL E
1006	\$F	CTRL F
1007	\$G	CTRL G
1008	\$H	CTRL H
1009	\$I	CTRL I
1010	\$J	CTRL J
1011	\$K	CTRL K
1012	\$L	CTRL L
1013	\$M	CTRL M



Table C-1. ASCII Character Set (Continued)

1014	\$N	CTRL N
1015	\$O	CTRL O
1016	\$P	CTRL P
1017	\$Q	CTRL Q
1018	\$R	CTRL R
1019	\$S	CTRL S
1020	\$T	CTRL T
1021	\$U	CTRL U
1022	\$V	CTRL V
1023	\$W	CTRL W
1024	\$X	CTRL X
1025	\$Y	CTRL Y
1026	\$Z	CTRL Z
1027	%A	CTRL [
1028	%B	CTRL \
1029	%C	CTRL]
1030	%D	CTRL 6
1031	%E	CTRL -
1032	Space	Space
1033	/A	!
1034	/B	'
1035	/C	#
1036	/D	E
1037	/E	%
1038	/F	&
1039	/G	'
1040	/H	(

Table C-1. ASCII Character Set (Continued)

1041	/I)
1042	/J	*
1043	/K	+
1044	/L	,
1045	-	-
1046	.	.
1047	/	/
1048	0	0
1047	1	1
1050	2	2
1051	3	3
1052	4	4
1053	5	5
1054	6	6
1055	7	7
1056	8	8
1057	9	9
1058	/Z	:
1059	%F	;
1060	%G	<
1061	%H	=
1062	%I	>
1063	%J	?
1064	%V	@
1065	A	A
1066	B	B
1067	C	C

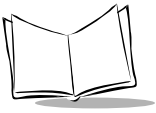


Table C-1. ASCII Character Set (Continued)

1068	D	D
1069	E	E
1070	F	F
1071	G	G
1072	H	H
1073	I	I
1074	J	J
1075	K	K
1076	L	L
1077	M	M
1078	N	N
1079	O	O
1080	P	P
1081	Q	Q
1082	R	R
1083	S	S
1084	T	T
1085	U	U
1086	V	V
1087	W	W
1088	X	X
1089	Y	Y
1090	Z	Z
1091	%K	[
1092	%L	\
1093	%M]
1094	%N	^

Table C-1. ASCII Character Set (Continued)

1095	%O	_
1096	%W	‘
1097	+A	a
1098	+B	b
1099	+C	c
1100	+D	d
1101	+E	e
1102	+F	f
1103	+G	g
1104	+H	h
1105	+I	i
1106	+J	j
1107	+K	k
1108	+L	l
1109	+M	m
1110	+N	n
1111	+O	o
1112	+P	p
1113	+Q	q
1114	+R	r
1115	+S	s
1116	+T	t
1117	+U	u
1118	+V	v
1119	+W	w
1120	+X	x
1121	+Y	y



Table C-1. ASCII Character Set (Continued)

1122	+Z	z
1123	%P	{
1124	%Q	
1125	%R	}
1126	%S	~
1127		Undefined
1128		
ALT Keys	Keystroke	
2064	ALT 2	
2065	ALT A	
2066	ALT B	
2067	ALT C	
2068	ALT D	
2069	ALT E	
2070	ALT F	
2071	ALT G	
2072	ALT H	
2073	ALT I	
2074	ALT J	
2075	ALT K	
2076	ALT L	
2077	ALT M	
2078	ALT N	
2079	ALT O	
2080	ALT P	
2081	ALT Q	
2082	ALT R	

Table C-1. ASCII Character Set (Continued)

2083	ALT S
2084	ALT T
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z
2091	ALT [
2092	ALT \
2093	ALT]
2094	ALT 6
2095	ALT -
Misc. Key	Keystroke
3001	PA 1
3002	PA 2
3003	CMD 1
3004	CMD 2
3005	CMD 3
3006	CMD 4
3007	CMD 5
3008	CMD 6
3009	CMD 7
3010	CMD 8
3011	CMD 9
3012	CMD 10
3013	¥

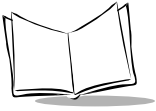


Table C-1. ASCII Character Set (Continued)

3014	£
3015	¤
3016	¥
3017	°
3018	1/2
3019	¶
3020	§
3021	
3022	0/00
PF Keys	Keystrokes
4001	PF 1
4002	PF 2
4003	PF 3
4004	PF 4
4005	PF 5
4006	PF 6
4007	PF 7
4008	PF 8
4009	PF 9
4010	PF 10
4011	PF 11
4012	PF 12
4013	PF 13
4014	PF 14
4015	PF 15
4016	PF 16
4017	PF 17

