
SCANTEAM®

PDF417 Capable

CCD Reader



PDF



Code 128



1 2 of 5



UPC



EAN


PROGRAMMING MENU




Welch Allyn

The SCANTEAM PDF417 Programming Menu is used to program Decoded Output PDF417 Capable CCD Readers.

The SAMPLE BAR CODES page (near the end of the programming menu) contains bar code symbols you may use to verify that you have programmed your SCANTEAM PDF417 scanner correctly.

Input Power Voltage Requirements	
Model	Input Power Voltage
3000-X2 3000-X4 3400-X0X 3400-X2X 3400PDF/G-X2X 3700PDF/C-2331	5 Volt <i>ONLY</i> 
3000-X1 3000-X3 3400-X1X 3400-X3X 3400PDF/G-X3X	5 Volt Standard Cables or 12 Volt Special Cables

 **Caution:**

DO NOT use SCANTEAM 3000 or 5500 12 Volt Interface Cables with the SCANTEAM 3400.

DAMAGE TO YOUR 3400 WILL RESULT!

Use the appropriate 3400 12 Volt Interface Cable.

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Data Collection Web Address: <http://dcd.welchallyn.com>

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USE THIS PAGE

■ As a general overview of the programming menu. The programming menu consists of two basic components as shown below.


CODE SELECTION II (RETAIL)


USE THIS PAGE


■ To select the one programmed parameter (*) values by scanning DEFAULT symbol.
■ To enable or disable listed code selections.


selections	scan	parameters	scan	scan
UPC ID = c (HEX 63)	I	Version A Version D(2) Version Ed Version E1 Check Dbat Xmit Number System Xmit Version E Expand 2-Digit Addenda 5-Digit Addenda	A B C D E F G H I	*Yes/No No* *Yes/No *Yes/No *Yes/No *Yes/No *Yes/No *Yes/No *Yes/No *Yes/No
EAN ID = d (HEX 64)	II	EAN/JAN 13 EAN/JAN 8 Check Dbat Xmit 2-Digit Addenda 5-Digit Addenda	A B C D E	*Yes/No *Yes/No *Yes/No *Yes/No *Yes/No
UPC & EAN Addenda Req'd.	III	Enable		Yes/No*

Notes:
(I) Designates DEFAULT selections.
(2) UPC Version D is not supported at this time.

 ENTER

 DEFAULT

 ESCAPE











 EXIT

SAMPLE MENU PAGE




USE THIS PAGE

■ In combination with the adjoining menu pages to program the unit.
■ The bar codes on this page correspond to symbols in shaded areas on adjoining menu pages. SCAN these bar codes in the sequence indicated on menu page to program desired selections and variables.

DIGITS

 0 (YES)	 5
 1 (NO)	 6
 2	 7
 3	 8
 4	 9

OTHERS

 ESCAPE	 DEFAULT	 EXIT
--	--	--

BAR CODE CHART

MENU PAGE

- Each menu page represents one section of the programming menu. Use individual menu pages in combination with the bar code chart on the back page foldout to program the decoder.
- **USE THIS PAGE** – A summary of the programming options (parameters) of each menu page.
- **ENTER** – Each menu page has its own unique ENTER bar code; scan this bar code to activate desired menu page.
- **DEFAULT** – The DEFAULT bar code allows the user to independently default menu pages to asterisk (*) values without affecting, in any way, the rest of the programming menu. Default values can be easily selected from the desired menu pages by scanning the bar code sequence ENTER, DEFAULT, EXIT. Individual defaults for a specific selection can be made by scanning ENTER, ROMAN NUMERAL, DEFAULT, EXIT.
- **ESCAPE** – Use this bar code to cancel current programming sequence. All parameters remain as they were. Scan ESCAPE to abort changes and exit from programming mode.
- **EXIT** – Scanning this bar code ends programming selection. Go from one menu page to another by scanning a new ENTER code (no need to scan EXIT between pages). Scan EXIT to save changes and end programming sequence.
- **SELECTIONS/PARAMETERS** – Lists all of the options available on each menu page. Following each option are symbols in shaded areas. These symbols correspond to bar codes on the adjoining bar code chart.
- **NOTES** – are provided to call out any unusual situations and/or refer you to necessary information or examples elsewhere in the menu or manual.

Programming Note: Programming changes are in effect as soon as you make them! For example: changes to the beeper volume can be heard instantly. Likewise, changes to the baud rate parameters occur as soon as the "ENTER RS-232," Roman Numeral "I," and number ("0-6") sequence has been scanned. EXIT will save the changes; ESCAPE will restore the original settings. Take care that programming parameters match your terminal settings.

MENU PAGE FACING (Not Shown)

- The page facing the menu is often used to supplement or clarify the material presented on the front of each menu page. The information and examples found here are specific to the individual menu page and contain, in some cases, charts and diagrams that must be used in order to determine the correct programming sequence.

BAR CODE DATA CHART

- The bar codes on this chart are assigned to a ROMAN NUMERAL, LETTER, DIGIT, OR YES/NO symbol. These bar codes correspond to the symbols in shaded areas on the menu pages and are scanned in various combinations to enter programming sequences to the decoder. Bar codes on this page are meaningless unless an ENTER bar code from one of the menu pages is first scanned. When an ENTER bar code is scanned, the bar code chart becomes specific to that menu page and remains so until the EXIT bar code is scanned or another menu page is selected.

