Welch Allyn®

SCANTEAM® 3400 PDF

User's Guide

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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Note: To maintain compliance with FCC Rules and Regulations, cables connected to this device must be *shielded* cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

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Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Statement of Agency Compliance

CE

The CE mark on the product indicates that the system has been tested to and conforms with the provisions noted within the 89/336/EEC Electromagnetic Compatibility Directive (Class A) and the 73/23/EEC Low Voltage Directive.

Welch Allyn shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE marked and does not comply with the Low Voltage Directive.

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Introduction

SCANTEAM 3400PDF scanners are high performance devices for reading PDF417 and linear bar codes. They are well suited for a variety of applications with integrated decoding and keyboard wedge, RS−232, or wand emulation outputs available.

The scanners can be programmed to customize the set−up parameters and tailor the data output to suit application needs.

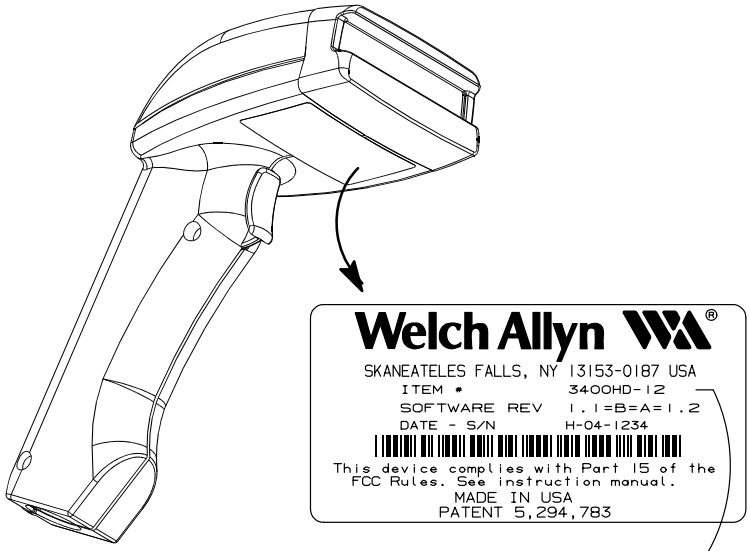
The scanner can be programmed for many communications parameters and input/output protocols compatible to the host. Programming is accomplished by using the single programming bar codes in this menu. Use this chapter to program your scanner to work with your terminal/computer.

This programming section contains the following:

- Getting Started Information
- Plug and Play Selections
- Terminal Interface Selections
- Main Menu Selections

Getting Started

Scanner Identification



SCANTEAM 3400PDF Identification Label

Model Number 3400HD–12
❶ ❷❸

Engine Type ❶
HD = High Density
LR = Long Range

AutoTrigger Option ❷
0 = No Trigger – Always in Hands Free AutoTrigger Mode
1 = Manual Trigger – Can be programmed for AutoTrigger Mode

Interface Option ❸				
Option	Wand Emulation	TTL RS–232	True RS–232	Keyboard Wedge
2	•	•		Various
3			•	

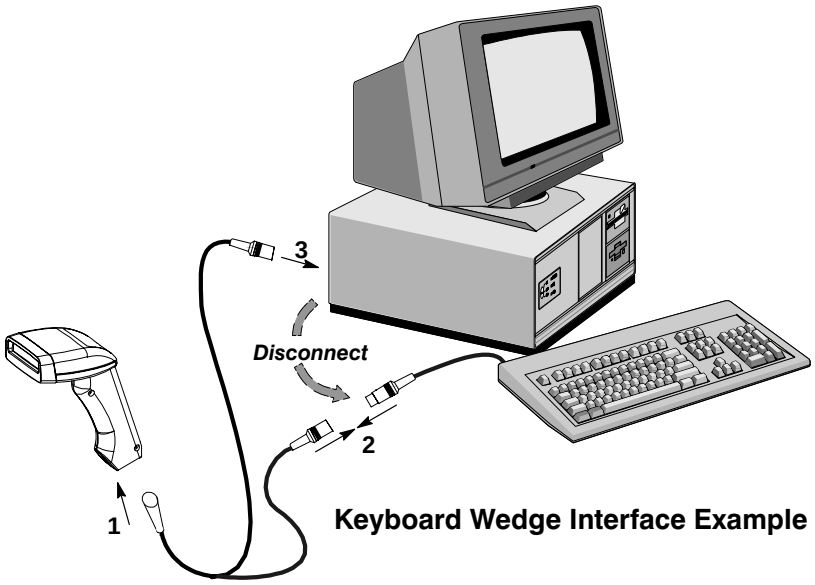
Getting Started

Connecting the Scanner

Install the scanner by following the steps shown below:

❶ Turn off the power to the host system.

❷ Connect the interface cable to the scanner and to the terminal/computer.



Keyboard Wedge Interface Example

(Cable, Keyboard, and Terminal will vary.)

❸ Turn on the power to the host system.

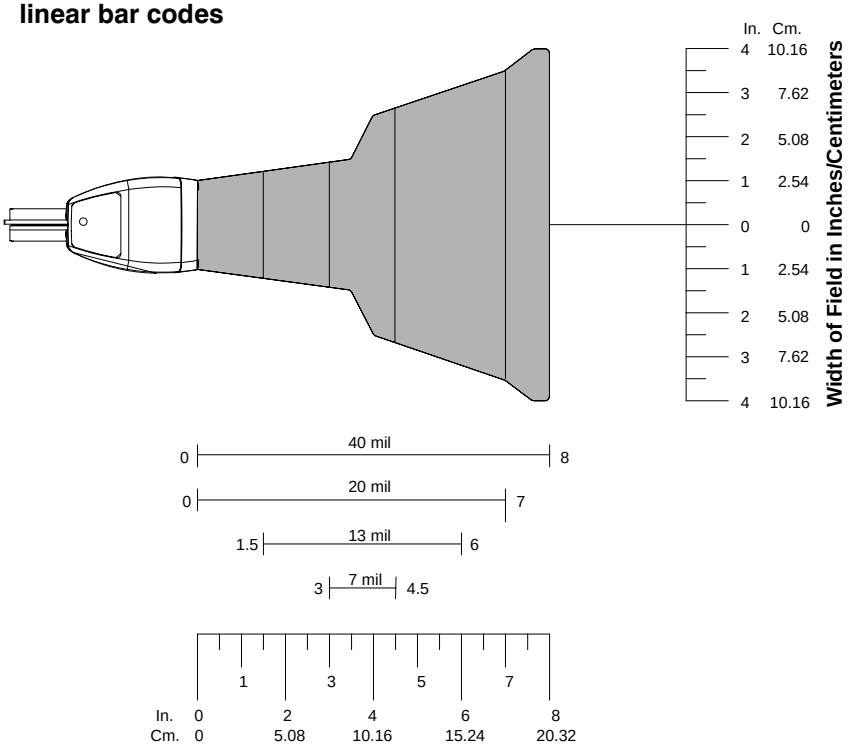
❹ Program your scanner to work with your terminal or computer by scanning the Terminal Set–Up Codes. Either scan the Plug and Play codes (Page 1–7) or use the Supported Terminal list (Pages 1–9) to determine your terminal's Terminal ID.

With Plug and Play programming, you connect the scanner and scan *only* one bar code and required prefixes and suffixes to program the scanner to work with a designated interface.

❺ To determine if your scanner is set up correctly, scan one of the sample bar codes on the back cover of this guide.

Scan Maps

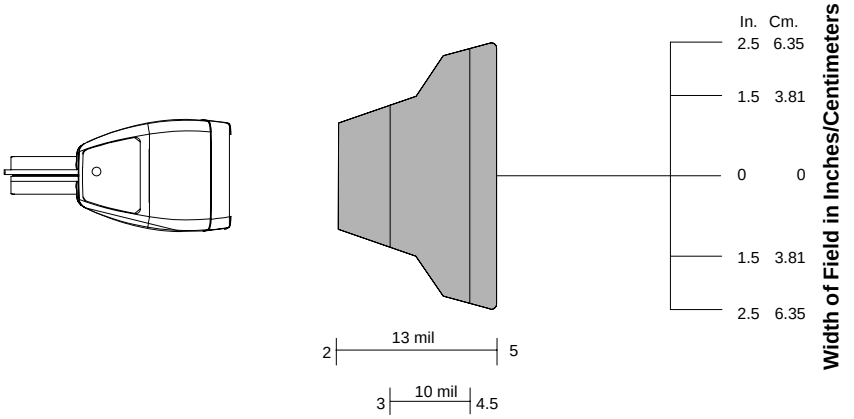
Typical Performance at 20˚C for SCANTEAM 3400PDF/LR using linear bar codes

