

# **510-2d Complete Configuration Guide**

## **Worth Data Inc.**

3/06



# User Preferences

Table 1. User Preferences Default Table

Parameter	Parameter Number	Default	Page Number
<b>User Preferences</b>			
Set Default Parameter	All	Defaults	1
Parameter Scanning	ECh	Enable	1
Beeper Tone	91h	Medium	1, 2
Beeper Volume	8Ch	High	2
Trigger Modes	8Ah	Level	2, 3
Power Mode	80h	Low Power	3
Time Delay to Low Power Mode	92h	1.0 Sec	3, 4
Decode Session Timeout	88h	9.9 Sec	4
Timeout Between Decodes, Same Symbol	89h	0.6 Sec	4
Beep After Good Decode	38h	Enable	5
Presentation Mode Session Timeout	F0h, 90h	2 Seconds	5

## Set Default Parameter

Scan this bar code to return all parameters to the default values listed in *Table 12* on page 59.



**\*Set All Defaults**

## Parameter Scanning

*Parameter # ECh*

To disable decoding of parameter bar codes, scan the **Disable Parameter Scanning** bar code below. Note that the **Set Defaults** parameter bar code can still be decoded. To enable decoding of parameter bar codes, either scan **Enable Parameter Scanning** or **Set All Defaults**.



**\*Enable Parameter Scanning  
(01h)**



**Disable Parameter Scanning**

## Beeper Tone

*Parameter # 91h*

To select a decode beep frequency (tone), scan the **Low Frequency**, **Medium Frequency**, or **High Frequency** bar code.



**Low Frequency  
(02h)**



**\*Medium Frequency  
(Optimum Setting)  
(01h)**



**High Frequency  
(00h)**

## Beeper Volume

*Parameter # 8Ch*

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



**Low Volume  
(02h)**



**Medium Volume  
(01h)**



**\*High Volume  
(00h)**

## Trigger Modes

*Parameter # 8Ah*

- **Level** - A trigger event activates decode processing, which continues until the trigger event ends, a valid decode, or the decode session time-out is reached.
- **Presentation Mode** - When the 510-2D detects an object in its field of view it triggers and attempt to decode. The range of object detection does not vary under normal lighting conditions. This applies to decode mode only. In this mode the unit does not enter its sleep state.
- **Host** - A host command issues the triggering signal. The 510-2D interprets a trigger pull as a level triggering option.



**\*Level  
(00h)**



**Presentation Mode  
(07h)**



**Host  
(08h)**

## Power Mode

*Parameter # 80h*

This parameter determines whether or not power remains on after a decode attempt. In **low power mode**, the decoder enters into a low power consumption mode to preserve battery life after each decode attempt. In **continuous power mode**, power remains on after each decode attempt.



**Continuous On  
(00h)**



**\*Low Power Mode  
(01h)**

## Time Delay to Low Power Mode

*Parameter # 92h*

This parameter sets the time the decoder remains active after decoding. The decoder wakes upon trigger pull or when the host attempts to communicate with the decoder. This parameter only applies when **Power Mode** is set to **Low Power**.



**\*1 Second  
(11h)**



**5 Seconds  
(15h)**



**1 Minute  
(21h)**



**5 Minutes  
(25h)**



**15 Minutes  
(2Bh)**



**1 Hour  
(31h)**

## Decode Session Timeout

*Parameter # 88h*

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.5 to 9.9 seconds. The default timeout is 9.9 seconds. To set a **Decode Session Timeout**, scan the bar code below. Next, scan two numeric bar codes from page 67 that correspond to the desired on time. Single digit numbers must have a leading zero. For example, to set a **Decode Session Timeout** of 0.5 seconds, scan the bar code below, then scan the **0** and **5** bar codes. To correct an error or change the selection, scan **Cancel** on page 68.



**Decode Session Timeout**

## Timeout Between Decodes, Same Symbol

*Parameter # 89h*

This option is used in presentation mode to prevent multiple reads of a symbol left in the 510-2D's field of view. The timeout begins when the symbol is removed from the field of view. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. The default interval is 0.6 seconds. To select the timeout between decodes for the same symbol, scan the bar code below, then scan two numeric bar codes from page 67 that correspond to the desired interval, in 0.1 second increments.