Table C-1. ASCII Character Set (Continued)

4018	PF 18
4019	PF 19
4020	PF 20
4021	PF 21
4022	PF 22
4023	PF 23
4024	PF 24
F Keys	Keystroke
5001	F1
5002	F2
5003	F3
5004	F4
5005	F5
5006	F6
5007	F7
5008	F8
5009	F9
5010	F10
5011	F11
5012	F12
5013	F13
5014	F14
5015	F15
5016	F16
5017	F17
5018	F18
5019	F19

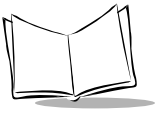


Table C-1. ASCII Character Set (Continued)

5020	F20
5021	F21
5022	F22
5023	F23
5024	F24
5025	F25
5026	F26
5027	F27
5028	F28
5029	F29
5030	F30
5031	F31
5032	F32
5033	F33
5034	F34
5035	F35
5036	F36
5037	F37
5038	F38
5039	F39
5040	F40
Numeric Keypad	Keystroke
6042	*
6043	+
6044	undefined
6045	-

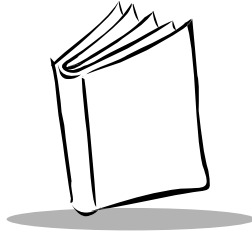
Table C-1. ASCII Character Set (Continued)

6046	.
6047	/
6048	0
6049	1
6050	2
6051	3
6052	4
6053	5
6054	6
6055	7
6056	8
6057	9
6058	Enter
6059	Num Lock
6060	00
Extended Keypad	Keystroke
7001	Break
7002	Delete
7003	Pg Up
7004	End
7005	Pg Dn
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert



Table C-I. ASCII Character Set (Continued)

7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Dn Arrow
7017	Left Arrow
7018	Right Arrow
7019	Back Tab



Appendix D

Technical Specifications

Table D-1. Technical Specifications

Item	Description
Power Requirements* PC Wedge/Synapse RS-232C/Synapse Low Power	4.5 to 5.5 VDC (max) 200 mA @ 5V typical 4.5 to 5.5 VDC (max) 190 mA @ 5V typical 4.5 to 5.5 VDC (max) 400 mA @ 5V typical
Decode Capability	The P 300FZY and P 300PRO can be programmed to decode the following code types: UPC/EAN, Bookland EAN, Code 39, Code 39 Full ASCII, Trioptic Code 39, Code 93, Codabar, Interleaved 2 of 5, Code 128, EAN 128, Discrete 2 of 5, MSI Plessey, and PDF417. Set code length(s) for any linear code type. The P 300FZY and 300PRO can auto-discriminate between all of the above code types except for Code 39 and Code 39 Full ASCII. Transmission of decoded information depends on the capabilities of the attached terminal.
Beeper Operation	User-selectable: Enabled, Disabled
Scan Repetition Rate	36 scans/sec
Scan Angle	±37°
Roll (Skew) Tolerance	±45° from normal
Pitch	±60° from normal
Yaw	±30° from normal
1-D Decode Depth of Field	See <i>P 300STD Decode Zone</i> on page D-3



Table D-1. Technical Specifications (Continued)

Item	Description
2-D Decode Depth of Field	See <i>P 300FZY Decode Zone</i> on page D-4
Print Contrast Minimum	MRD 25% absolute dark/light differential, measured at 650 nm.
<p>*For direct host power connection, make sure the host terminal supplies sufficient power for the specified operation. Symbol is not responsible for damage to host equipment or system mis-operation due to an insufficient power condition.</p>	
Ambient Light Immunity Artificial Lighting Sunlight	450 ft. candles 4844 lux 9000 ft. candles 96876 lux (@8 in. (20 cm) on low density bar codes)
Operating Temperature	-30° to 50°C (STD/FZY) -20° to 50°C (PRO)
Storage Temperature	-40° to 140°F -40° to 60°C
Humidity	5% to 95% (non-condensing)
Durability	6-ft. drop to concrete 1.8 m
Dimensions Height Length Width	7.0 in. 17.80 cm 9.2in. 13.50 cm 3.5 in. 9.80 cm
Laser Classifications	CDRH Class II IEC 825 Class 2
Laser Power	0.81 mW ±0.07mW