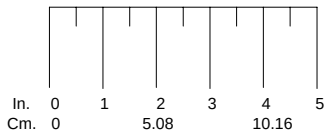


Typical Depth of Field in Inches/Centimeters

Scan Maps

Typical Performance at 20˚C for SCANTEAM 3400PDF/LR using PDF bar codes

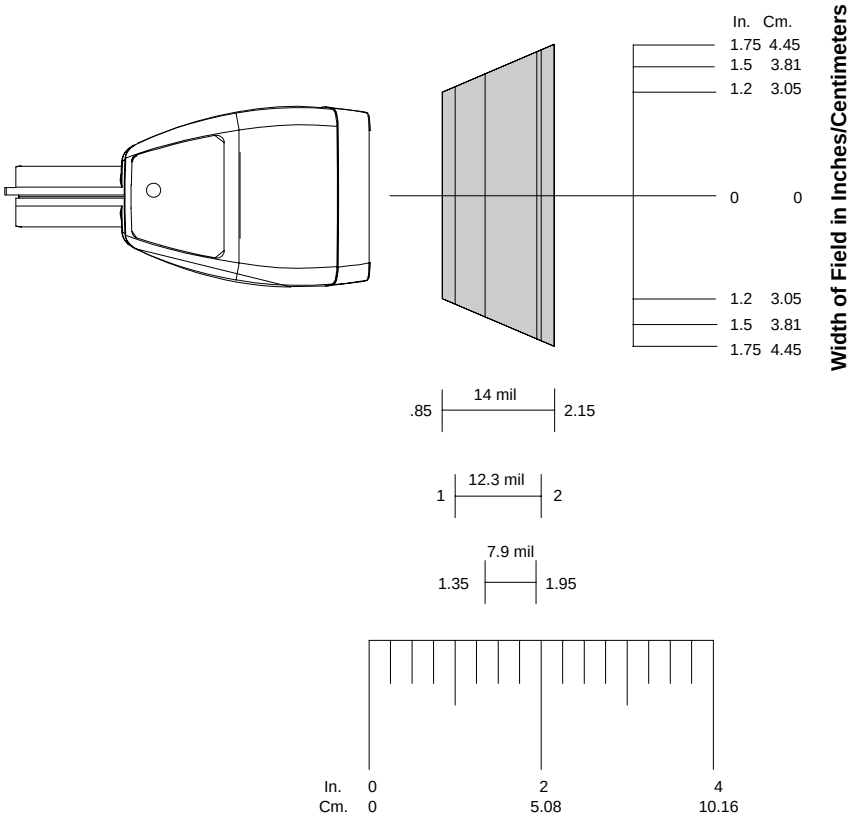




Typical Depth of Field in Inches/Centimeters

Scan Maps

Typical Performance at 20˚C for SCANTEAM 3400PDF/HD using both PDF and linear bar codes



Typical Depth of Field in Inches/Centimeters

Plug and Play Selections

IBM PC Interface

✶ IBM PC AT and Compatibles Interface
(also PS/2 30-286, 50, 55SX, 60, 70, 70-061, 70-121, 80)
(Terminal ID 03)

IBM PS/2 and Compatibles Interface
(for PS/2 25, 30 models)
(Terminal ID 02)

*These bar codes **also** program a carriage return (CR) suffix.*

✶ Indicates default selection.

RS–232 Interface

RS-232 Interface
(Terminal ID 00)

*The bar code above **also** programs the following parameters:*

Programmable Option	**Setting**
Baud Rate	9600 bits per second
Parity	even
Data Format	7 data bits, parity bit, 1 stop bit (8 Bit Data)

Plug and Play Selections

Wand Emulation Interface

Wand Emulation (Code 39 Format) Interface
(Terminal ID 61)

Wand Emulation (Same Code Format) Interface †
(Terminal ID 64)

† Supports Code 39, UPC, EAN, Code 128, Interleaved 2 of 5, and Codabar. All other linear codes output as Code 39. PDF417 is output as Code 128.

*These bar codes **also** program the following parameters:*

Programmable Option	**Setting**
Transmission Rate	20 inches per second
Output Polarity	Black High

End of "Plug and Play" programming...

Terminal Interface Selections

If your terminal is not one of the Plug and Play options, you must program one of the terminals listed below. To program the terminal interface, scan the Program Terminal Interface bar code below, then scan the appropriate two digit Terminal I.D. code from the Programming Chart on the next page.

Program Terminal Interface

Supported Terminals

Terminal	Model(s)	Terminal I.D.
Esprit	200, 400	05
Heath Zenith	PC	90
HP	Vectra QS−16	03
IBM	PS/2 25, 30	02
IBM	AT, PS/2 30−286, 50, 55SX, 60, 70, 70−061, 70−121, 80	03
IBM 102 Key	3151, 3161, 3162, 3163, 3191, 3192, 3196, 3197, 3471, 3472, 3476, 3477	06
IBM 122 Key	3179−1, 3191, 3192, 3471, 3472, 3194	07
IBM 122 Key	3196, 3197, 3476, 3477, 3486, 3488, 3482	08
IBM Compatible	Japan 106 Key, AT Style	B6
IBM PC	Japan Workstation	B7
IDEAS		08
ITT	9271	07
Lee Data	IIS	07
NEC	NEC 98XX Series	B8
Olivetti	240, 250, 290, 380, P500	03
RS232 TTL		00
Telex 88 Key	078A, 078, 79, 80, 191, 196, 1191, 1192, 1471, 1472, 1476	25
Telex 102 Key	078A, 078, 79, 80, 191, 196, 1191, 1192, 1471, 1472, 1476	45
Telex 122 Key	078A, 078, 79, 80, 191, 196, 1191, 1192, 1471, 1472, 1476	46
Wand Emulation	Code 39 format	61
Wand Emulation	Same code format	64

Programming Chart


0


1


2


3


4


5


6


7


8


9


A


B


C


D


E


F

Main Menu Selections

Reset Factory Settings

Scanning the ***Factory Default Settings*** bar code resets the scanner to the original factory settings, clearing any programming changes you may have made.

Factory Default Settings

Status Check

Scan the ***Show Software Revision*** bar code to transmit the software revision level to the host terminal. The software revision will be printed out as "WA34310XXX." (The "X's" will vary according to the firmware ID.)

Show Software Revision

Introduction

Use this chapter to program the output parameters for the Hand-Held Scanner.

This programming section contains the following menuing selections:

- Prefix and Suffix
- Output
- Serial Communication (RS-232)
- Data Formatter

Prefix / Suffix Selections

Quick Suffix Selections

If your application requires it, scan the ***Program Carriage Return Suffix*** bar code to program a carriage return (CR) suffix for all enabled bar code symbologies. **Scanning this bar code clears all previously programmed prefixes and suffixes.**

Scan the ***Clear Bar Code Suffix*** bar code to disable (or clear) all previously programmed prefixes and suffixes (e.g., the carriage return suffix).

Program Carriage Return Suffix

Clear Bar Code Suffix

Prefix / Suffix Selections

Primary Interface Prefix and Suffix

The scanner transmits a decoded message after every successful bar code read. Prefix and Suffix characters are data characters you may assign to be sent before and after the transmitted bar code data.

Transmitted data frame –>	Prefix	Bar Code Message	Suffix

Characters for the Prefix and Suffix are selected by their hexadecimal ASCII value, up to 12 characters each. Prefix and Suffix characters may be sent for a specific symbology, or may be sent with all bar code scans.
Default Prefix = none. Default Suffix = none.

Programming Steps to Add a Primary Interface Prefix / Suffix:

❶ To add a Prefix, scan the ***Add Primary Prefix*** programming bar code.
To add a Suffix, scan the ***Add Primary Suffix*** programming bar code.

❷ Refer to the Symbology Chart (page 2−6) to find the Hex value that represents the symbology(s) you want transmitted with one or more Prefixes or Suffixes. Scan the two digits on the Programming Chart on page 2−7.

❸ Refer to the Hex ASCII Chart (page 2−6) to find the Hex value that represents the ASCII characters you wish to transmit with the bar code data. Use the Programming Chart to scan the alphanumeric combination that represents the ASCII characters.

❹ To complete Prefix / Suffix programming, scan either:

- ***Save Current Prefix or Suffix Changes***† programming bar code. This exits, saving the Prefix / Suffix selections you just assigned.
- ***Discard Current Prefix or Suffix Changes*** programming bar code. This exits without changing the Prefix / Suffix.

† You may also start scanning bar codes; your Prefix / Suffix selections will be saved.

Programming Steps to Clear (or Delete) One Prefix / Suffix Entry:

❶ To clear the Prefix entry for a specific symbology, scan the ***Clear One Primary Prefix*** programming bar code.
To clear the Suffix entry for a specific symbology, scan the ***Clear One Primary Suffix*** programming bar code.

❷ Refer to the Symbology Chart to find the Hex value representing the symbology's entry you want cleared. Scan the two digits on the Programming Chart.

❸ You don't need to scan ***Save Current ... Changes*** or ***Discard Current ... Changes*** programming bar codes to complete programming.

Other Programming Selections: Scanning the ***Clear All Primary Prefixes*** or ***Clear All Primary Suffixes*** bar code deletes all Primary Prefix or Suffix selections. You don't need to scan the ***Save Current ... Changes*** or ***Discard Current ... Changes*** programming bar code to complete programming.

Note: *Prefix / Suffix programming examples may be found on page 2−5.*

Prefix / Suffix Selections

Primary Interface Prefix Selection

Add Primary Prefix ‡

Clear All Primary Prefixes

Clear One Primary Prefix ‡

Primary Interface Suffix Selection

Add Primary Suffix ‡

Clear All Primary Suffixes

Clear One Primary Suffix ‡

Exit Selection for Prefix / Suffix

Save Current Prefix or Suffix Changes

Discard Current Prefix or Suffix Changes

‡ One or more two-digit numbers are required after scanning this programming bar code. Please scan your selection on the Programming Chart on page 2–7.

Prefix / Suffix Selections

Prefix and Suffix Examples

Example 1: Add Suffix for Specific Symbology

You want to send a CR (carriage return) Suffix for UPC only.

- Scan the ***Add Suffix*** Suffix Selection bar code.
- The Symbology Chart indicates that the Hex value of UPC is "63". Scan **6** and **3** on the Programming Chart on page 2–7.
- A "CR" is equivalent to "0D" (see the Hex ASCII Chart). Scan **0** and **D** on the Programming Chart.
- Scan the ***Save Current Suffix Changes*** Exit Selection bar code.

Example 2: Add Suffix for *ALL* Symbologies

You want to send a CR (carriage return) Suffix for all symbologies.

- Scan the ***Add Suffix*** Suffix Selection bar code.
- The Symbology Chart indicates that the Hex value for All Symbologies is "99". Scan **9** and **9** on the Programming Chart on page 2–7.
- A "CR" is equivalent to "0D". Scan **0** and **D** on the Programming Chart.
- Scan the ***Save Current Suffix Changes*** Exit Selection bar code.