BEEPER

Volume

This programming selection provides control of the reader's beeper volume. The beeper volume may be set from low to high in four increments. Default = "2," medium-high.

Beep on Power Up

When enabled, the reader will double beep each time the system is reset. When disabled, the beeper will not sound whenever the system is reset. Default = enabled ("Yes").

Beep on Good Read

When enabled, the reader will beep once following a successful decode. When disabled, the beeper will not sound following the decode. Default = enabled ("Yes").

PDF417: Ticking Indicates Scanning Progress

When enabled, the reader 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 = enabled ("Yes").

PDF417: Humming Indicates Decoder Is Busy

When enabled, the reader 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 = enabled ("Yes").

What the Beeper is Telling you:	
As audible feedback, the PDF Capable reader provides five different beeps: single beep, double beep, triple beep, tick, and hum.	
Single Beep	One beep signals a successful barcode read.
Double Beep	Two beeps in succession indicate either: <ul style="list-style-type: none">• a hardware reset (as when the unit is first powered on)• ENTER/EXIT/ESCAPE programming mode (when using the programming menu pages).
Triple Beep	Three quick beeps in succession indicate an error condition, as when an illegal menu code is scanned, or when the serial input buffer overflows. Every character sent to the PDF Capable reader is stored in a buffer. If the characters arrive faster than the reader can process them, it is possible (though rare) that the input buffer will completely fill up, and an overflow occurs.
Tick	The "Tick" has the shortest duration, and no perceivable pitch. It is used to indicate scanning progress while reading PDF417. A tick is initiated for every 32 PDF417 codewords read. A high rate of ticking corresponds to a high rate of data collection, thus good printing and good scanning technique are indicated by a high ticking rate. <i>Refer to the PDF Technical manual for printing/scanning suggestions. In general, keep the scan line of the reader aligned with the rows of the symbol. Printing smaller X-dimension and larger Y-dimension (row height) aids scanning ability.</i>
Hum	The "Hum" is a steady tone with a lower pitch and volume than the beep, and a variable duration. The PDF417 reader cannot scan while decoding PDF417. When a great deal of error correction is required, the reader may appear to be "locked up." Humming indicates that the reader is busy decoding. Use the ticking option for PDF417 to learn how to scan for optimum performance. Careful scanning greatly decreases PDF417 decoding time.

BEEPER

USE THIS PAGE

- To default this page to asterisked (*) values.
- To set beeper volume.
- To program beep on power up and/ or beep on good read.
- To program ticking or humming to indicate scanning/ decoding progress for PDF417.

selections	scan	parameters	scan
VOLUME	I	Low	0
		Medium-Low	1
		Medium-High	2*
		High	3
BEEP ON POWER UP	II	Enable	*Yes/No
BEEP ON GOOD READ	III	Enable	*Yes/No
TICKING INDICATES SCANNING PROGRESS <i>(PDF417 only)</i>	IV	Enable	*Yes/No
HUMMING INDICATES DECODER IS BUSY <i>(PDF417 only)</i>	V	Enable	*Yes/No

Notes:
 (1) * Denotes DEFAULT settings.



RS-232

Baud Rate

This programming 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. Default = 9600 bits per second.

Character Format

This programming selection allows you to set the character format for number of data and parity bits. PDF capable products support seven or eight bits of data and zero or one parity bit per character. The number of start and stop bits is fixed at one each. If an application requires only ASCII characters 0 through 127 decimal (text, digits, and punctuation), select 7 data bits. For applications requiring use of the full ASCII set, select 8 data bits per character. Default = eight data bits, no parity, and one stop bit.

Note: *PDF417 data is checked for accuracy before it is transmitted. This does not guarantee that errors will not be introduced during data communication. A parity bit may be added to each transmitted character as a means of character validation. A checksum character may also be added to the message as a suffix, for even stronger security (see Prefix/Suffix menu page). The receiving device must be set up for precisely the same character format as the reader, to ensure reliable communication.*

Data Flow Control

Flow control may be necessary to handle the larger PDF417 messages. The PDF417 reader will normally transmit a message immediately following a successful decode. With flow control selected, the receiver can enable/disable the reader's transmitter. Default = "None," no data flow control option selected.

For example: suppose the receiver stores transmitted characters in a 512-byte buffer, yet the PDF417 reader has a 1400-byte message to transmit. The receiver might take 510 characters into its buffer, then tell the reader to STOP transmitting. As the receiver processes the message, space becomes available in the 512-byte buffer and the receiver can tell the reader to START transmitting again.

Two methods of flow control have been implemented in the PDF capable products: RTS/CTS hardware handshaking, and an XON/XOFF protocol.

RTS/CTS Handshaking

This option uses two signals in addition to the transmit and receive signals. The reader will have control of the RTS signal, the receiver controls the CTS signal.

Whenever the reader has a message to send, it will raise the Request To Send (RTS) line. If the reader has no messages to send, the line will be held low. When the receiver wants to suspend transmission, the Clear to Send (CTS) line will be held low. The reader looks at the state of CTS prior to sending each character. When the receiver is willing to accept a message from the reader, it should raise the Clear To Send (CTS) line. The reader will resume sending messages, continuing where it left off when the CTS line was lowered.

XON/XOFF Protocol

This option uses only the transmit/receive lines between the reader and the receiver.