P 300STD Decode Zone

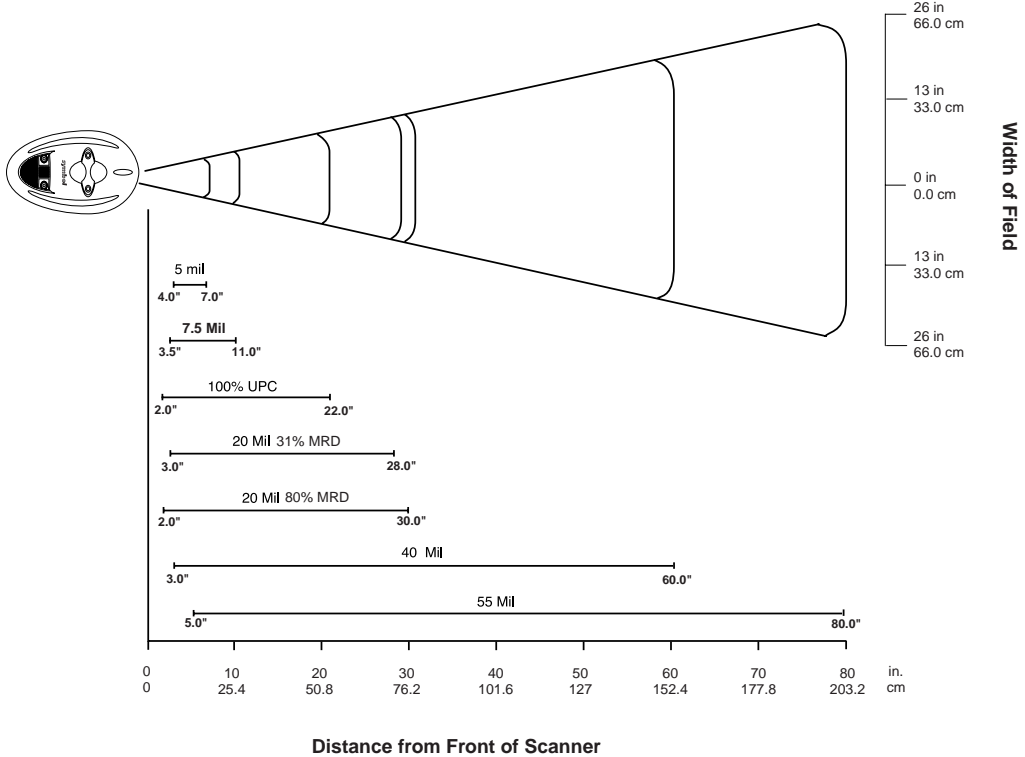
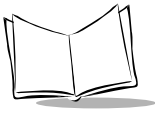