Example 3: Add Prefix for Specific Symbology / Suffix for *ALL* Symbologies

You want to send a HT (tab) Prefix for UPC only and a CR / LF (carriage return / line feed) Suffix for all symbologies.

- Scan the ***Add Prefix*** Prefix Selection bar code.
- The Symbology Chart indicates that the Hex value of UPC is "63". Scan **6** and **3** on the Programming Chart on page 2–7.
- An "HT" is equivalent to "09". Scan **0** and **9** on the Programming Chart.
- Scan the ***Add Suffix*** Suffix Selection bar code.
- The Symbology Chart indicates that the Hex value for All Symbologies is "99". Scan **9** and **9** on the Programming Chart.
- A "CR" is equivalent to "0D" and an "LF" is "0A". Scan **0**, **D**, **0**, and **A** on the Programming Chart.
- Scan the ***Save Current Prefix / Suffix Changes*** Exit Selection bar code.

Example 4: To Clear a Specific Prefix Entry

You've programmed the scanner to send a CR / LF (carriage return / line feed) Prefix for all symbologies (Hex value, 99). This is one Prefix entry. You've also programmed a "*#*" Prefix for UPC (Hex, 63). You decide that you want to clear the UPC entry, but not the Prefix entry for all symbologies.

- Scan the ***Clear Specific Prefix*** Prefix Selection bar code.
- The Symbology Chart indicates that the Hex value for UPC is "63". Scan **6** and **3** on the Programming Chart on page 2–7.

Prefix / Suffix Selections

Symbology Chart

Symbology	Code ID †	Hex Value	Symbology	Code ID †	Hex Value
Codabar	a	61	Code 93	i	69
Code 39	b	62	Code 128	j	6A
UPC	c	63	Matrix 2 of 5	m	6D
EAN	d	64	Plessey	n	6E
Interleaved 2 of 5	e	65	*PDF*	r	72
Code 2 of 5	f	66	*All Symbologies*		99
MSI	g	67	*(Prefix/Suffix Programming **only**.)*		
Code 11	h	68			

Hex to ASCII Conversion Chart

ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex
NUL	00	DLE	10	SP	20	0	30	@	40	P	50	‘	60	p	70
SOH	01	DC1	11	!	21	1	31	A	41	Q	51	a	61	q	71
STX	02	DC2	12	”	22	2	32	B	42	R	52	b	62	r	72
ETX	03	DC3	13	#	23	3	33	C	43	S	53	c	63	s	73
EOT	04	DC4	14	$	24	4	34	D	44	T	54	d	64	t	74
ENQ	05	NAK	15	%	25	5	35	E	45	U	55	e	65	u	75
ACK	06	SYN	16	&	26	6	36	F	46	V	56	f	66	v	76
BEL	07	ETB	17	’	27	7	37	G	47	W	57	g	67	w	77
BS	08	CAN	18	(	28	8	38	H	48	X	58	h	68	x	78
HT	09	EM	19	)	29	9	39	I	49	Y	59	i	69	y	79
LF	0A	SUB	1A	*	2A	:	3A	J	4A	Z	5A	j	6A	z	7A
VT	0B	ESC	1B	+	2B	;	3B	K	4B	[	5B	k	6B	{	7B
FF	0C	FS	1C	,	2C	<	3C	L	4C	\	5C	l	6C	|	7C
CR	0D	GS	1D	–	2D	=	3D	M	4D	]	5D	m	6D	}	7D
SO	0E	RS	1E	.	2E	>	3E	N	4E	^	5E	n	6E	~	7E
SI	0F	US	1F	/	2F	?	3F	O	4F	_	5F	o	6F	DEL	7F

Note: *Prefix / Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.*

Note: *Adding a Prefix or a Suffix appends that Prefix / Suffix to any existing entries for the symbology(s) you've chosen. For example, if you've already programmed and saved a CR / LF (carriage return / line feed) and add a "#" Prefix, the "#" will be sent after the CR / LF.*

*If you add a Prefix / Suffix but want existing entries cleared, you'll need to use the **Clear Specific Prefix / Suffix** programming selection first. Then use the **Add Prefix / Suffix** programming selection to program your new Prefix / Suffix.*

Programming Chart


0


1


2


3


4


5


6


7


8


9


A


B


C


D


E


F

Output Selections

✶ *Default All Output Settings* ✶

Beeper Volume Selection

Off

Low

Medium

✶ High

Ticking/Scanning Progress Selection

When enabled, the scanner will emit a ticking sound as it scans a PDF417 symbol. The rate of ticking is proportional to the rate of data collection. When disabled, you will not hear a ticking sound while scanning a PDF417 symbol. Default = Enable.

✶ Enable

Disable

Humming/Busy Decoder Selection

When enabled, the scanner will emit a humming sound while it is decoding a PDF417 symbol. When disabled, you will not hear a humming sound while decoding a PDF417 symbol. Default = Enable.

✶ Enable

Disable

Output Selections

Output Delays Selection

This selection provides control of the time delays between data output by the scanner to the host terminal. The actual delay is 5 milliseconds multiplied by the programmed value (00 – 99). *Default = 00.*

Intercharacter Delay is the time delay between data characters output by the scanner to the host terminal.

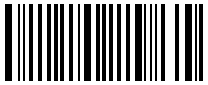
Interfunction Delay is the time delay between function (key) codes output by the scanner to the host terminal.

Intermessage Delay is the time delay between data messages or records output by the scanner to the host terminal.

Example: You need a 45 millisecond delay. Scan the ***Intercharacter Delay*** bar code. Then scan "0" and "9" on the Programming Chart (09 x 5ms = 45 ms).

Intercharacter Delay (x5mS) ‡

Interfunction Delay (x5mS) ‡



Intermessage Delay (x5mS) ‡

‡ A two-digit number is required after scanning this programming bar code. Please scan your selection on the Programming Chart on page 2–7.

Output Selections

AutoTrigger Selection

When enabled, this programming selection allows auto-triggering with the optional Scan Stand. The Scan Stand provides hands-free operation in any application where a great number of bar code entries is required.

✶ Manual Trigger

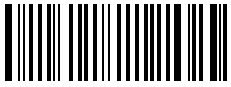
AutoTrigger

Reread Delay Selection

This selection allows you to set a time period that must pass before the scanner can read the *same* bar code again. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads at POS (point of sale) terminals. Use shorter delays in applications where repetitive bar code scanning is required.

✶ Low (175 milliseconds)

Medium (450 milliseconds)



High (1.0 second)

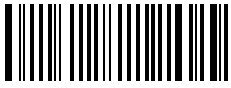
Extra High (2.0 seconds)

Good Read Delay Selection

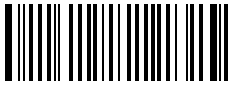
This selection allows you to set a time period that must pass before the scanner can read another bar code. Some terminals require a slower read rate. By setting a good read delay, you can ensure a good read.

✶ None

Low (500 milliseconds)



Medium (1.0 second)



High (1.5 second)

Output Selections

Scan Voting Selection

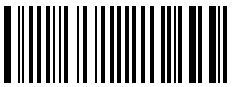
When Scan Voting is enabled, the scanner requires three (3) identical, consecutive scans before the bar code data will be accepted and transmitted to the terminal. When this selection is disabled, the bar code data will be transmitted following one (1) valid scan.

Enable

✶ Disable

Code I.D. Transmit Selection

This selection allows you to enable or disable transmission of a Code I.D. before the decoded bar code symbology. (See the Symbology Chart on page 2–6 for the single character code that identifies each symbology.)



Enable

✶ Disable

AIM I.D. Transmit Selection

This selection allows you to enable or disable transmission of an AIM I.D. before the decoded bar code symbology. (See AIM Guidelines on Symbology Identifiers for more information on the AIM symbology ID characters.) *Default = Disable.*

Enable

✶ Disable

Function Code Transmit Selection

When this selection is enabled, and function codes are contained within the scanned data, the scanner transmits the key code (which corresponds to the decoded ASCII function code) to the terminal. ASCII function codes are represented by the HEX values 00–1F. (Charts of these function codes are shown in Section 6, Supported Interface Keys.)

✶ Enable

Disable

Serial Communication Settings

✶ *Default All Serial Communication Settings* ✶

CTS Check Selection

This selection allows you to select the software programming feature that checks for a CTS signal, if your application does not have a CTS I/O line. *Default = Disable.*

Enable

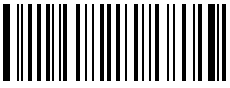
✶ Disable

Baud Rate Selection

This selection sets the baud rate from 600 bits per second to 38,400 bits per second. Programming baud rate causes the data to be sent at the specified rate. The host terminal must be set up for the same baud rate as the scanner, to ensure reliable communication. *Default = 9600 bps.*

600

1200



2400

4800

✶ 9600

19200

38400

Serial Communication Settings

RS-232 Word Length Selection

This selection allows you to set the RS-232 word length at seven or eight bits of data per character. The number of start and stop bits is fixed at one each. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications requiring use of the full ASCII set, select 8 data bits per character.

✶ 7 Data, 1 Stop

7 Data, 2 Stop

8 Data, 1 Stop

Serial Communication Settings

Parity Selection

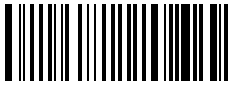
This selection provides a means of checking character bit patterns for validity. The scanner can be configured to operate under Even, Odd, Mark / None, or Space parity options. The host terminal must be set up for the same parity as the scanner, to ensure reliable communication.

None

Mark

Space

Odd



✶ Even

Protocol Selection

This selection allows you to program the scanner for the protocol required by your application. The protocol is a set of rules concerning the exchange of data between serially communicating devices. The scanner supports Record, Xon / Xoff, and Ack / Nak protocols when receiving data from an RS-232 device.