When the receiver wants to suspend transmission, it will send the XOFF character (ASCII 19 decimal) to the reader. When the receiver wants to resume transmission, it will send the XON character (ASCII 17 decimal) to the reader. The reader will resume sending messages, continuing where it left off when the XOFF character was sent.

No Read Notification

If Manual Trigger is enabled and you activate and deactivate the trigger without successfully reading a bar code, you will receive the output sequence {Prefix} "NR" {Suffix}. This occurs when the trigger switch is pressed or when the scanner is triggered serially.

USE THIS PAGE

- To default this page to asterisk (*) values.
- To set baud rate.
- To program character format.
- To program data flow control.

selections	scan	parameters	scan
BAUD RATE	I	600 bits/second	0
		1200 bps	1
		2400 bps	2
		4800 bps	3
		9600 bps	4*
		19200 bps	5
		38400 bps	6
CHARACTER FORMAT	II	7 Data, Space Parity, 1 Stop	0
		7 Data, Mark Parity, 1 Stop	1
		7 Data, Even Parity, 1 Stop	2
		7 Data, Odd Parity, 1 Stop	3
		8 Data, No Parity, 1 Stop	4*
		8 Data, Mark Parity, 1 Stop	5
		8 Data, Even Parity, 1 Stop	6
DATA FLOW CONTROL	III	None	0*
		RTS/CTS Handshaking	1
		XON/XOFF Flow Control	2
"NO READ" NOTIFICATION	IV		Yes/No*

Notes:

- (1) * Denotes DEFAULT settings.
- (2) RS-232 parameter changes are affected immediately (i.e., before scanning the EXIT bar code.)



WAND EMULATION

SCANTEAM PDF417 Information /Examples

Overview

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

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

Delay Between Data Blocks

This sets the effective delay between sub-symbols.

Effective Output Scan Rate

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

Digital Output Signal Polarity

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.

Overall Checksum

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).

Note: PDF Wand Emulation Users

Encrypted PDF symbols (Veritas or Hypercompression) are designed to be used with specific applications running on the host device or PC. If the host device or PC is not running the specific application, the control sequences contained in the encrypted PDF symbol could affect the host device or PC. For example, when connected to a PC running Windows™ and **not** running the specified application, symptoms range from different application functions appearing on the screen to various Windows options opening over the application which is running. Concurrent with this, you may notice that the Caps Lock and/or Num Lock keys may be turned on or off on the PC keyboard. This same sequence of events also could occur when you use a wand to scan a linear bar code label containing control sequences.

It is highly recommended that you only scan PDF bar code labels when the host device or PC is running the proper application.

It is also recommended that if you are going to scan a label into the Windows environment via a keyboard wedge, you test the label for possible problems. The problems should be corrected before committing to that PDF label.

If you are using a PDF encrypted or control code label, and you encounter the above problems in Windows, it is recommended that RS-232 be looked into as an option.

Note: If you are using Wand Emulation interface and connected to a SCANTEAM 2000:

If your application requires that the Caps Lock key on the PC be left on, you may notice that your PDF displays upper case characters as lower case and vice versa. To resolve this problem, program the SCANTEAM 2000 for a Caps Lock Keyboard style. Refer to the Output Parameters page in the SCANTEAM 2000 Programming Menu. The default keyboard style is set to Primary. In the PC environment, the Caps Lock Keyboard style is Secondary. (Enter, I, B, Exit).

Welch Allyn  SCANTEAM PDF417 Programming Menu **WAND EMULATION**

USE THIS PAGE

- To default this page to asterisk (*) values.
- To set data block size.
- To program delays between data blocks.
- To set transmission.

selections	scan	parameters	scan
CHARACTERS PER DATA BLOCK	I	20	0
		40	1
		60	2*
		80	3
DELAY BETWEEN DATA BLOCKS	II	5 ms	0
		50 ms	1*
		150 ms	2
		500 ms	3
EFFECTIVE OUTPUT SCAN RATE(1)	III	15 inches per sec.	0
		30 inches per sec.	1*
		60 inches per sec.	2
		120 inches per sec.	3
DIGITAL OUTPUT SIGNAL POLARITY	IV	Black Hi	0*
		White Hi	1
OVERALL CHECKSUM	V	Disabled	0*
		Enabled	1



Notes:

(1) Assuming a bar code density of .010 inches (10 mil).



TRIGGER

Generally, a TRIGGER ON causes the reader to begin decoding, and a TRIGGER OFF halts decoding. The meaning of TRIGGER ON and TRIGGER OFF depends on the trigger mode.

Autotrigger Enable

In autotrigger mode, the reader scans continuously. It does not, however, output decoded messages continuously. Internal logic determines when to output a decoded message. This decision is based on several factors, including the state of TRIGGER ON/OFF. In the context of autotrigger mode, TRIGGER ON and TRIGGER OFF are defined as:

TRIGGER ON – The scanner senses the presence of several black/white elements (does not yet know if pattern is decodable).

TRIGGER OFF – The scanner senses the lack of black/white elements.

The reader's new autotrigger logic is aggressive, resulting in fast reads. It is *not* necessary to TRIGGER OFF to read a *new* code. However, to reread the *same* code twice, you need to TRIGGER OFF for about a quarter of a second or until the scanner senses the lack of black and white elements.