Figure D-1. P 300STD Decode Zone



P 300FZY Decode Zone

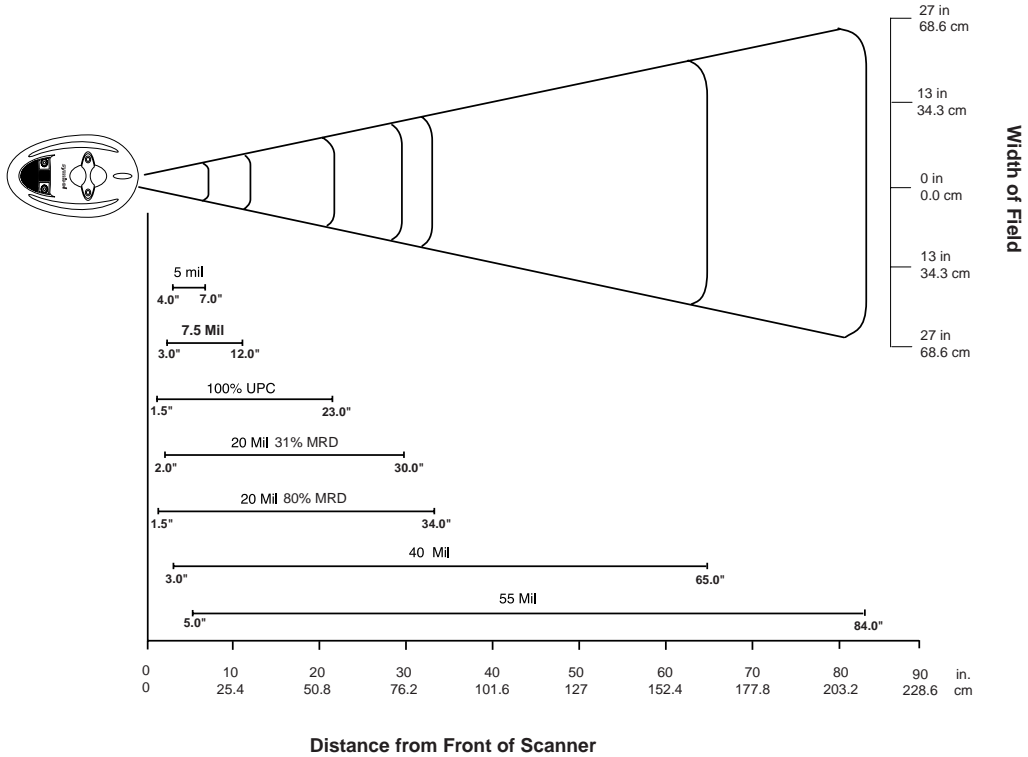


Figure D-2. P 300FZY Decode Zone

Note: The measurements above are for 6.6 mil, 100 character PDF bar code and 15 mil, 64 character PDF bar code.

P 300PRO I-D Decode Zone

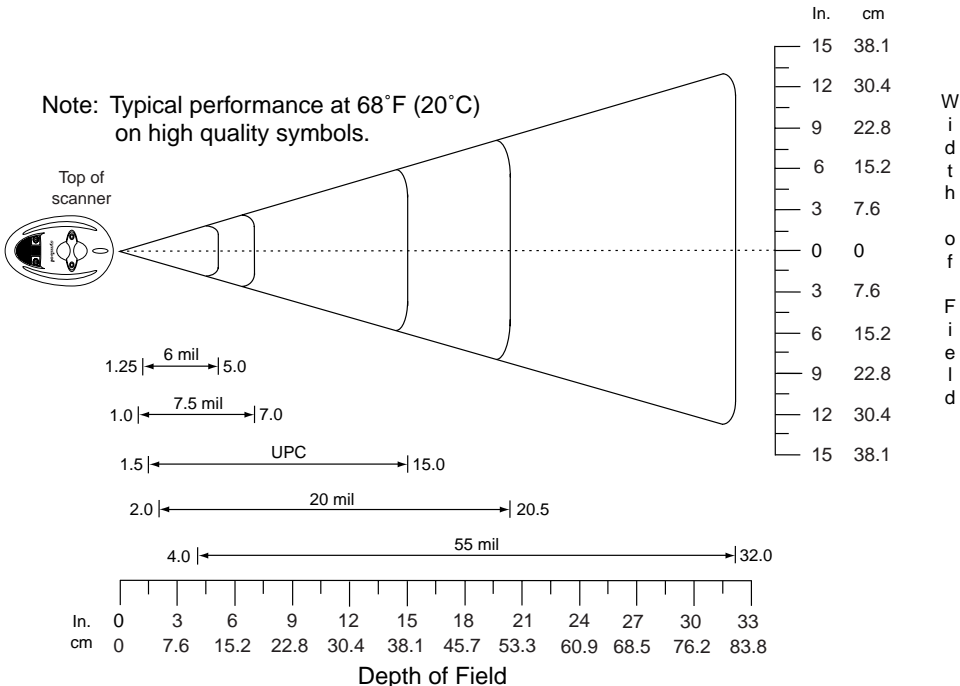
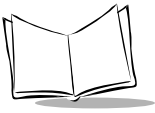


Figure D-3. P 300PRO I-D Decode Zone



P 300PRO 2-D Decode Zone

Note: Typical performance at 68°F (20°C)
on high quality symbols.