**Timeout Between Decodes, Same Symbol**

## Beep After Good Decode

Parameter # 38h

Scan a bar code below to select whether or not the decoder issues a beep signal after a good decode. If selecting **Do Not Beep After Good Decode**, beeper signals are issued during parameter menu scanning and to indicate error conditions.



**\*Beep After Good Decode  
(Enable)  
(01h)**



**Do Not Beep After Good Decode  
(Disable)  
(00h)**

## Presentation Mode Session Timeout

Parameter # F0h, 90h

To set the duration of the attempt to decode a bar code detected in presentation mode, scan the bar code below. Next, scan three numeric bar codes from page 67 to select a value between 1 and 255 that represents tenths of a second. Single digit numbers must have a leading zero. For example, to set 0.5 seconds, scan the bar code below, then scan the **0, 0, 5** bar codes. To correct an error or change the selection, scan **Cancel** on page 68. The default value is 2 seconds.



**Presentation Mode Session Timeout**

## USB Parameter Defaults

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Table 2 lists the defaults for USB host parameters. To change any option, scan the appropriate bar code(s) provided in the **Parameter Descriptions** section beginning on page 6. See page 59, *Standard Default Parameters* for all user preferences, hosts, symbologies, and miscellaneous default parameters.

**Table 2. USB Host Default Table**

Parameter	Default	Page Number
<b>USB Host Parameters</b>		
USB Device Type	SNAPI with Imaging	6
USB Country Keyboard Types (Country Codes)	North American	6, 7
USB Keystroke Delay	No Delay	7, 8
USB CAPS Lock Override	Disable	8
USB Ignore Unknown Characters	Enable	8
Emulate Keypad	Disable	8, 9
USB FN1 Substitution	Disable	9
Function Key Mapping	Disable	9
Simulated Caps Lock	Disable	9
Convert Case	None	10

# USB Host Parameters \* Indicates Default

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## USB Device Type

Select the desired USB device type. When changing USB Device Types, the decoder automatically resets. The decoder issues the standard startup beep sequences.



**HID Keyboard Emulation**



**Simple COM Port Emulation**

## USB Country Keyboard Types (Country Codes)

Scan the bar code corresponding to the keyboard type. This setting applies only to the **USB HID Keyboard Emulation** device. When changing USB country keyboard types the decoder automatically resets. The decoder issues the standard startup beep sequences.



**\*North American Standard USB Keyboard**



**German Windows**



**French Windows**



**French Canadian Windows 95/98**



**French Canadian Windows 2000/XP**



**Spanish Windows**



**Italian Windows**



**Swedish Windows**



**UK English Windows**



**Japanese Windows (ASCII)**



**Portuguese-Brazilian Windows**

## **USB Keystroke Delay**

This parameter sets the delay, in milliseconds, between emulated keystrokes. Scan a bar code below to increase the delay when hosts require a slower transmission of data.



**\*No Delay**



**Medium Delay (20 msec)**



**Long Delay (40 msec)**

## USB CAPS Lock Override

This option applies only to the **HID Keyboard Emulation** device. When enabled, the case of the data is preserved regardless of the state of the caps lock key. This setting is always enabled for the **Japanese, Windows** (ASCII) keyboard type and can not be disabled.



**Override Caps Lock Key  
(Enable)**



**\*Do Not Override Caps Lock Key  
(Disable)**

## USB Ignore Unknown Characters

This option applies only to the **HID Keyboard Emulation** device and IBM device. Unknown characters are characters the host does not recognize. When **Send Bar Codes With Unknown Characters** is selected, all bar code data is sent except for unknown characters, and no error beeps sound. When **Do Not Send Bar Codes With Unknown Characters** is selected, for IBM devices, bar codes containing at least one unknown character are not sent to the host, and an error beep sounds. For **HID Keyboard Emulation** devices, the bar code characters up to the unknown character are sent, and an error beep sounds.



**\*Send Bar Codes with Unknown Characters  
(Transmit)**



**Do Not Send Bar Codes with Unknown Characters  
(Disable)**

## Emulate Keypad

When enabled, all characters are sent as ASCII sequences over the numeric keypad. For example ASCII A would be sent as “ALT make” 0 6 5 “ALT Break”. This allows support for other country variants.



**\*Disable Keypad Emulation**



**Enable Keypad Emulation**

## USB Keyboard FN 1 Substitution

This option applies only to the **USB HID Keyboard Emulation** device. When enabled, this allows replacement of any FN 1 characters in an EAN 128 bar code with a Key Category and value chosen by the user (see *FN1 Substitution Values* on pages 57 and 58 to set the *Key Category* and *Key Value*).