Manual Trigger Enable

In manual trigger mode, a TRIGGER ON is required to activate scanning and decoding. In the context of manual trigger mode, TRIGGER ON/OFF are defined as:

TRIGGER ON – (A) The trigger switch is pressed **or** (B) The serial TRIGGER ON command (ASCII 18 decimal) is sent to the reader.

TRIGGER OFF – (A) The trigger switch is released **or** (B) The serial TRIGGER OFF command (ASCII 20 decimal) is sent to the reader.

In manual trigger mode it is necessary to TRIGGER OFF following a successful decode before another code can be read. The scanning stops immediately following a successful decode, but the reader is not TRIGGERED OFF until one of the conditions above has been satisfied.

Note: *If the scanner is triggered serially, it is not necessary to send the TRIGGER OFF command following a successful decode.*

TRIGGER

USE THIS PAGE

- To default this page to asterisked (*) values.
- To set the trigger mode to autotrigger.
- To set the trigger mode to manual trigger.

selections	scan
AUTOTRIGGER ENABLE	I*
MANUAL TRIGGER ENABLE (2) (3) <i>(For both hardware and serial triggering)</i>	II*

Notes:

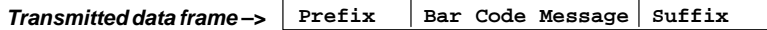
- (1) * Denotes DEFAULT setting.
- (2) SCANTEAM 3000 and 3400 must be in manual trigger mode to use switched power option.
- (3) SCANTEAM 3000 and 3400 units that have a trigger default to Manual Trigger Enable.



PREFIX/SUFFIX

Prefix/Suffix

The scanner will transmit the decoded message after every successful bar code read. You have the option of adding characters before (prefix) and after (suffix) the bar code:



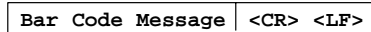
Characters for the prefix and suffix are selected by their hexadecimal ASCII value, up to 8 characters each. In addition, special characters are available for code identification and for error detection. Programming prefix/suffixes is flexible, allowing creative framing possibilities.

These prefix/suffixes apply to all messages regardless of the symbology, and cannot be assigned for a specific symbology. The special characters for Code ID **will** change to indicate the decoded symbology.

Note: *HEX-ASCII and Symbology charts are shown below the Prefix/Suffix Examples. Special Characters and their explanations are on following (menu) page.*

Prefix/Suffix Examples:

- The suffix defaults to a carriage return plus line feed:



If no suffix is desired, scan:

ENTER, II, EXIT

To clear a prefix, scan:

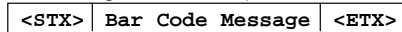
ENTER, I, EXIT

Where: ENTER (Prefix/Suffix) enters programming mode.

II selects suffix programming and clears current suffix.

EXIT saves changes and exits programming mode.

- To frame a message with <STX> (start of transmission) and <ETX> (end of transmission):



First program the prefix, then the suffix, by scanning:

ENTER, I, 0, 2, II, 0, 3, EXIT

Where: ENTER (Prefix/Suffix) enters programming mode.

I selects prefix programming and clears current prefix.

02 represents the hexadecimal ASCII value for the <STX> character.

II selects suffix programming and clears current suffix.


03 represents the hexadecimal ASCII value for the <ETX> character.

EXIT saves changes and exits programming mode.

HEX – ASCII CHART									
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		

SYMBOLGY CHART								
Symbology	Code ID	ASCII	Symbology	Code ID	ASCII	Symbology	Code ID	ASCII
Codabar	a	61	Industrial 2 of 5	f	66	Code 49	l	6C
Code 39	b	62	MSI code	g	67	Matrix 2 of 5	m	6D
UPC	c	63	Code 11	h	68	Plessey code	n	6E
EAN	d	64	Code 93	i	69	Code 16K	o	6F
Interleaved 2 of 5	e	65	Code 128	j	6A	PDF417	r	72

USE THIS PAGE
 ■ To default this page to asterisk (*) values.
 ■ To program prefix/suffix parameters.

selections		parameters
PREFIX	I	Up to EIGHT hexadecimal pairs, 00 through FF *None
SUFFIX	II	Up to EIGHT hexadecimal pairs, 00 through FF * <CR> <LF>



Notes:
 (1) DEFAULT is **NO** prefix and **<CR>** **<LF>** suffix.

Special Characters

Hex Character	Result
80	Insert Code ID The 80 hex will be replaced by a single character identifying the decoded barcode symbology. <i>See the Symbology Chart, facing page.</i>
81	Insert AIM Symbology ID and Modifier The 81 hex will be replaced by a three character string:]CM <i>Where:] is the symbology ID flag character C is the symbology ID character M is the modifier character See AIM Guidelines on Symbology Identifiers for more information.</i>
85	Insert LRC Checksum as two printable hexadecimal characters plus a space. When placed at the end of a transmitted message, the LRC checksum provides a modest amount of error detection. The checksum is computed as the Exclusive-Or of every transmitted character, after being initialized to zero. The LRC checksum can have any value 00 through FF hexadecimal, but not all characters in this range are printable. This option causes the LRC checksum to be transmitted as three characters; two hexadecimal numbers plus a space.
86	Insert LRC Checksum as a single byte A single character is transmitted having a value 00 through FF hexadecimal.
87 XX	Set LRC Checksum = XX (hexadecimal) For initializing the checksum to some value other than zero, XX can be any value 00 through FF hexadecimal. This option is set as the first prefix.