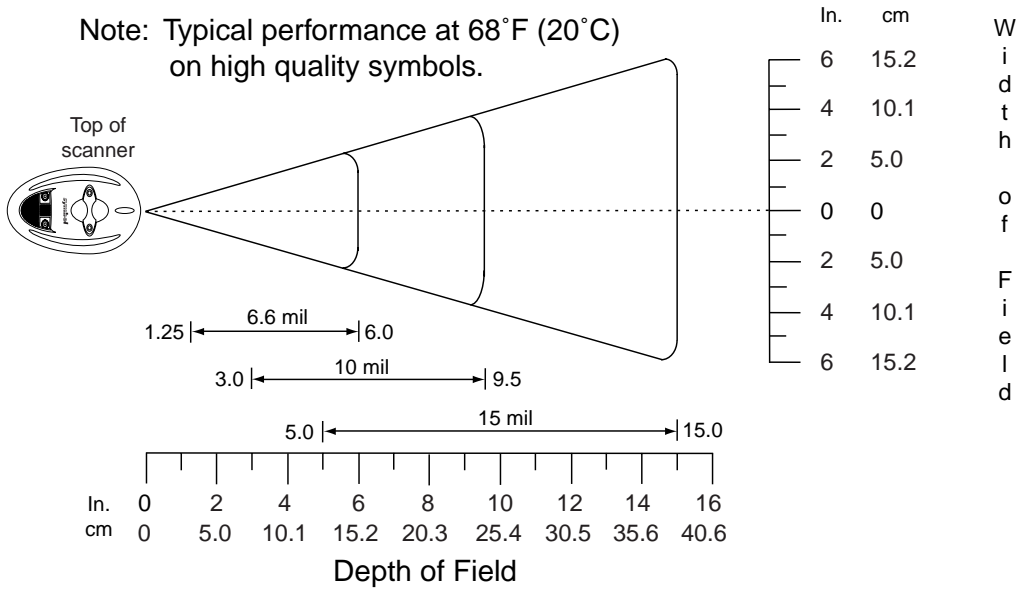
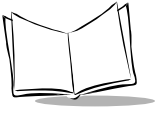


Figure D-4. P 300PRO 2-D Decode Zone

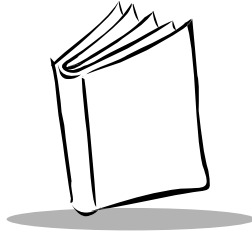
Pin-outs

Table D-2. Pin-outs

Pin	P 300
1	Reserved
2	Power
3	Ground
4	Synapse Data
5	Synapse Clock
6	RxD
7	TxD
8	DTR
9	CTS
10	RTS



P 300STDIFZY/PRO Scanner Product Reference Guide



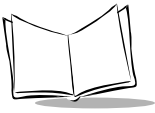
Glossary

APERTURE	The opening in an optical system defined by a lens or baffle that establishes the field of view.
ASCII	American Standard Code for Information Interchange. A 7 bit-plus-parity code representing 128 letters, numerals, punctuation marks, and control characters. It is a standard data transmission code in the U.S.
ASYMMETRIC WIDTH GROWTH	Non-uniform growth of elements in a printed symbol.
AUTODISCRIMINATION	The ability of an interface controller to determine the code type of a scanned bar code. After this determination is made, the information content can be decoded.
AVERAGE BAR WIDTH GROWTH	Average deviation of bars from nominal widths over the entire symbol.
BAD CHECK DIGIT	Error message resulting from failure of the check digit to calculate properly.
BAD DATA CHARACTER	Error message caused by failure of one or more data characters to decode properly.
BAD PRINT CONTRAST	Error message due to lack of contrast between the background and the bars of the symbol.
BAR	The dark element in a printed bar code symbol.



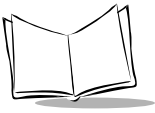
BAR CODE DENSITY	The number of characters represented per unit of measurement (e.g., characters per inch in one-dimensional symbologies, characters per square inch in PDF417).
BAR HEIGHT	The dimension of a bar measured perpendicular to the bar width.
BAR WIDTH	Thickness of a bar measured from the edge closest to the symbol start character to the trailing edge of the same bar.
BAR WIDTH DEVIATION	Increase or decrease in bar width as compared with nominal bar width.
BAUD RATE	A measure of the data flow or number of signaling events occurring per second. When one bit is the standard "event," this is a measure of bits per second (bps). For example, a baud rate of 50 means transmission of 50 bits of data per second.
BIDIRECTIONAL READING CAPABILITY	The ability to decode a symbol successfully by reading in complementary (opposite) directions across bars and spaces.
BIT	Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its "meaning."
BUFFER	An area of memory allocated for data storage. In this context, a buffer's data storage capacity is needed when data can flow into the device more quickly than the device can process that data. Buffering the data preserves it until it can be processed.
BYTE	On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory can be used to store one ASCII character.
CHARACTER	A pattern of bars and spaces which either directly represents data or indicates a control function, such as a number, letter, punctuation mark, or communications control contained in a message.