✶ Record

Xon / Xoff

Ack / Nak

Data Formatter Selections

Data Format Editor

Note: The Data Formatter option may be used with linear codes **only**.

This selection provides editing of all input (scanned) data. All Industrial and Retail symbologies can be formatted. You may scan the ***Clear Data Format*** bar code if you are **certain** you want to delete or clear all formats.

To make Data Format Editor selections, you must know the terminal type, code I.D., code length, and editor commands your application requires. Use the Alpha-numeric bar codes on the Programming Chart on the next page to scan these options.

Use the Data Format Editor by following the steps below:

❶ Scan the ***Enter Data Format*** bar code.

❷ **Terminal Type**
Scan two bar codes that represent the terminal type (00-99†, see page 1−9 for Terminal I.D. list.)

❸ **Code I.D.**
Refer to the Symbology chart (page 2−6), then scan two bar codes from the "Hex Value" column that represent the Code I.D. of the symbology you want formatted. ("All Symbologies" − hex value 99 − is not supported by Data Formatter.)

❹ **Length**
Scan two numeric bar codes on the next page for the bar code length you require (00-99†). Be sure to include spaces.

❺ **Editor Command Sequences**
Refer to the Format Editor Commands chart (page 2−18). Scan two bar codes that represent the command you need.

❻ **End Format (FF)**
Scan "F" ***twice*** to end Data Format Editor programming.

† 99 is the Universal number, indicating all terminals and all code lengths.

Programming Chart


0


1


2


3


4


5


6


7


8


9


A


B


C


D


E


F

Data Formatter Selections

Status Check

Scan the ***Show Formats*** bar code to transmit the existing Data Format Editor formats. One format per line will be printed out.

Show Formats

Require Data Format

When disabled, the bar code data will be output to the host as scanned (including prefixes and suffixes). When enabled, all input data must conform to an edited format or the scanner will not transmit the input data to the host device.

Enable

✶ Disable

Data Format Editor

See pages 2–15 and 2–18 through 2–19 for a description of this selection and examples.

Enter Data Format

Clear All Data Formats

Data Formatter Selections

Format Editor Commands Chart

Send Commands

F1 Send all characters followed by "XX" key or function code, starting from current cursor position. ***Syntax = F1XX*** *(XX = HEX ASCII character or function code 00−FE HEX).*

F2 Send "NN" characters followed by "XX" key or function code, starting from current cursor position. ***Syntax = F2NNXX*** *(NN = number of characters 00−99 DEC, XX = HEX ASCII character or function code 00−EF HEX).*

F3 Send up to but not including "SS" character (Search and Send) starting from current cursor position, leaving cursor pointing to "SS" character followed by "XX" key or function code. ***Syntax = F3SSXX*** *(SS = HEX ASCII Character 00−7F HEX, XX = HEX ASCII character 00−7F HEX).*

F4 Send "XX" character "NN" times (Insert) leaving cursor in current cursor position. ***Syntax = F4XXNN*** *(XX = HEX ASCII character 00−7F HEX, NN = number of characters 00−99 DEC).*

Move Commands

F5 Move cursor ahead "NN" characters from current cursor position. ***Syntax = F5NN*** *(NN = number of characters 00−99 DEC)*.

F6 Move cursor back "NN" characters from current cursor position. ***Syntax = F6NN*** *(NN = number of characters 00−99 DEC).*

F7 Move cursor to the beginning of the data string. ***Syntax = F7***.

Search Commands

F8 Search ahead for "XX" character from current cursor position, leaving cursor pointing to "XX" character. ***Syntax = F8XX*** *(XX = HEX ASCII character 00−7F).*

F9 Search back for "XX" character from current cursor position, leaving cursor pointing to "XX" character. ***Syntax = F9XX*** *(XX = HEX ASCII character 00−7F).*

Miscellaneous Commands

FA Leading zero suppress on. Suppress leading zeroes from current cursor position until first non−zero character. ***Syntax = FA***.

FB Suppress "XX" character(s) (up to three) starting from current cursor position until suppress disable command "FC" or end of format. ***Syntax = FBXXFB, FBXXXXFB, FBXXXXXXFB*** *(XX = ASCII character 00−7F).*

FC Disable suppress filter and clear all suppressed characters. ***Syntax = FC***.

FE Compare character in current cursor position to the character "XX." If characters are equal, increment cursor. If characters are not equal, no format match. ***Syntax = FEXX*** *(XX = HEX ASCII character 00 −7F).*

Data Formatter Selections

Data Formatter Example

You are using an IBM PC AT and are scanning a UPC A bar code with a five digit addenda (shown below). The bar code has a total of 18 characters, including the number system, the check digits, and a space between the main bar code data and the addenda bar code data.

UPC A with 5 digit addenda

For your application, you don't want the space between the main bar code data and the addenda bar code data transmitted. You also want the bar code data followed by a carriage return (CR).

Refer to the Format Editor Commands Chart on page 2−18 to format the following example. The programming bar codes on pages 2−17, and the alpha-numeric bar codes on the inside back cover are used to program the data formatter.

- Scan the ***Enter Data Format*** bar code (page 2−17).
- Scan the ***03*** bar codes for PC AT Terminal Type.
- Scan the ***63*** bar codes, the Hex value for UPC symbology.
- Scan the ***18*** bar codes for the bar code length.

The following are the Editor Command Sequences:

- Scan the ***FB*** (suppress characters command) bar codes, scan ***20*** (the Hex value for a space), and then scan ***FB*** to frame (complete) the command.
- Scan the ***F7*** bar codes to move the cursor back to the beginning of the bar code data.
- Scan the ***F1*** and ***0D*** bar codes to send all the characters followed by a carriage return (CR= 0D in Hex value).
- Scan the ***FF*** bar codes to end Format Editor selection.

Introduction

Use this chapter to program the Hand-Held Scanner for General Operating features.

This programming section contains the following menuing selections:

- Wand Emulation
- Country Code
- Keyboard
- Code Page Selections

Wand Emulation Settings

The basic operation of this interface is to transmit the decoded bar code data to a decoding device by emulating the digital output of a wand. The transmitted Digital Output Signal emulates Code 128 symbology. All of the wand scans, except the last, will contain the Code 128 Message Append character, FNC2. This character will alert the decoder to concatenate each of the wand scans and effectively reconstruct the entire large message. Large messages are broken down into data blocks that are transmitted as individual wand scans.

Characters per Data Block Selection

This programming selection allows you to set the size of the data block which will be transmitted as a wand scan.

20

40

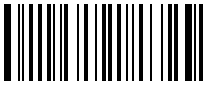
✶ 60

80

Delay Between Data Blocks Selection

This sets the effective delay between sub-symbols.

5 ms



✶ 50 ms

150 ms

500 ms

Wand Emulation Settings

Effective Output Scan Rate Selection

This sets the transmission rate of the Digital Output Signal. The available parameters assume a bar code density of .010 inches (10 mil).

15 inches per sec.

✶ 30 inches per sec.

60 inches per sec.

120 inches per sec.

Digital Output Signal Polarity Selection

This programming parameter allows you to set the output logic convention for the digital output. The choices are White High (Laser Output) and Black High. *Default = Black High*.

✶ Black High

White High

Overall Checksum Selection

When enabled, a computed check character will be added at the end of the entire message. The check character is the character which when Exclusive-ORed with every preceding character of the message yields a result of 0x00 (00H). *Default = Disable.*

Enable

✶ Disable

Wand Emulation Selections

Transmission Rate Selection

This programming selection sets the transmission rate from 10 ips (inches per second) to 300 ips if the scanner is in Wand Emulation mode. Programming the transmission rate causes the data to be sent at the specified rate. The programmed transmission rate must be compatible with the device receiving the bar code data. *Default = 25 ips (inches per second).*

10

✶ 25

40

80

120

150

200

300

Wake Up Pulse Selection

This selection provides a “wake up” pulse on the sync line from the scanner to a portable terminal. This feature extends battery life of the portable terminal by waking up the terminal only when data is ready to be sent. Bar code data follows the wake up pulse after a 0.2 second delay. *Default = Disable.*

Enable

✶ Disable

Country Code Selections

Country Keyboard Selection

This programming selection allows you to re-map the keyboard layout for the selected country. As a general rule, the following characters are not supported by the scanner for countries other than the United States:

@ | $ # { } [ ] = / ‘ \ < > ~

✶ United States

Belgium

Denmark, Finland, Norway, Sweden

France

Germany, Austria

Italy

Russia

Switzerland

United Kingdom

Denmark (*Wyse only*)

Norway (*Wyse only*)

Keyboard Selections

Keyboard Style Selections

Keyboard Style Selections

This programming selection allows you to program special keyboard features, such as Caps Lock and Shift Lock.

Regular is used when you normally have the Caps Lock key off.

Caps Lock is used when you normally have the Caps Lock key on.

Shift Lock is used when you normally have the Shift Lock key on. (Not common to U.S. keyboards.)

Automatic Caps Lock is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off (AT and PS/2 only). This selection can only be used with systems that have an LED which notes the Caps Lock status.

Emulate External Keyboard should be scanned if you do not have an external keyboard (IBM AT or equivalent).

✶ Regular

Caps Lock

Automatic Caps Lock

Shift Lock

Emulate External Keyboard

Keyboard Selections

Keyboard Style Modifiers

Keyboard Style Modifiers

This programming selection allows you to program special keyboard features, such as CTRL+ codes and Turbo Mode.

Default All – This sets all Keyboard Style Modifiers to their default states (Control + ASCII Mode Off, Turbo Mode Off, Numeric Keypad Mode Off).