**CODE
SELECTION I
(INDUSTRIAL)**

SCANTEAM PDF417 Information/Examples

Note: Welch Allyn PDF Capable readers can autodiscriminate between 7 Symbologies. For maximum data security, disable the codes not used.

Symbology	Option	Explanation
Codabar	S/S Xmit	Data in a Codabar symbol is framed by a start and a stop character. Since they are not considered part of the message, they are not ordinarily transmitted.
	Check Char Req'd	For applications requiring enhanced security, a check character may be used. When enabled, the reader will assume that the last character is a check character, and will use it to verify the accuracy of the scanned data. If no error is detected, the data will be transmitted.
	Xmit Check Char	When required, the check character will be verified, but will not normally be transmitted. Enable this option to transmit the checksum, when planning to verify transmitted data.
	Concatenation	Codabar provides an option for concatenating messages of adjacent symbols. The reader can distinguish those messages which are concatenated from those that are not. Select "NO" to prevent concatenation.
	Concatenation Req'd	With this option enabled the reader <i>only</i> responds to concatenated symbols. If a particular application will always use concatenation with Codabar, then this option is recommended.
Code 39	S/S Xmit	Data in a Code 39 Symbol is framed by a start and a stop character. Since they are not considered part of the message they are not ordinarily transmitted.
	Check Char Req'd	For applications requiring enhanced security, a check character can be used. When enabled, the reader will assume that the last character is a check character, and will use it to verify the accuracy of the scanned data. If no error is detected, the data will be transmitted.
	Xmit Check Char	When required, the check character will be verified, but will not normally be transmitted. Enable this option to transmit the checksum, when planning to verify transmitted data.
	Full ASCII	The Code 39 specification provides a means of encoding the full ASCII set of characters by using two-character sequences made up of one of the four Code 39 characters (\$ + % /) followed by one of the 26 letters as shown in the Full ASCII Code 39 chart (on page 14). The reader cannot distinguish Code 39 labels encoded in full ASCII mode from those encoded in standard mode. Use this option to direct the decoder which mode to assume.
	Append Option	The Code 39 specification provides a means of appending data messages. If the first data character of a Code 39 symbol is a SPACE, then data following the SPACE can be appended to a storage buffer. PDF Capable readers do not have an append buffer; therefore this function is not available. When append option is selected, any leading SPACE is removed from the transmitted message.
Interleaved 2 of 5	Check Digit Req'd	For applications requiring enhanced data security, a check character can be used. When enabled, the reader will assume that the last digit is a check digit, and will use it to verify the accuracy of the scanned data. If no errors are detected the data will be transmitted.
	Xmit Check Digit	When required, the check digit will be verified, but will not normally be transmitted. Enable this option to transmit the check digit, when planning to verify the transmitted data.

CODE SELECTION I (INDUSTRIAL)

USE THIS PAGE

- To select the pre-programmed asterisk (*) values by scanning DEFAULT symbol.
- To enable or disable listed code selections.

selections	scan	parameters	scan	scan
CODABAR <i>ID = a (HEX 61)</i>	I	Enable		*Yes/No
		S/S Xmit	A	Yes/No*
		Check Char. Req'd	B	Yes/No*
		Xmit Check Char.	C	Yes/No*
		Concatenation	D	*Yes/No
		Concatenation Req'd	E	Yes/No*
		Min Length	F	*01–Max
		Max Length	G	Min–60*
CODE 39 <i>ID = b (HEX 62)</i>	II	Enable		*Yes/No
		S/S Xmit	A	Yes/No*
		Check Char. Req'd	B	Yes/No*
		Xmit Check Char.	C	Yes/No*
		Full ASCII	D	*Yes/No
		Append Option	E	Yes/No*
		Min Length	F	*01–Max
		Max Length	G	Min–48*
INTERLEAVED 2 OF 5 <i>ID = e (HEX 65)</i>	III	Enable		*Yes/No
		Check Digit Req'd	A	Yes/No*
		Xmit Check Digit	B	Yes/No*
		Min Length (2)	C	02–Max
CODE 128 <i>ID = j (HEX 6A)</i>	IV	Enable		*Yes/No
		Min Length	A	*01–Max
		Max Length	B	Min–80*



Notes:

- (1) * Denotes DEFAULT settings.
- (2) The DEFAULT minimum length for Interleaved 2 of 5 codes is 4 characters.

CODE SELECTION II (RETAIL)

Note: Welch Allyn PDF Capable readers can autodiscriminate between 7 Symbolologies. For maximum data security, disable the codes not used.