CHARACTER SET	Those characters available for encodation in a particular bar code symbology.
CHECK DIGIT	A digit used to verify a correct symbol decode. The scanner inserts the decoded data into an arithmetic formula and checks that the resulting number matches the encoded check digit. Check digits are required for UPC and Code 128 but are optional for other symbologies. Using check digits decreases the chance of substitution errors when a symbol is decoded.
CLUSTER	One of three subsets of mutually exclusive codeword definitions within PDF417.
CODABAR	A discrete self-checking code with a character set consisting of start/stop characters (A B C D or * T N E), digits 0 to 9, and these additional characters: (- \$: / , +).
CODE	Set of unambiguous rules specifying the way in which data may be represented.
CODEWORD	In PDF417, a single group of bars and spaces (4 bars and 4 spaces, for a total of 17 module widths) which represents one or more numbers, letters, or other symbols.
CODEWORD PD (CODEWORD PERCENT DECODE)	Within a PDF417 symbol, the percentage of codewords which decoded successfully; the number of good codewords divided by the total number of codewords (data codewords plus error correction codewords).
CODE LENGTH	Number of data characters in a bar code between the start and stop characters, not including those characters.
CODE 128	A high density symbology which allows the interface controller to encode all 128 ASCII characters without adding extra symbol elements.
CODE 3 OF 9 (CODE 39)	A versatile and widely used alphanumeric bar code symbology with a set of 43 character types, including all uppercase letters, numerals from 0 to 9, and 7 special characters (- . / + % \$ and space). The code name is derived from the fact that 3 of 9 elements representing a character are wide, while the remaining 6 are narrow.



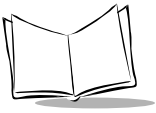
CONTINUOUS CODE	A bar code or symbol in which all spaces within the symbol are parts of characters. There are no intercharacter gaps in a continuous code. The absence of gaps allows for greater information density.
COUNTRY FLAG	In EAN-8 and EAN-13 codes, two or three digits which appear immediately following the left guard bar pattern.
DEAD ZONE	An area within a scanner's field of view, in which specular reflection may prevent a successful decode.
DECODE	To recognize a bar code symbology (e.g., UPC/EAN) and then analyze the content of the specific bar code scanned. To translate the bar/space pattern into defined characters within a defined symbology.
DECODE ALGORITHM	A decoding scheme that converts pulse widths into data representation of the letters or numbers encoded within a bar code symbol.
DEPTH OF FIELD	The range between minimum and maximum distances at which a scanner can read a symbol with a certain minimum element width.
DISCRETE CODE	A bar code or symbol in which the spaces between characters (intercharacter gaps) are not part of the code (e.g., Code 39).
DISCRETE 2 OF 5	A binary bar code symbology representing each character by a group of five bars, two of which are wide. The location of wide bars in the group determines which character is encoded; spaces are insignificant. Only numeric characters (0 to 9) and START/STOP characters may be encoded.
EAN	European Article Number. This European/International version of the UPC provides its own coding format and symbology standards. Element dimensions are specified metrically. EAN is used primarily in retail. Main variants are EAN-8 and EAN-13.
EDGE ROUGHNESS	Edge irregularities as compared with a nominal bar edge.
ELEMENT	Generic term for a bar or space.

ENCODED AREA	Total linear dimension occupied by all characters of a code pattern, including start/stop characters and data.
ERROR CORRECTION	In addition to error detection, the recovery capability of PDF417 over missing, destroyed, or misdecoded codewords. Error correction capability is based on the level of security (0 - 8) selected when the PDF417 label is printed.
EXTRANEIOUS INK	Ink in a scan area not intended to be there (i.e., tracking and splatter).
FIRST READ RATE	Percentage of correct readings obtainable by one pass of a scanning device over a bar code.
FLASH	Derived from EEPROM, this is a type of memory that holds its content without power but must be erased in bulk — or in a “flash.” Typically, these memory chips are less expensive and provide higher bit densities.
GUARD BARS	The start, stop, and center delimiting bars of UPC and EAN symbols.
HOST COMPUTER	A computer that serves other terminals in a network, providing such services as computation, database access, supervisory programs, and network control.
INTERCHARACTER GAP	The space between two adjacent bar code characters in a discrete code.
INTERLEAVED BAR CODE	A bar code in which characters are paired together, using bars to represent the first character and the intervening spaces to represent the second.
INTERLEAVED 2 OF 5	A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded.