Control + ASCII Mode On – If you scan this selection, the scanner sends key combinations for ASCII control characters for values 00–1F. Refer to page 6–1 for CTRL+ Values. *Default = Off*

Turbo Mode – Selecting Turbo Mode On, (for the IBM AT only), programs the scanner to send characters to the terminal faster. *Default = Off*

Numeric Keypad Mode – Selecting Numeric Keypad Mode On sends numeric characters as if entered from a numeric keypad. *Default = Off*

Automatic Direct Connect – When Emulate External Keyboard has been selected (page 3–6), Automatic Direct Connect Mode keeps the integrated keyboard from becoming permanently disabled. *Default = Off*

Note: *This selection disabled the keyboard for the entire duration of the bar code transmission.*

Default All

Control + ASCII Mode On

✶ Control + ASCII Mode Off

Turbo Mode On

✶ Turbo Mode Off

Numeric Keypad Mode On

✶ Numeric Keypad Mode Off

Automatic Direct Connect Mode On

✶ Automatic Direct Connect Mode Off

Code Page Selections

Windows/DOS Selections

If your country code is a code other than the default (United States), make certain you have selected the proper country code on page 3−5.

If characters are not displaying properly, your bar code label may have been created in Windows. Scan the Windows bar code below to display the proper characters. *Default = MS−DOS*.

Windows

✶ MS−DOS

PDF Label Character Set Selection

If your PDF label has been created using the ASCII Character Set, scan the ASCII Character Set bar code below. If your PDF label has been created using the National ISO Character Set, use the default setting. Refer to the table below for the national replacement characters (ANSI). *Default = National ISO Character Set*.

ASCII Character Set

✶ National ISO Character Set

National Replacement Characters: ANSI Chart

		Decimal −>	35	36	64	91	92	93	94	96	123	124	125	126
		Hex −>	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
		ASCII −>	#	$	@	[	\	]	^	‘	{	|	}	~
ISO	Keyboard Language	Country I.D.												
6	United States	0	#	$	@	[	\	]	^	‘	{	|	}	~
25	Belgium	1	£	$	à	°	ç	§	^	‘	é	ù	è	¨
10	Sweden, Finland	2	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
25	France	3	£	$	à	°	ç	§	^	‘	é	ù	è	¨
21	Germany	4	#	$	§	Ä	Ö	Ü	^	‘	ä	ö	ü	ß
15	Italy	5	£	$	§	°	ç	é	^	ù	à	ò	è	ì
0	Switzerland	6	£	$	ç	à	é	è	^	‘	ä	ö	ü	¨
4	United Kingdom	7	£	$	@	[	\	]	^	‘	{	|	}	~
0	Denmark	8	#	$	@	Æ	Ø	Å	^	‘	æ	ø	å	~
61	Norway	9	#	$	@	Æ	Ø	Å	^	‘	æ	ø	å	|
17	Spain	10	£	$	§	¡	Ñ	¿	^	‘	°	ñ	ç	~

Introduction

Use this chapter to program the Hand-Held Scanner for Industrial, Retail, and Stacked Symbology selections.

This programming section contains the following menuing selections:

- Codabar Selections.
- Code 39 Selections.
- Code 93 Selections.
- Interleaved 2 of 5 Selections.
- Code 2 of 5 Selections.
- Matrix 2 of 5 Selections.
- Code 11 Selections.
- Code 128 Selections.
- Code 16 Selections.
- Code 49 Selections.
- EAN Selections.
- UPC Selections.
- MSI Selections.
- Plessey Selections.
- PDF Selections.

Industrial Symbology Selections

✶ *Default All Codabar Settings* ✶

Codabar Selection

✶ On

Codabar

Off

Transmit

Start / Stop Characters

✶ Don't Transmit

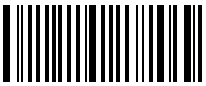
✶ Adaptive

Decoding

Traditional

Minimum ‡

Message Length



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

Codabar Selection, *continued*

Check Character

✶ No Check Character

Validate, But Don't Transmit

Validate, And Transmit

Concatenation

Codabar supports symbol concatenation. When you ***Allow*** concatenation, the scanner will look for a Codabar symbol having a "D" start character, adjacent to a symbol having a "D" stop character. In this case the two messages are concatenated into one with the "D" characters omitted.

Select ***Require*** to prevent the scanner from decoding a lone Codabar symbol.

Concatenation

Don't Allow (Concatenation Off)

✶ Allow

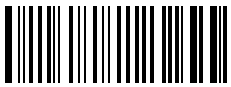
Require

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

✶ *Default All Code 39 Settings* ✶

Code 39 Selection



✶ On

Code 39

Off

Transmit

Start / Stop Characters

✶ Don't Transmit

✶ Enable

Full ASCII

Refer to the Full ASCII Chart on page 4–6.

Disable

Enable

Append

✶ Disable

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

Code 39 Selection, *continued*

Decoding

✶ Adaptive

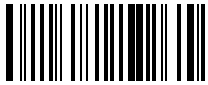
Traditional

Message Length

Minimum ‡

Maximum ‡

Check Character



✶ No Check Character

Validate, But Don't Transmit

Validate, And Transmit

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

FULL ASCII CHART †

NUL	%U	DLE	$P	SP	SPACE	0	0	@	%V	P	P	‘	%W	p	+P
SOH	$A	DC1	$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	$B	DC2	$R	”	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	$C	DC3	$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	$D	DC4	$T	$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	$E	NAK	$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	$F	SYN	$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	$G	ETB	$W	’	/G	7	7	G	G	W	W	g	+G	w	+W
BS	$H	CAN	$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	$I	EM	$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	$J	SUB	$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L	|	%Q
CR	$M	GS	%C	–	–	=	%H	M	M	]	%M	m	+M	}	%R
SO	$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

† This chart is used for encoding the above characters in Full ASCII when using Code 39 bar codes. For example, to get a “<”, encode %G (which is 25 47 on the Hex ASCII chart in the Prefix / Suffix Programming section).

✶ *Default All Code 93 Settings* ✶

Code 93 Selection

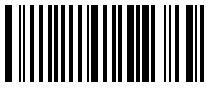
✶ On

Code 93

Off

Minimum ‡

Message Length



Maximum ‡

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Industrial Symbology Selections

✶ *Default All Interleaved 2 of 5 Settings* ✶

Interleaved 2 of 5 Selection

✶ On

Interleaved 2 of 5

Off

✶ Adaptive

Decoding

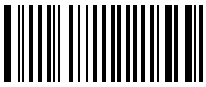
Traditional

Minimum ‡

Message Length

Maximum ‡

Check Digit



✶ No Check Digit

Validate, But Don't Transmit

Validate, And Transmit

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

✶ *Default All Matrix / Code 2 of 5 Settings* ✶

Code 2 of 5 Selection

✶ On

Code 2 of 5

Off

Minimum ‡

Message Length

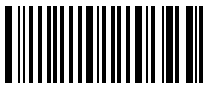
Maximum ‡

Matrix 2 of 5 Selection

✶ On

Matrix 2 of 5

Off



Minimum ‡

Message Length

Maximum ‡

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

✶ *Default All Code 11 / Code 128 Settings* ✶

Code 11 Selection

Code 11

✶ On

Off

Check Digits Required

✶ 2 Check Digits

1 Check Digit

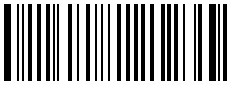
Message Length

Minimum ‡

Maximum ‡

Code 128 Selection

Code 128



✶ On

Off

Message Length

Minimum ‡

Maximum ‡

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Industrial Symbology Selections

Code 128 Function Character Selection

When Code 128 Function Character is enabled, the scanner can substitute a <GS> for function character 1. To enable the <GS> substitution, you must scan the Code 128 Function Character On bar code, and the <GS> Substitution On bar code.

Note: For complete Code 128 support, the AIM ID Transmit selection should also be enabled. Refer to page 2–11.

On

Code 128 Function Character

✶ Off

On

<GS> Substitution

✶ Off

Industrial Symbology Selections

✶ *Default All Code 16K / Code 49 Settings* ✶

Code 16K Selection †

On

Code 16K

✶ Off

Minimum ‡

Message Length

Maximum ‡

Code 49 Selection †

On

Code 49

✶ Off

Minimum ‡

Message Length

Maximum ‡

† Not in standard product. Contact your Welch Allyn Sales Coordinator.

‡ A two-digit number is required after scanning this programming bar code. (16K may accept a 3−digit number.) Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Retail Symbology Selections

✶ *Default All EAN / UPC Settings* ✶

EAN Selection

✶ On

EAN / JAN 13

Off

✶ On

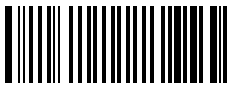
EAN / JAN 8

Off

✶ Transmit

Check Digit

Don't Transmit



Enable

ISBN

✶ Disable

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Retail Symbology Selections

✶ *Default All UPC / EAN Settings* ✶

UPC Selection

✶ On

UPC A

Off

✶ On

UPC E0

Off

On

UPC E1

✶ Off

✶ Transmit

Check Digit

Don't Transmit

✶ Transmit

Number System

Don't Transmit

Expand

Version E Expand

✶ Don't Expand

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

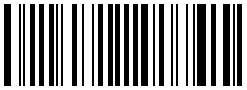
Retail Symbology Selections

Require

EAN / UPC Addenda

✶ Don't Require

Note: The EAN/UPC Addenda Format bar codes below apply to software revision level 2.0 and greater.



No Space

EAN / UPC Addenda Format

✶ Space

EAN Addenda Selection

Enable

Two Digit Addenda

✶ Disable

Enable

Five Digit Addenda

✶ Disable

UPC Addenda Selection

Enable

Two Digit Addenda

✶ Disable

Enable

Five Digit Addenda

✶ Disable

Retail Symbology Selections

✶ *Default All MSI & Plessey Settings* ✶

MSI Selection

On

MSI

✶ Off

Minimum ‡

Message Length

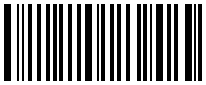
Maximum ‡

Plessey Selection

On

Plessey

✶ Off



Minimum ‡

Message Length

Maximum ‡

‡ A two-digit number is required after scanning this programming bar code. Scan your selection on the Programming Chart (inside back cover).