Symbology	Option	Explanation
UPC	Version A	Standard Version, used to encode a 12 digit number; the first digit is the number system character, the next ten are data characters, the last is a check character.
	Version D	This Variable Length version is not supported by the PDF Capable reader.
	Version E0	The Zero Suppression version for number system 0 compacts UPC data into six digits plus a check character.
	Version E1	No longer supported by the UPC specification because of its similarity to EAN 13, this Zero Suppression version compacts UPC number system 1 data into six digits. The PDF Capable readers can be programmed to read UPC E1 as long as EAN 13 is disabled.
	Check Digit Xmit	The check digit of a UPC symbol is normally transmitted, though the reader can be programmed to suppress the check digit.
	Number System Xmit	The number system character of a UPC symbol is normally transmitted, though the reader can be programmed to suppress the number system character.
	Version E Expand	When this option is selected, the UPC E symbol is expanded into the standard 12 digit format.
	Addenda	Two / five digit addendas are supported; it is recommended you leave them disabled unless they are specifically required. If an addenda will always be used it is recommended you enable the UPC and EAN ADDENDA REQUIRED Option. When enabled, symbols without the addenda will not read.
EAN	EAN / JAN 13	A superset of UPC, EAN 13 encodes a 13 digit number; 12 data digits and a check digit.
	EAN / JAN 8	EAN encodes an 8 digit number; 7 data digits and a check digit.
	Check Digit Xmit	The check digit of an EAN symbol is normally transmitted, though the reader can be programmed to suppress the check digit.
	Addenda	Two and five digit addendas are supported; it is recommended you leave them disabled unless they are specifically required. If an addenda will always be used it is recommended you enable the UPC and EAN ADDENDA REQUIRED Option. When enabled, symbols without the addenda will not read.

FULL ASCII CODE 3 OF 9 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	:	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	- /M	= %H	M M	] %M	m +M	} %R
SO \$N	RS %D	. /N	> %I	N N	^ %N	n +N	~ %S
SI \$O	US %E	/ /O	? %J	O O	_ %O	o +O	DEL %T

**CODE
SELECTION II
(RETAIL)**

USE THIS PAGE

- To select the pre-programmed asterisk (*) values by scanning DEFAULT symbol.
- To enable or disable listed code selections.

selections	scan	parameters	scan	scan
UPC <i>ID = c (HEX 63)</i>	I	Version A	A	*Yes/No
		Version D (2)	B	No*
		Version E0	C	*Yes/No
		Version E1	D	*Yes/No
		Check Digit Xmit	E	*Yes/No
		Number System Xmit	F	*Yes/No
		Version E Expand	G	Yes/No*
		2 Digit Addenda	H	Yes/No*
		5 Digit Addenda	I	Yes/No*
EAN <i>ID = d (HEX 64)</i>	II	EAN/JAN 13	A	*Yes/No
		EAN/JAN 8	B	*Yes/No
		Check Digit Xmit	C	*Yes/No
		2 Digit Addenda	D	Yes/No*
		5 Digit Addenda	E	Yes/No*
UPC & EAN ADDENDA REQ'D.	III	Enable		Yes/No*



- Notes:**
- (1) * Denotes DEFAULT settings.
 - (2) UPC Version D is not supported at this time.

**CODE
SELECTION III
(STACKED)**

Note: Welch Allyn PDF Capable readers can autodiscriminate between 7 Symbologies. For maximum data security, disable the codes not used.

Symbology	Option	Explanation
PDF417	Macro PDF	Up to 16 Macro PDF symbols encoding up to 13,000 characters of data can be combined in designated order and transmitted as a single data packet in the PDF417 readers. Disabling Macro PDF causes the data from every PDF417 symbol to be transmitted independently in the order scanned.
	Show Macro Control Block	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 above). When enabled, the backslash "\ " is used as an escape character and natural occurrences of "\ " in data are replaced by "\\ ".
	Show GLI Blocks	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 "\\ ".
	One Pass	If this option is enabled, any partial PDF417 scan will be cleared from memory upon a TRIGGER OFF. Normally PDF scans are saved in memory until either a DECODE or a new PDF417 label is scanned. It is not always possible for the reader to know when a new label is introduced.
	Notify When Certain	If this option is enabled, the reader sends out a message (ASCII decimal 23) to notify the host system that a successful PDF417 decode is certain; no more scanning is required. For Example: in a machine mount system, a host computer moves a PDF417 label back and forth in front of the PDF Capable reader until the ASCII decimal 23 is received. At that point scanning is completed, and the decoded message will follow.
	When To Decode	The PDF Capable reader must temporarily halt scanning in order to perform PDF417 decoding. A refined algorithm automatically predicts when enough information has been scanned to insure a successful decode. If the scanned data contains many errors, though, decoding cannot succeed and more scanning is required. In a machine mount system with a predetermined scan cycle, it may be an advantage to use Trigger-Off Decoding . When this option is enabled, the reader will not attempt to decode PDF417 until a TRIGGER OFF. During the predetermined scanning time, the reader is sure to be collecting data. The When To Decode default for the SCANTEAM 3700 is set to decode PDF bar code data at Trigger Off to protect against multiple reads of the same code through a single scan. Trigger Off occurs with a change in state of the external or serial trigger or when scanning white in the Autotrigger mode.
	Scan Diagnostics	Enabling Scan Diagnostics causes progress reports to be issued during PDF417 scanning. Interim reports are in the cryptic form: "21x07=115+032=147 129 C" which reports: (#Rows)x(#DataColumns)=(#DataWords)+(#CheckWords) =(Total) (#Read) (Grade) The first five parameters describe the symbol being scanned while the final two report on the progress made in scanning it. Enabling Scan Diagnostics also enables a prolonged delay before attempting an array decode, allowing results to accumulate over several scans of the symbol. Upon successful array decode, a final report is issued in the form: "003 Eras + 001 Errs = >143 A" which presents the results of the error correction calculations.
	No Read Notification	Refer to Page 4 for an explanation of the No Read Notification parameter.