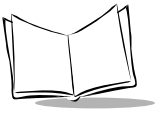
LASER	An acronym for Light Amplification by Stimulated Emission of Radiation. The laser is an intense light source. Light from a laser is all the same frequency, unlike the output of an incandescent bulb. Laser light is typically coherent and has a high energy density.
LASER SPOT SIZE	The diameter of the spot of laser light scanning the bar code, as measured at a given distance from the bar code. Smaller spot sizes yield higher resolution but poorer depth of focus.
LED INDICATOR	A semiconductor diode (LED - Light Emitting Diode) used as an indicator, often in digital displays. The semiconductor uses applied voltage to produce light of a certain frequency determined by the semiconductor's particular chemical composition.
MIL	1 mil = 1 thousandth of an inch.
MINIMUM REFLECTANCE DIFFERENCE (MRD)	The difference in percentage between light reflected from spaces (R_S) and light reflected from bars (R_B). $MRD = \%R_S - \%R_B$.
MISREAD (Misdecode)	A condition which occurs when the data output of a reader or interface controller does not agree with the data encoded within a bar code symbol.
MODULE	The narrowest bar or space (unit of measure) in a code. The term is used by the Uniform Code Council in its description of UPC/EAN code; it is also used in the description of Code 128. Contiguous modules are used to form bars or spaces which are wider than one unit.
MODULE ASPECT RATIO	The ratio of height to width of the narrowest bar or space, or unit of measure, in a bar code.
NANOMETRE	A unit of measure used to define the wavelength of light. Equal to 10^{-9} metre.
NOMINAL	The exact (or ideal) intended value for a specified parameter. Tolerances are specified as positive and negative deviations from this value.

NOMINAL SIZE	Standard size for a bar code symbol. Most UPC/EAN codes can be used over a range of magnifications (e.g., from 0.80 to 2.00 of nominal).
NUMBER SYSTEM CHARACTER	In the UPC/EAN code used in a retail application, the mandatory, first encoded character, after the left guard bars. The corresponding human readable character identifies the coded character and appears at the bottom left-hand margin of the symbol. The assigned system number corresponds to a usage category for the bar coded item.
ONE-DIMENSIONAL SYMBOLOGY	Symbologies which encode data only in a linear or horizontal dimension (X-dimension); the symbol's vertical height (Y-dimension) is redundant (e.g., UPC/EAN, Code 39).
OPACITY	The capacity for material to interfere with transmission of light.
OVERHEAD	The number of characters required for start, stop, and checking for a given symbol (in PDF417, also left and right row indicators and error correction codewords). For example, a one-dimensional symbol requiring start/stop and two check characters contains four characters of overhead. Thus, to encode three data characters, seven characters are required.
PARAMETER	A variable that can have different values assigned to it.
PARITY TYPE	A parity check bit is the most significant bit of each ASCII coded character. The parity should be set to help detect transmission errors. The parity should be set to match that of the receiving device. If even parity is selected, the parity bit has a value (0 or 1) to ensure that an even number of 1 bits are contained in the coded character. If odd parity is selected, the parity bit will have a value (0 or 1) to ensure that an odd number of 1 bits are contained in the coded character. If 0 parity is selected, the parity bit always will be set to 0. If 1 parity is selected, the parity bit always will be set to 1.



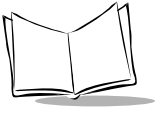
PDF417	A two-dimensional, or stacked, bar code symbology which can encode over one kilobyte of data per label and which represents data in the form of codewords (values 0 - 928). Each codeword consists of four bars and four spaces, for a total of 17 module widths; modules vary in width from one to six element widths. The symbology permits encoding up to 30 data columns and from 3 to 90 data rows. For ease of reading while still maintaining high data density, codewords are encoded in three mutually-exclusive encodation sets, or clusters, with the same cluster repeating sequentially each third row.
PERCENT DECODE	The average probability that a single scan of a bar code would result in a successful decode. In a well-designed bar code scanning system, that probability should approach near 100%.
PRINT CONTRAST SIGNAL (PCS)	Measurement of the contrast (brightness difference) between the bars and spaces of a symbol. A minimum PCS value is needed for a bar code symbol to be scannable. $PCS = (RL - RD) / RL$, where RL is the reflectance factor of the background and RD the reflectance factor of the dark bars.
PROM	Acronym for Programmable Read Only Memory. An integrated circuit which can be programmed through special processes and accessed at random during normal operation. Reprogramming is possible, but only through processes such as ultraviolet light erasing and electrical rewriting of data.
PROTOCOL	For a specific signaling type, a set of recognized rules governing the format and timing of message exchange. Between data communications devices, this includes an exchange of predetermined signals arranged for both establishing connection and for disconnecting.
QUIET ZONE	A clear space, containing no dark marks, which precedes the start character of a bar code symbol and follows the stop character.
REFLECTANCE	Amount of light returned from an illuminated surface.