Programming Tip: If a symbology will not be used, we recommend turning it off to minimize the chance of a misread.

Stacked Symbology Selections

Enable PDF Selection

To enable PDF decoding, scan the PDF Enable bar code below. *Default = Enable*.

✶ Enable

Disable

Show GLI Blocks Selection

Enabling this feature causes GLI Commands to be issued where located within their encoded data sequences. When enabled, the "\" is used as an escape character and natural occurrences of "\" in data are replaced by "\\". *Default = Disable*.

Show GLI Control Blocks

✶ Don't Show GLI Control Blocks

Note: Enabling Show Macro Control causes backslash characters occurring normally in encoded data to be issued twice (i.e., as "\\").

Macro PDF Selection

Up to 16 Macro PDF symbols that encode up to 5,500 characters of data may be combined in designated order and transmitted as a single data packet in the PDF417 reader. Disabling Macro PDF causes the data from every PDF417 symbol to be transmitted independently in the order scanned.

To enable PDF decoding, scan the Macro PDF Enable bar code below. *Default = Enable*.

✶ Enable

Disable

Stacked Symbology Selections

Show Macro Control Blocks Selection

Enabling this feature causes Macro PDF Control Block contents to be included at the end of the encoded data except when all data messages have been successfully merged and are issued as a single data packet (see Macro PDF Selection above). When enabled, the backslash "\" is used as an escape character and natural occurrences of "\" in data are replaced by "\\". *Default = Don't Show Control Blocks*.

Show Control Blocks

✶ Don't Show Control Blocks

Stacked Symbology Selections

Introduction

The scanner's internal operational firmware is contained in a "Flash EEPROM" (a programmable / erasable ROM – Read Only Memory). This enables you to configure the unit without opening the scanner or changing a chip (IC).

This programming section contains the:

- Cloning Utility.

Firmware Utilities

Cloning Utility

Scanning the ***Clone Master*** bar code will transfer the firmware contents of the "master" unit to the "destination" or installed unit. First, you must follow the steps below to initiate the cloning procedure:

1) Connect the destination (installed) unit to one of the 8 pin modular connectors on the cloning cable.

2) Connect the master unit (containing the new or updated software) to the remaining 8 pin modular connector on the cloning cable.

3) Make sure that both units are powered ***On***, and then scan the ***Clone Destination*** bar code with the destination unit.

Clone Destination

4) Now scan the ***Clone Master*** bar code with the master unit.

Clone Master

5) The master unit will start transferring its firmware contents to the installed / destination unit.

6) When cloning is complete, the master unit will double beep. This process takes about 30 seconds.

Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII "CTRL"+ relationships apply to all terminals that can be used with the Hand-Held Decoded Output scanner.

Function Code	HEX/ASCII Value	Full ASCII "CTRL" +
NUL	00	2
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	6
US	1F	-

The last five characters in the Full ASCII "CTRL"+ column ([\ ] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

Country	Codes				
United States	[	\	]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Swiss		<	··	6	-
United Kingdom	[	′	]	6	-
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	]	6	-

Interface Keys

Supported Interface Keys

Supported Interface Keys		IBM AT/XT and PS/2 Compatibles, WYSE PC/AT	IBM XTs and Compatibles	IBM, DDC, Memorex Telex, Harris*
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter (KP)	CR/Enter	Enter
STX	02	Cap Lock	Caps Lock	F11
ETX	03	ALT make	Reserved	F12
EOT	04	ALT break	Reserved	F13
ENQ	05	CTRL make	Reserved	F14
ACK	06	CTRL break	Reserved	F15
BEL	07	CR/Enter	CR/Enter	New Line
BS	08	Reserved	Reserved	F16
HT	09	Tab	Tab	F17
LF	0A	Reserved	Reserved	F18
VT	0B	Tab	Tab	Tab/Field Forward
FF	0C	Delete	Delete	Delete
CR	0D	CR/Enter	CR/Enter	Field Exit/New Line
SO	0E	Insert	Insert	Insert
SI	0F	Escape	Escape	F19
DLE	10	F11	Reserved	Error Reset
DC1	11	Home	Home	Home
DC2	12	Print	Print	F20
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Backfield/Back Tab
NAK	15	F12	Reserved	F21
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

* IBM 3191/92, 3471/72, 3196/97, 3476/77, DDC 3596, Telex (all models), Harris H180/190 with 122 key keyboards

Interface Keys

Supported Interface Keys

Supported Interface Keys		IBM, Memorex Telex (102)*	Memorex Telex (88)**	DEC VT, HDS, WYSE***
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter	Enter	Enter
STX	02	F11	PF10	PF1
ETX	03	F12	PF11	PF2
EOT	04	F13	PF12	PF3
ENQ	05	F14	Reserved	PF11
ACK	06	F15	Reserved	PF12
BEL	07	New Line	New Line	New Line
BS	08	F16	Field Forward	PF4
HT	09	F17	Field Forward	TAB
LF	0A	F18	Reserved	F13
VT	0B	Tab/Field Forward	Field Forward	F14
FF	0C	Delete	Delete	Remove
CR	0D	Field Exit	New Line	New Line
SO	0E	Insert	Insert	Insert Here
SI	0F	Clear	Erase	Cursor Up
DLE	10	Error Reset	Error Reset	Cursor Left
DC1	11	Home	Reserved	Cursor Down
DC2	12	Print	Print	Cursor Right
DC3	13	Back Space	Back Space	Delete
DC4	14	Back Tab	Back Field	Print
NAK	15	F19	Reserved	F15
SYN	16	F1	PF1	F1
ETB	17	F2	PF2	F2
CAN	18	F3	PF3	F3
EM	19	F4	PF4	F4
SUB	1A	F5	PF5	F5
ESC	1B	F6	PF6	F6
FS	1C	F7	PF7	F7
GS	1D	F8	PF8	F8
RS	1E	F9	PF9	F9
US	1F	F10	Home	F10

* IBM 3196/97, 3476/77, 3191/92, 3471/72, Memorex Telex (all models) with 102 key keyboards

** Memorex Telex with 88 key keyboards

*** DEC VT 220/320/340/420 (only available on SCANTEAM 5400/5700−X3), HDS−3200, WYSE WY−85/185

Interface Keys

Supported Interface Keys

Supported Interface Keys		Esprit 200, 400 ANSI	Esprit 200, 400 ASCII	Esprit 200, 400 PC
NUL	00	Reserved	Reserved	Reserved
SOH	01	New Line	New Line	New Line
STX	02	N/A	N/A	N/A
ETX	03	N/A	N/A	N/A
EOT	04	N/A	N/A	N/A
ENQ	05	N/A	N/A	N/A
ACK	06	N/A	N/A	N/A
BEL	07	New Line	New Line	New Line
BS	08	N/A	N/A	N/A
HT	09	Tab	Tab	Tab
LF	0A	N/A	N/A	N/A
VT	0B	Tab	Tab	Tab
FF	0C	N/A	N/A	Delete
CR	0D	New Line	New Line	New Line
SO	0E	N/A	N/A	Insert
SI	0F	Escape	Escape	Escape
DLE	10	F11	F11	F11
DC1	11	Insert	Insert	Home
DC2	12	F13	F13	Print
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Back Tab
NAK	15	F12	F12	F12
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

Interface Keys

Supported Interface Keys

Supported Interface Keys		Bull BDS−7 (Honeywell HDS−7)	HP 700/92	WYSE WY−60/150 (ASCII/ANSI keyboards)
NUL	00	Reserved	Reserved	Reserved
SOH	01	Transmit	Enter	Enter
STX	02	Reserved	Caps	PF1
ETX	03	Reserved	Reserved	PF2
EOT	04	Reserved	Reserved	PF3
ENQ	05	Backtab	Reserved	PF11
ACK	06	Reserved	Reserved	PF12
BEL	07	Carriage Return	Reserved	New Line
BS	08	Back Space	Back Space	PF4
HT	09	Tab	Tab	TAB
LF	0A	F11	Reserved	F13
VT	0B	F12	Reserved	F14
FF	0C	Delete Character	Reserved	Remove
CR	0D	Carriage Return	Return	New Line
SO	0E	Insert	Reserved	Insert Here
SI	0F	Clear	Reserved	Cursor Up
DLE	10	Error Reset	Home	Cursor Left
DC1	11	Home	Reserved	Cursor Down
DC2	12	Delete Line	Reserved	Cursor Right
DC3	13	Erase EOP	Reserved	Delete
DC4	14	Erase EOF	Reserved	Print
NAK	15	Insert Line	Clear Screen	F15
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	Escape	F6
FS	1C	F7	F6	F7
GS	1D	F8	F7	F8
RS	1E	F9	F8	F9
US	1F	F10	Reserved	F10

Interface Keys

Supported Interface Keys

Supported Interface Keys		**WYSE WY−30**
NUL	00	Reserved
SOH	01	Enter
STX	02	Reserved
ETX	03	Reserved
EOT	04	Reserved
ENQ	05	Reserved
ACK	06	Reserved
BEL	07	Return
BS	08	Reserved
HT	09	Tab
LF	0A	Line Feed
VT	0B	Reserved
FF	0C	Reserved
CR	0D	Return
SO	0E	Reserved
SI	0F	Cursor Up
DLE	10	Cursor Left
DC1	11	Cursor Down
DC2	12	Cursor Right
DC3	13	Back Space
DC4	14	Reserved
NAK	15	Reserved
SYN	16	F1
ETB	17	F2
CAN	18	F3
EM	19	F4
SUB	1A	F5 (CTRL F1)
ESC	1B	F6 (CTRL F2)
FS	1C	F7 (CTRL F3)
GS	1D	F8 (CTRL F4)
RS	1E	F9 (SHIFT F2)
US	1F	F10 (SHIFT F3)