**Enable**



**\*Disable**

## Function Key Mapping

ASCII values under 32 are normally sent as a control-key sequences (see *Table 3* on page 10). When this parameter is enabled, the keys in bold are sent in place of the standard key mapping. Table entries that do not have a bold entry remain the same whether or not this parameter is enabled.



**\*Disable Function Key Mapping**



**Enable Function Key Mapping**

## Simulated Caps Lock

When enabled, the decoder inverts upper and lower case characters on the bar code as if the Caps Lock state is enabled on the keyboard. This inversion is done regardless of the current state of the keyboard's Caps Lock state.



**\*Disable Simulated Caps Lock**



**Enable Simulated Caps Lock**

## Convert Case

When enabled, the decoder converts all bar code data to the selected case.



\*No Case Conversion



Convert All to Upper Case



Convert All to Lower Case

## ASCII Character Set for USB

Table 3. USB Prefix/Suffix Values

Prefix/ Suffix Value	Full ASCII Code 39	Encode Character Keystroke
1000	%U	CTRL 2
1001	\$A	CTRL A
1002	\$B	CTRL B
1003	\$C	CTRL C
1004	\$D	CTRL D
1005	\$E	CTRL E
1006	\$F	CTRL F
1007	\$G	CTRL G
1008	\$H	CTRL H / <b>BACKSPACE</b> <sup>1</sup>
1009	\$I	CTRL I / <b>HORIZONTAL TAB</b> <sup>1</sup>
1010	\$J	CTRL J
1011	\$K	CTRL K
1012	\$L	CTRL L
1013	\$M	CTRL M / <b>ENTER</b> <sup>1</sup>
1014	\$N	CTRL N
1015	\$O	CTRL O
1016	\$P	CTRL P
1017	\$Q	CTRL Q
1018	\$R	CTRL R
1019	\$S	CTRL S
1020	\$T	CTRL T
1021	\$U	CTRL U
1022	\$V	CTRL V
1023	\$W	CTRL W
1024	\$X	CTRL X
1025	\$Y	CTRL Y
1026	\$Z	CTRL Z
1027	%A	CTRL [ / <b>ESC</b> <sup>1</sup>
1028	%B	CTRL \
1029	%C	CTRL ]

<sup>1</sup>The keystroke in bold is sent only if the “Function Key Mapping” is enabled. Otherwise, the unbolded keystroke is sent.

**Table 3. USB Prefix/Suffix Values (Continued)**

Prefix/ Suffix Value	Full ASCII Code 39	Encode Char.acter Keystroke
1030	%D	CTRL 6
1031	%E	CTRL -
1032	Space	Space
1033	/A	!
1034	/B	"
1035	/C	#
1036	/D	\$
1037	/E	%
1038	/F	&
1039	/G	'
1040	/H	(
1041	/I	)
1042	/J	*
1043	/K	+
1044	/L	,
1045	-	-
1046	.	.
1047	/O	/
1048	0	0
1049	1	1
1050	2	2
1051	3	3
1052	4	4
1053	5	5
1054	6	6
1055	7	7
1056	8	8
1057	9	9
1058	/Z	:
1059	%F	;
1060	%G	<
1061	%H	=
1062	%I	>
1063	%J	?
1064	%V	@
1065	A	A
1066	B	B
1067	C	C
1068	D	D
1069	E	E
1070	F	F
1071	G	G
1072	H	H
1073	I	I
1074	J	J
1075	K	K
1076	L	L
1077	M	M
1078	N	N
1079	O	O
1080	P	P

*<sup>1</sup>The keystroke in bold is sent only if the “Function Key Mapping” is enabled. Otherwise, the unbolded keystroke is sent.*