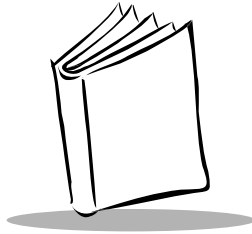
RESOLUTION	The narrowest element dimension which can be distinguished by a particular reading device or printed with a particular device or method.
ROW INDICATORS	To help synchronize a PDF417 symbol's structure, codewords which collectively indicate which row a particular one is, which is the left and right side of that row, how many rows are in the symbol, what security level is encoded in the symbol, and how many data columns are in the rows. Left Row Indicators occur in each row immediately after the Start pattern; Right Row Indicators occur in each row immediately before the Stop pattern.
SCAN	Search for a symbol to be optically recognized.
SCAN AREA	Area intended to contain a symbol.
SCANNER	<p>An electronic device used to scan bar code symbols and produce a digitized pattern that corresponds to the bars and spaces of the symbol. Its three main components are:</p> <ol style="list-style-type: none">1. Light source (laser or photoelectric cell) - illuminates a bar code.2. Photodetector - registers the difference in reflected light (more light reflected from spaces).3. Signal conditioning circuit - transforms optical detector output into a digitized bar pattern.
SELF-CHECKING CODE	A symbology that uses a checking algorithm to detect encoding errors within the characters of a bar code symbol.
SHOW-THROUGH	The generally undesirable property of a substrate that permits underlying markings to be seen.
SPACE	The lighter element of a bar code formed by the background between bars.
SPECULAR REFLECTION	The mirror-like reflection of light from a surface, which can "blind" a scanner.
SPOT SIZE	Size of the scanning aperture.
SPOTS	The presence of ink in a bar code's spaces or clear areas. These generally reduce the percent decode.



START/STOP CHARACTER	A pattern of bars and spaces that provides the scanner with start and stop reading instructions and scanning direction. The start and stop characters are the first and last encoded characters of a bar code.
SUBSTRATE	A foundation material on which a substance or image is placed.
SUBSTRATE SCATTERING	Optical phenomenon which causes bars to appear larger and spaces narrower than they are actually printed. It is caused by the scattering of incident light rays within the medium.
SYMBOL	A scannable unit that encodes data within the conventions of a certain symbology, usually including start/stop characters, quiet zones, data characters, and check characters.
SYMBOL ASPECT RATIO	The ratio of symbol height to symbol width.
SYMBOL HEIGHT	The distance between the outside edges of the quiet zones of the first row and the last row.
SYMBOL LENGTH	Length of symbol measured from the beginning of the quiet zone (margin) adjacent to the start character to the end of the quiet zone (margin) adjacent to a stop character.
SYMBOLOLOGY	The structural rules and conventions for representing data within a particular bar code type (e.g. UPC/EAN, Code 39).
SYMMETRIC BAR WIDTH GROWTH	Uniform growth of bars evenly distributed.
TOLERANCE	Allowable deviation from the nominal bar or space width.
TWO-DIMENSIONAL SYMBOLOLOGY	Designed for high information density and higher encoding capability than one-dimensional bar codes, a symbology which encodes data in both the horizontal (X-dimension) and vertical dimensions, usually in a “stacked” or multi-row arrangement.
UPC	Universal Product Code. A relatively complex numeric symbology. Each character consists of two bars and two spaces, each of which can be any of four widths. The standard symbology for retail food packages in the United States.

VISIBLE LASER DIODE (VLD)	A solid state device which produces visible laser light. Laser light emitted from the diode has a wavelength of 670 to 680 nanometers.
VOID	Absence of ink within printed bars.
X-DIMENSION	Width of the narrowest element (bar or space) in a bar code symbol.
Y-DIMENSION	Element height, as applied to a two-dimensional symbology, which must equal or exceed a required minimum.
ZERO-SUPPRESSED CODE	A version of UPC/EAN which reduces the number of characters in the code. The resulting code combines the manufacturer's code and the product's code of Version A in a retail application.





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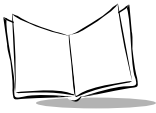
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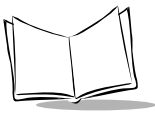
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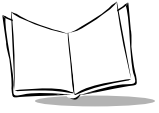
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P 300STDIFZY/PRO Scanner Product Reference Guide

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