SCANTEAM 3400PDF Product Specifications

Environmental Specifications

parameter	*specification*
Operating Temperature Storage Temperature	32° F to 122° F [0°C to 50°C] –40° F to 158° F [–40°C to 70°C]
Humidity	0% to 95% RH noncondensing
Barometric Pressure	101,000 to 69,000 Pascals [Sea level to 3,000 meters]
Mechanical Shock	Functional after ten 5ft. [1.5m] drops
ESD Sensitivity	Functional after 15KV discharge
Ambient Illumination	3400PDF/HD = 10,000 lux
Modular Connector Life	750 insertions/disconnections

Electrical Specifications

parameter	*specification*
Operating Voltage	5 VDC ±10%
5VDC Input *only*	**113 Scans/Sec** **200 Scans/Sec**
Current Draw (3400PDF/HD–2, –3)	N/A 280mA
Current Draw (3400PDF/LR–2, –3)	240mA N/A
Standby Current (3400PDF/HD) (3400PDF/LR	 3mA 115mA
In–Rush Current	400mA maximum
Power Supply Noise Rejection	100mV peak to peak, from 10 to 100KHz
Acquisition Time (Trigger to Output)	100msec maximum
Mean Time Between Failure (MTBF)	50,000 hours (for ground benign)
Agency Compliance	FCC Class A, CE (Class A), LVD
Patents	U.S. 5,420,409 U.S. 5,723,853

Scanner Performance

parameter	*specification*
Pitch Angle	±7 degrees
Skew Angle	±30 degrees
Minimum Reflective Difference (MRD)	37.5%
Scan Rate (3400PDF/HD) (3400PDF/LR)	 200 scans per second 113 scans per second (set at factory)
Horizontal Scan Velocity	0 to 5 inches [127mm] per second
Illumination	660 nm Visible Red Light Emitting Diodes
Resolution PDF417 Codes (3400PDF/HD) (3400PDF/LR) Linear Codes (3400PDF/HD) (3400PDF/LR)	 7.9 mil [0.200mm] code density minimum 10 mil [.254mm] with 4:1 ratio 7.9 mil [0.200mm] code density minimum 7.0 mil [0.178mm] code density minimum

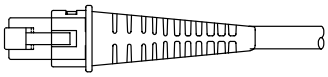
Standard Cable Pinouts

Wand Emulation
3400PDF/XX–X2

Conventional wand data format is provided at the modular connector in the scanner handle.

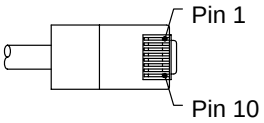
Interface cables normally supplied with scanner model 3400PDF/XX−X2 are terminated with a 10 pin modular plug (P1) and a 9 pin Type D (Squeeze−to−release) connector (P2) that is compatible with all Welch Allyn terminals. See chart below.

P1

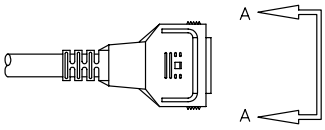


10 Pin Modular Plug

P1 connects to the scanner handle.

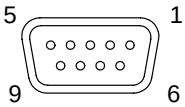


P2



9 Pin Type D Female

P2 connects to your terminal.



View A–A

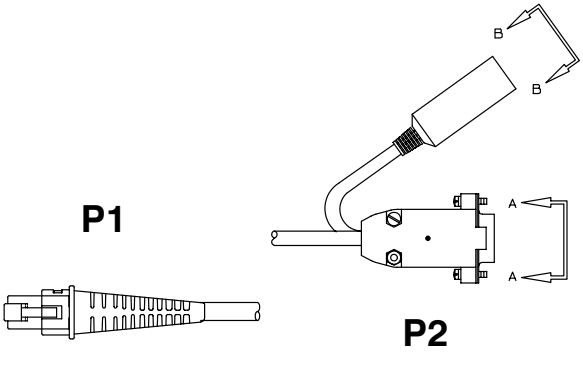
P1	*Signal*	*Function*	P2
2	Braid	Cord Shield	8
3	Prog 1	Tied to 5 Volt Power	
4	Ground	Supply Ground	7
6	Barcode	Bar Code Data Output	2
7	+5VDC	5 Volt Power Connection	4

Standard Cable Pinouts

RS–232
3400PDF/XX–X2 (TTL)

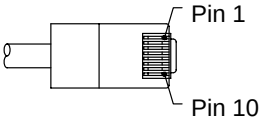
Decoded output data format is provided at the modular connector in the scanner handle.

Interface cables normally supplied with scanner model 3400PDF/XX–X2 (TTL) are terminated with a 10 pin modular plug (P1) and a 9 pin Type D connector (P2) that is compatible with all Welch Allyn terminals. See chart below.



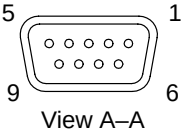
10 Pin Modular Plug

P1 connects to the scanner handle.



9 Pin Type D Female

P2 connects to your terminal.



P1	*Signal*		*Function*	P2
2	Braid		Cord Shield	SH
3	DTR		Data Terminal Ready	6
4	Ground		Supply Ground	5
5	RXD	470Ω	Receive Data – Serial Data to Scanner	3
6	TXD		Transmit Data – Serial Data from Scanner	2
7	+5VDC		5 Volt Power Connection	
8	RTS		Request to Send Data	8
9	CTS	470Ω	Clear to Send Data	7

P3: 2, 1, SH

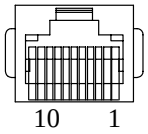
Standard Cable Pinouts

Keyboard Wedge

3400PDF/XX–X2

Decoded output data format provided at 10 pin RF41 modular connector (in scanner handle). See chart below.

10 Pin RJ41 Modular Connector



Pin	*Standard Welch Allyn Color Code*	*Signal*	*Function*
1	N/C		
2	Braid	N/C	Cord Shield
3	Blue	Prog 1	
4	Black	Ground	Supply Ground
5	Orange	Tclock	Terminal Clock
6	Green	Tdata	Terminal Data
7	Red	+5VDC	5 Volt Power Connection
8	White	Kdata	Keyboard Data
9	Gray	Kclock	Keyboard Clock
10	N/C		

Maintenance

The Hand-Held Decoded Output Scanner provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following periodic checks insure dependable scanner operation:

Cleaning the Scan Window

Scanning performance may degrade if the scan window is not clean. If the window is visibly dirty, or if the scanner isn't scanning well, clean the scan window with a soft cloth or facial tissue dampened with water (or a mild detergent– water solution). If a detergent solution is used, rinse with a clean tissue dampened with water only.

The scanner housing may also be cleaned the same way.

⚠ Warning:

Do not submerge the scanner in water. The scanner's housing is not water–tight.

Do not use abrasive wipers or tissues on the scan window: abrasive wipers may scratch the window.

Never use solvents (alcohol or acetone) on the housing or window: solvents may damage the finish or the window.

Do not open the scanner. There are no serviceable parts inside.

Inspecting Cords and Connectors

Inspect the scanner's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with scanner operation. Contact your Welch Allyn distributor for information about cable replacement. Cable replacement instructions on page 8–2.

Examining the Scanner Housing

Routinely examine the scanner housing for signs of damage. A damaged housing may cause the internal components to move and may result in a malfunctioning scanner.

Maintenance & Troubleshooting

Replacing the Interface Cable

The standard interface cable is attached to the scanner with an 8–pin modular connector. When properly seated, the connector is held in the scanner handle by a flexible retention tab. The cable's designed to be field replaceable.

Notes:

- Order replacement cables from Welch Allyn or from an authorized distributor.
- When ordering a replacement cable, specify the cable part number of the original interface cable.

To Replace the Interface Cable:

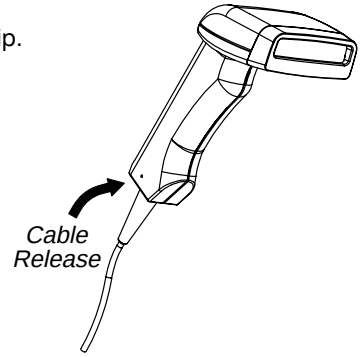
❶ Turn the power to the host system OFF.

❷ Disconnect the scanner cable from the terminal or computer.

❸ Locate the small hole on the side of the scanner handle near the base (*see Figure below*).

❹ Straighten one end of a paper clip.

❺ Insert the end of the paper clip into the small hole and press in. This depresses the retention tab, releasing the connector. Pull the connector out of the scanner handle while maintaining pressure on the paper clip.



❻ Replace with the new cable. Insert the connector into the opening at the base of the scanner handle. Press firmly. The connector is "keyed" to go in only one way, and will click into place.

To Reset Factory Settings

If you aren't sure *what* programming options have been set up in your scanner, or you've changed some options and now want the factory settings restored, refer to Main Menu Selections in Section 1 and scan the ***Factory Default Settings*** bar code.

Maintenance & Troubleshooting

Troubleshooting

The Hand-Held Decoded Output scanner automatically performs self-tests whenever you turn it on. If your scanner is not functioning properly, review the following Troubleshooting Guide to try to isolate the problem.

Troubleshooting Guide

Is the power on? Is the red illuminated beam on?
If the red scan beam on the scanner isn't illuminated, check that: ❶ the cable is connected properly. ❷ the host system power is on (if external power isn't used).

Is the scanner having trouble reading your bar codes?
If the scanner isn't reading bar codes well, check that the bar codes: ❶ aren't smeared, rough, scratched, or exhibiting voids. ❷ aren't coated with frost or water droplets on the surface. ❸ are enabled in the scanner or the decoder the scanner is connected to.