**Table 3. USB Prefix/Suffix Values (Continued)**

Prefix/ Suffix Value	Full ASCII Code 39	Encode Char.acter Keystroke
1081	Q	Q
1082	R	R
1083	S	S
1084	T	T
1085	U	U
1086	V	V
1087	W	W
1088	X	X
1089	Y	Y
1090	Z	Z
1091	%K	[
1092	%L	\
1093	%M	]
1094	%N	^
1095	%O	_
1096	%W	`
1097	+A	<b>a</b>
1098	+B	<b>b</b>
1099	+C	<b>c</b>
1100	+D	<b>d</b>
1101	+E	<b>e</b>
1102	+F	<b>f</b>
1103	+G	<b>g</b>
1104	+H	<b>h</b>
1105	+I	<b>i</b>
1106	+J	<b>j</b>
1107	+K	<b>k</b>
1108	+L	<b>l</b>
1109	+M	<b>m</b>
1110	+N	<b>n</b>
1111	+O	<b>o</b>
1112	+P	<b>p</b>
1113	+Q	<b>q</b>
1114	+R	<b>r</b>
1115	+S	<b>s</b>
1116	+T	<b>t</b>
1117	+U	<b>u</b>
1118	+V	<b>v</b>
1119	+W	<b>w</b>
1120	+X	<b>x</b>

*The keystroke in bold is sent only if the “Function Key Mapping” is enabled. Otherwise, the unbolded keystroke is sent.*

**Table 4. USB ALT Key Character Set**

ALT Keys	Keystroke
2064	ALT 2
2065	ALT A
2066	ALT B
2067	ALT C
2068	ALT D
2069	ALT E
2070	ALT F
2071	ALT G
2072	ALT H
2073	ALT I
2074	ALT J
2075	ALT K
2076	ALT L
2077	ALT M
2078	ALT N
2079	ALT O
2080	ALT P
2081	ALT Q
2082	ALT R
2083	ALT S
2084	ALT T
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z

**Table 5. USB GUI Key Character Set**

GUI Key	Keystroke
3000	Right Control Key
3048	GUI 0
3049	GUI 1
3050	GUI 2
3051	GUI 3
3052	GUI 4
3053	GUI 5
3054	GUI 6
3055	GUI 7
3056	GUI 8
3057	GUI 9
3065	GUI A
3066	GUI B
3067	GUI C
3068	GUI D
3069	GUI E
3070	GUI F
3071	GUI G
3072	GUI H
3073	GUI I
3074	GUI J
3075	GUI K
3076	GUI L
3077	GUI M
3078	GUI N
3079	GUI O
3080	GUI P
3081	GUI Q
3082	GUI R
3083	GUI S
3084	GUI T
3085	GUI U
3086	GUI V
3087	GUI W
3088	GUI X
3089	GUI Y
3090	GUI Z

*Note: GUI Shift Keys - The Apple™ iMac keyboard has an apple key on either side of the space bar. Windows-based systems have a GUI key to the left of the left ALT key, and to the right of the right ALT key.*

**Table 6. USB F Key Character Set**

F Keys	Keystroke
5001	F1
5002	F2
5003	F3
5004	F4
5005	F5
5006	F6
5007	F7
5008	F8
5009	F9
5010	F10
5011	F11
5012	F12
5013	F13
5014	F14
5015	F15
5016	F16
5017	F17
5018	F18
5019	F19
5020	F20
5021	F21
5022	F22
5023	F23
5024	F24

**Table 7. USB Numeric Keypad Character Set**

Numeric Keypad	Keystroke
6042	*
6043	+
6044	undefined
6045	-
6046	.
6047	/
6048	0
6049	1
6050	2
6051	3
6052	4
6053	5
6054	6
6055	7
6056	8
6057	9
6058	Enter
6059	Num Lock

**Table 8. USB Extended Keypad Character Set**

Extended Keypad	Keystroke
7001	Break
7002	Delete
7003	PgUp
7004	End
7005	Pg Dn
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert
7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Down Arrow
7017	Left Arrow
7018	Right Arrow

## Scanning Sequence Examples

In most cases, scanning one bar code sets the parameter value. For example, to transmit bar code data without the UPC-A check digit, simply scan the **Do Not Transmit UPC-A Check Digit** bar code under *Transmit UPC-A Check Digit* on page 20. The decoder issues a fast warble beep and the LED turns green, signifying a successful parameter entry.

Other parameters, such as **Set Length(s) for D 2 of 5** require scanning several bar codes. See the individual parameter, such as **Set Length(s) for D 2 of 5**, for this procedure.

## Errors While Scanning

Unless otherwise specified, to correct an error during a scanning sequence, just re-scan the correct parameter.

## Symbology Parameter Defaults

*Table 9* lists the defaults for all symbologies parameters. To change any option, scan the appropriate bar code(s) provided in the *Symbologies Parameters* section beginning on 17. See page 59, *Table 12. Standard Default Parameters* for all user preferences, hosts, and miscellaneous default parameters.