**CODE
SELECTION III
(STACKED)**

USE THIS PAGE

- To select the pre-programmed asterisk (*) values by scanning DEFAULT symbol.
- To enable or disable listed code selections.

selections	scan	parameters	scan	scan
PDF417 <i>ID = r (HEX 72)</i>	I	Enable		*Yes/No
		Macro PDF (2)	A	*Yes/No
		Show Macro Control Block (3) (5)	B	Yes/No*
		Show GLI Blocks (3) (5)	C	Yes/No*
		One Pass Option (4)	D	Yes/No*
		Notify When Certain (4)	E	Yes/No*
		When To Decode	F	
		Trigger Off Decoding (4) (6)		0*
		Automatic (6)		1*
		Scan Diagnostics (7)	G	Yes/No*
"No Read" Notification (8)	G	Yes/No*		

Notes:

- (1) * Denotes DEFAULT settings.
- (2) Macro PDF storage not available on SCANTEAM 2000 and SCANTEAM 3000 decoders.
- (3) Enabling either "Show" option causes backslash characters occurring normally in encoded data to be issued twice (i.e., as "\\").
- (4) This feature is best used for the SCANTEAM 3700 machine mount scanner.
- (5) Features available for Macro PDF only.
- (6) The default for the When To Decode option is Trigger Off Decoding for the SCANTEAM 3700. The default for the When To Decode option is Automatic for the SCANTEAM 3000 and SCANTEAM 3400.
- (7) This parameter applies to scanners configured for RS-232 output.
- (8) This parameter applies to 3400 scanners configured for wand emulation output.



DISABLE ALL SYMBOLOGIES

USE THIS PAGE
 ■ To disable all symbologies.

selections	scan
DISABLE ALL CODES (1, 2)	X

Scan the Roman numeral X to disable ALL symbologies.
CAUTION: You will **not** be prompted to verify this option.

Notes:

- (1) All retail, industrial, and stacked symbologies will be disabled.
- (2) For optimum scanning performance, disable all codes and only use those symbologies relevant to your application requirements.



SERIAL MENU

Welch Allyn 

SCANTEAM PDF417 Programming Menu

Using the Serial Menu

The serial menu may be used any time in place of the bar code menuing. The serial menu is particularly useful for programming PDF capable machine mount readers that do not have a hardware trigger.

Every programming menu code can be replaced by a two character serial command. A serial device programs the reader by sending the proper sequence of serial commands. Use the menu pages to select the programming variables your application requires.

For every menu code, the equivalent two character serial command (and its corresponding ASCII decimal value) are given in the SERIAL MENU CHARTS on the following pages.

Example 1

If you want PDF417 enabled and all other bar code symbologies disabled, use the following sequence of serial commands:

**E <Ctrl-X> T <Ctrl-Y> <SPC> <Ctrl-Y> F<Ctrl-X> K <Ctrl-Y> 0 <Ctrl-Y>
<SPC > <Ctrl-Y>**

The above serial commands correspond to the selections and variables on the programming menu page:

- ENTER code for Disable All Symbologies Menu Page
- Confirm Selection
- "Exit" code for that menu page
- "Enter" code for stacked codes
- PDF417 selection (Roman Numeral I)
- "Yes" (Digit 0) to enable PDF417 decoding
- "EXIT" code for that menu page.

Example 2

If you wish to set the Beeper Volume to its highest setting, use the BEEPER menu page. The correct sequence of serial commands would be:

A <Ctrl-X> K <Ctrl-Y> 3 <Ctrl-Y> <SPC> <Ctrl-Y>

The above serial commands correspond to the selections and variables on the programming menu page:

- ENTER code for that menu page
- "VOLUME" selection (Roman Numeral I)
- "HIGH" (Digit 3) to select the high option
- "EXIT" code for that menu page.

Special Notes:

Take care not to confuse the letter O and the number 0. Note also that the DEFAULT code is represented by a period (.) followed by <Ctrl-Y>. ASCII (decimal) values are included on the SERIAL MENU CHARTS (below the corresponding serial command).

RS-232 parameter changes are immediately affected. The connected host serial device must also change to the programmed selections accordingly. After changing baud rate it may be necessary to wait a short amount of time for the serial port to stabilize. For this reason bar code menuing is suggested for changing RS-232 parameters.

In manual trigger mode, two serial commands may be used to turn the trigger on/off. The commands are:

ASCII 18 (decimal)	Ctrl-R	Trigger ON
ASCII 20 (decimal)	Ctrl-T	Trigger OFF

For PDF417, the Notify When Certain character is:

ASCII 23 (decimal)	Ctrl-W	Notify When Certain
--------------------	---------------	---------------------

USE THIS PAGE

- In combination with the adjoining menu pages to program the PDF417 by sending serial commands from the host.
- The serial command sequences on this page correspond to the bar code symbols on the BAR CODE CHARTS.