Is the bar code displayed but not "entered"?
The bar code is displayed on the host device correctly, but you still have to press a key to enter it (*the Enter/Return key or the Tab key, for example*). ***You need to program a suffix.*** Programming a suffix enables the scanner to output the scanned bar code *plus* the key you need (such as a "CR," carriage return) to enter the bar code into your application. (*See Suffix Selection in Section 2, Output Parameters Menu.*)

Maintenance & Troubleshooting

Does the scanner read your bar code incorrectly?

If the scanner reads a bar code (*one beep for a good read*), but the bar code is not displayed correctly on the host screen:

❶ The scanner may not be programmed for the appropriate terminal interface.

Example: *You scan "12345" and the host displays "@es%."*

Reprogram the scanner with the correct "Plug and Play" or Terminal Selection bar code (*see Section* 1).

❷ The scanner may not be programmed to output your bar code properly.

Example: *You scan "12345" and the host displays "A12345B."*

Reprogram the scanner with the proper Symbology selections (*see Section 4, Symbology Menu*).

The scanner won't read your bar code at all?

If the scanner will not read your bar code:

❶ Try scanning the Sample Bar Codes (*found on the back cover of the User's Guide*).

If the scanner reads the Sample Bar Codes, check that your bar code is readable. (*See "Is the scanner having trouble reading your bar codes" on the previous page.*)

Verify that your bar code symbology is enabled. (*See Sections 4, Symbology Menu.*)

If the scanner does not read the Sample Bar Codes either, continue to #2, below...

❷ If the scanner won't read the Sample Bar Codes either:

Verify that the bar code symbologies are enabled. (*See Sections 4, Symbology Menu.*)

Scan the "Default All... " bar code on each symbology menu page in Section 4 to enable most symbologies. (*MSI and Plessey will have to be enabled individually, as they are defaulted* ***Off****.*)

Customer Support

Limited Warranty

Welch Allyn, Inc., hereby warrants its products to be functional and free from manufacturing defects at the time of delivery. Welch Allyn, Inc. further warrants that it will replace or repair, at its option, any unit that fails to perform according to Welch Allyn's published specifications during a period of three (3) years from the time of shipment by Welch Allyn, Inc. to the user at the time it is purchased from any of Welch Allyn Inc.'s Authorized Distributors. Any attempt on the part of the user to disassemble or service the equipment shall void the warranty.

The warranty does not apply to product which have been damaged by improper handling, shipping, or misuse. The warranty does not apply, if, in the sole opinion of Welch Allyn, Inc., the unit has been damaged by accident, misuse, neglect, improper shipping and handling. Since the unit is sensitive to static, the responsibility to protect it from static damage is solely that of the user. The warranty is valid only if the unit or scanner has not been tampered with or serviced by any party unauthorized by Welch Allyn, Inc. as a repair facility.

THE WARRANTIES SET FORTH HEREIN ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE OR RELIED UPON WITH RESPECT TO THE QUALITY AND FUNCTION OF THE BOARD AND SCANNER HEREIN SOLD.

In no event shall Welch Allyn, Inc. or its resellers be liable for any loss, inconvenience or damage whether direct, incidental, consequential or otherwise, and whether caused by negligence or other fault resulting from the breach of any express warranty except as set forth herein. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or country to country.

Serial Interface Menu Defaults

The following chart lists the factory default Serial Interface Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Prefix / Suffix Selections		
Primary Prefix	None	Page 2–4
Primary Suffix	None	Page 2–4
Output Selections		
Beeper Volume	High	Page 2–8
Ticking/Scanning Progress	Enable	Page 2–8
Humming/Busy Decoder	Enable	Page 2–8
Output Delays		
Intercharacter Delay	00 (x5mS)	Page 2–9
Interfunction Delay	00 (x5mS)	Page 2–9
Intermessage Delay	00 (x5mS)	Page 2–9
AutoTrigger	Disable	Page 2–10
Reread Delay	Low (175mS)	Page 2–10
Good Read Delay	None	Page 2–10
Scan Voting	Disable	Page 2–11
Code I.D. Transmit	Disable	Page 2–11
AIM I.D. Transmit	Disable	Page 2–11
Function Code Transmit	Enable	Page 2–11
Serial Communication Selections		
CTS Check	Disable	Page 2–12
Baud Rate	9600	Page 2–12
RS-232 Word Length	7 Data Bits, 1 Stop Bit	Page 2–13
Parity	Even	Page 2–14
Protocol	Record	Page 2–14
Data Formatter Selections		
Require Data Format	Disable	Page 2–17

Default Chart

General Operating Menu Defaults

The following chart lists the factory default General Operating Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Wand Emulation Selections		
Characters per Data Block	60	Page 3–2
Delay Between Data Blocks	50ms	Page 3–2
Effective Output Scan Rate	30 inches per second	Page 3–3
Digital Output Signal Polarity	Black High	Page 3–3
Overall Checksum	Disable	Page 3–3
Transmission Rate	25	Page 3–4
Wake Up Pulse	Disable	Page 3–4
Country Code Selections		
Country Keyboards	United States	Page 3–5
Keyboard Selections		
Keyboard Style	Regular	Page 3–6
Keyboard Style Modifiers	Control + ASCII Mode Off	Page 3–7
	Turbo Mode Off	Page 3–8
	Numeric Keypad Mode Off	Page 3–8
	Automatic Direct Connect Mode Off	Page 3–7
Code Page Selections	MS–DOS	Page 3–8
PDF Label Character Set	National ISO Character Set	Page 3–8

Default Chart

Symbology Menu Defaults – Industrial

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Codabar Selections		
Codabar	On	Page 4–2
Start / Stop Characters	Don't Transmit	Page 4–2
Decoding	Adaptive	Page 4–2
Message Length	Min = 4, Max = 60	Page 4–2
Check Character	No Check Character	Page 4–3
Concatenation	Allow	Page 4–3
Code 39 Selections		
Code 39	On	Page 4–4
Start / Stop Characters	Don't Transmit	Page 4–4
Full ASCII	Enable	Page 4–4
Append	Disable	Page 4–4
Decoding	Adaptive	Page 4–5
Message Length	Min = 0, Max = 48	Page 4–5
Check Character	No Check Character	Page 4–5
Code 93 Selections		
Code 93	On	Page 4–6
Message Length	Min = 0, Max = 64	Page 4–6
Interleaved 2 of 5 Selections		
Interleaved 2 of 5	On	Page 4–7
Decoding	Adaptive	Page 4–7
Message Length	Min = 4, Max = 80	Page 4–7
Check Digit	No Check Digit	Page 4–7
Code 2 of 5 Selections		
Code 2 of 5	On	Page 4–8
Message Length	Min = 4, Max = 48	Page 4–8
Matrix 2 of 5 Selections		
Matrix 2 of 5	On	Page 4–8
Message Length	Min = 4, Max = 80	Page 4–8

Default Chart

Symbology Menu Defaults – Industrial

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
Code 11 Selections		
Code 11	On	Page 4–9
Check Digits Required	2 Check Digits	Page 4–9
Message Length	Min = 4, Max = 80	Page 4–9
Code 128 Selections		
Code 128	On	Page 4–9
Message Length	Min = 0, Max = 80	Page 4–9
Code 128 Function Character Selection		
Code 128 Function Character	Off	Page 4–10
<GS> Substitution	Off	Page 4–10
Code 16K Selections		
Code 16K	Off	Page 4–11
Message Length	Min = 0, Max = 80	Page 4–11
Code 49 Selections		
Code 49	Off	Page 4–11
Message Length	Min = 0, Max = 80	Page 4–11

Default Chart

Symbology Menu Defaults – Retail

The following chart lists the factory default Retail Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
EAN Selections		
EAN / JAN 13	On	Page 4–12
EAN / JAN 8	On	Page 4–12
Check Digit	Transmit	Page 4–12
ISBN	Disable	Page 4–12
UPC Selections		
UPC A	On	Page 4–13
UPC E0	On	Page 4–13
UPC E1	Off	Page 4–13
Check Digit	Transmit	Page 4–13
Number System	Transmit	Page 4–13
Version E Expand	Don't Expand	Page 4–13
EAN / UPC Addenda Selections		
EAN / UPC Addenda	Don't Require	Page 4–14
EAN / UPC Addenda Format	Space	Page 4–14
EAN Addenda Two Digit Addenda	Disable	Page 4–14
Five Digit Addenda	Disable	Page 4–14
UPC Addenda Two Digit Addenda	Disable	Page 4–14
Five Digit Addenda	Disable	Page 4–14
MSI Selections		
MSI	Off	Page 4–15
Message Length	Min = 4, Max = 48	Page 4–15
Plessey Selections		
Plessey	Off	Page 4–15
Message Length	Min = 4, Max = 48	Page 4–15

Default Chart

Symbology Menu Defaults – Stacked

The following chart lists the factory default Industrial Symbology Menu settings (indicated by a "✶" on the programming menu pages).

Parameter Name	*Default Setting*	*Page Reference*
PDF417 Selections		
Enable PDF	Enable	Page 4–16
GLI Blocks	Don't Show GLI Blocks	Page 4–16
Macro PDF Selection	Enable	Page 4–16
Show Macro Control Blocks	Don't Show Control Blocks	Page 4–17

Programming Chart


0


1


2


3


4


5


6


7


8


9


A


B


C


D


E


F

Sample Bar Codes

Code 39

TEST–SHEET

Matrix 2 of 5

6543210

Code 128

CODE 128

Code 93

123456–9$

Interleaved 2 of 5

1234567890

Code 2 of 5

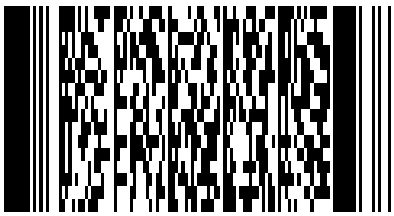
123456

UPC A with 5 digit addenda

56098

0 12345 67890 5

PDF417



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