ROMAN NUMERALS

K <Ctrl-Y>
75 25

I

<- Serial Command ->
<- ASCII (decimal) ->

P <Ctrl-Y>
80 25

VI

L <Ctrl-Y>
76 25

II

<- Serial Command ->
<- ASCII (decimal) ->

Q <Ctrl-Y>
81 25

VII

M <Ctrl-Y>
77 25

III

<- Serial Command ->
<- ASCII (decimal) ->

R <Ctrl-Y>
82 25

VIII

N <Ctrl-Y>
78 25

IV

<- Serial Command ->
<- ASCII (decimal) ->

S <Ctrl-Y>
83 25

IX

O <Ctrl-Y>
79 25

V

<- Serial Command ->
<- ASCII (decimal) ->

T <Ctrl-Y>
84 25

X

ENTER CODES: MENU PAGES

A <Ctrl-X>
65 24

BEEPER

<- Serial Command ->
<- ASCII (decimal) ->

B <Ctrl-X>
66 24

RS-232

G <Ctrl-X>
71 24

TRIGGER

<- Serial Command ->
<- ASCII (decimal) ->

C <Ctrl-X>
67 24

PREFIX/SUFFIX

USE THIS PAGE

- In combination with the adjoining menu pages to program the PDF417 by sending serial commands from the host.
- The serial command sequences on this page correspond to the bar code symbols on the BAR CODE CHARTS.

LETTERS

A <Ctrl-Y>
65 25

A

<- Serial Command ->
<- ASCII (decimal) ->

F <Ctrl-Y>
70 25

F

B <Ctrl-Y>
66 25

B

<- Serial Command ->
<- ASCII (decimal) ->

G <Ctrl-Y>
71 25

G

C <Ctrl-Y>
67 25

C

<- Serial Command ->
<- ASCII (decimal) ->

H <Ctrl-Y>
72 25

H

D <Ctrl-Y>
68 25

D

<- Serial Command ->
<- ASCII (decimal) ->

I <Ctrl-Y>
73 25

I

E <Ctrl-Y>
69 25

E

<- Serial Command ->
<- ASCII (decimal) ->

J <Ctrl-Y>
74 25

J

ENTER CODES: MENU PAGES

D <Ctrl-X>
68 24

INDUSTRIAL CODES

<- Serial Command ->
<- ASCII (decimal) ->

E <Ctrl-X>
69 24

RETAIL CODES

F <Ctrl-X>
70 24

STACKED CODES

<- Serial Command ->
<- ASCII (decimal) ->

E <Ctrl-X>
69 24

DISABLE ALL CODES

USE THIS PAGE

- In combination with the adjoining menu pages to program the PDF417 by sending serial commands from the host.
- The serial command sequences on this page correspond to the bar code symbols on the BAR CODE CHARTS.

DIGITS

0 <Ctrl-Y> 48 25	<- Serial Command -> <- ASCII (decimal) ->	5 <Ctrl-Y> 53 25
0 (YES)		5
1 <Ctrl-Y> 49 25	<- Serial Command -> <- ASCII (decimal) ->	6 <Ctrl-Y> 54 25
1 (NO)		6
2 <Ctrl-Y> 50 25	<- Serial Command -> <- ASCII (decimal) ->	7 <Ctrl-Y> 55 25
2		7
3 <Ctrl-Y> 51 25	<- Serial Command -> <- ASCII (decimal) ->	8 <Ctrl-Y> 56 25
3		8
4 <Ctrl-Y> 52 25	<- Serial Command -> <- ASCII (decimal) ->	9 <Ctrl-Y> 57 25
4		9

OTHERS

* <Ctrl-Y> 42 25	<- Serial Command -> <- ASCII (decimal) ->	<SPC> <Ctrl-Y> 32 25
ESCAPE		EXIT
. <Ctrl-Y> 46 25	<- Serial Command -> <- ASCII (decimal) ->	
DEFAULT		

USE THIS PAGE

- In combination with the adjoining menu pages to program your PDF417 scanner.
- The bar codes on this page correspond to symbols in shaded areas on adjoining menu pages. SCAN these bar codes in the sequence indicated on menu page to program desired selections and variables.

ROMAN NUMERALS



ENTER CODES: MENU PAGES



USE THIS PAGE

- In combination with the adjoining menu pages to program your PDF417 scanner.
- The bar codes on this page correspond to symbols in shaded areas on adjoining menu pages. SCAN these bar codes in the sequence indicated on menu page to program desired selections and variables.

LETTERS



ENTER CODES: MENU PAGES



USE THIS PAGE

- In combination with the adjoining menu pages to program your PDF417 scanner.
- The bar codes on this page correspond to symbols in shaded areas on adjoining menu pages. SCAN these bar codes in the sequence indicated on menu page to program desired selections and variables.

DIGITS



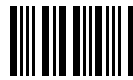
0 (YES)



5



1 (NO)



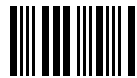
6



2



7



3



8



4



9

OTHERS



ESCAPE



EXIT



DEFAULT

SAMPLE BAR CODES

SCANTEAM PDF417 Programming Menu

■ This page contains bar code symbols in some of the most commonly used symbologies. You may use these codes to test that your system is properly programmed for a particular symbology.

Code 39



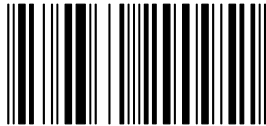
TEST-SHEET

Interleaved 2 of 5



1234567890

EAN-13



9780330290951

Codabar



0013557900

Code 128



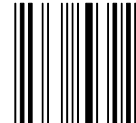
CODE 128<BEL>

UPC-A



031323120786

5 add on



56098

PDF417



WELCH ALLYN IS PDF CAPABLE!



Welch Allyn

Data Collection Division

4619 Jordan Road

P.O. Box 187

Skaneateles Falls, New York 13153-0187

PDF/PM Rev D