**Table 9. Symbology Default Table**

Parameter	Parameter Number	Default	Page Number
<b>UPC/EAN</b>			
UPC-A	01h	Enable	17
UPC-E	02h	Enable	17
UPC-E1	0Ch	Disable	17
EAN-8/JAN 8	04h	Enable	18
EAN-13/JAN 13	03h	Enable	18
Bookland EAN	53h	Disable	18
Decode UPC/EAN/JAN Supplementals (2 and 5 digits)	10h	Ignore	19
UPC/EAN/JAN Supplemental Redundancy	50h	10	20
Transmit UPC-A Check Digit	28h	Enable	20
Transmit UPC-E Check Digit	29h	Enable	20
Transmit UPC-E1 Check Digit	2Ah	Enable	21
UPC-A Preamble	22h	System Character	21
UPC-E Preamble	23h	System Character	21, 22
UPC-E1 Preamble	24h	System Character	22
Convert UPC-E to A	25h	Disable	22, 23
Convert UPC-E1 to A	26h	Disable	23
EAN-8/JAN-8 Extend	27h	Disable	23
UCC Coupon Extended Code	55h	Disable	23, 24
<b>Code 128</b>			
Code 128	08h	Enable	24
UCC/EAN-128	0Eh	Enable	24
ISBT 128	54h	Enable	25
<b>Code 39</b>			
Code 39	00h	Enable	25
Trioptic Code 39	0Dh	Disable	25
Convert Code 39 to Code 32 (Italian Pharmacy Code)	56h	Disable	26
Code 32 Prefix	E7h	Disable	26
Set Length(s) for Code 39	12h 13h	2 to 55	26, 27
Code 39 Check Digit Verification	30h	Disable	27
Transmit Code 39 Check Digit	2Bh	Disable	27, 28
Code 39 Full ASCII Conversion	11h	Disable	28
Buffer Code 39	71h	Disable	28, 29
<b>Code 93</b>			
Code 93	09h	Disable	30
Set Length(s) for Code 93	1Ah 1Bh	4 to 55	30, 31
<b>Code 11</b>			
Code 11	0Ah	Disable	31
Set Lengths for Code 11	1Ch 1Dh	4 to 55	31, 32
Code 11 Check Digit Verification	34h	Disable	32
Transmit Code 11 Check Digit(s)	2Fh	Disable	32, 33

<b>Interleaved 2 of 5 (ITF)</b>			
Interleaved 2 of 5 (ITF)	06h	Enable	33
Set Lengths for I 2 of 5	16h 17h	14	33, 34
I 2 of 5 Check Digit Verification	31h	Disable	34
Transmit I 2 of 5 Check Digit	2Ch	Disable	34, 35
Convert I 2 of 5 to EAN 13	52h	Disable	35
<b>Discrete 2 of 5 (DTF)</b>			
Discrete 2 of 5	05h	Disable	35
Set Length(s) for D 2 of 5	14h 15h	12	36
<b>Codabar (NW - 7)</b>			
Codabar	07h	Disable	37
Set Lengths for Codabar	18h 19h	5 to 55	37, 38
CLSI Editing	36h	Disable	38
NOTIS Editing	37h	Disable	38
<b>MSI</b>			
MSI	0Bh	Disable	39
Set Length(s) for MSI	1Eh 1Fh	4 to 55	39, 40
MSI Check Digits	32h	One	40
Transmit MSI Check Digit	2Eh	Disable	40
MSI Check Digit Algorithm	33h	Mod 10/Mod 10	41
<b>Postal Codes</b>			
US Postnet	59h	Enable	41
US Planet	5Ah	Enable	41
UK Postal	5Bh	Enable	42
Transmit UK Postal Check Digit	60h	Enable	42
Japan Postal	F0h 22h	Enable	42
Australian Postal	F0h 23h	Enable	43
Dutch Postal	F0h 46h	Enable	43
Transmit US Postal Check Digit	5Fh	Enable	43
<b>RSS (Reduced Space Symbology)</b>			
RSS 14	F0h 52h	Enable	44
RSS Limited	F0h 53h	Enable	44
RSS Expanded	F0h 54h	Enable	44
Convert RSS to UPC/EAN	F0h 8Dh	Disable	45
<b>Composite</b>			
Composite CC-C	F0h 55h	Disable	45
Composite CC-A/B	F0h 56h	Disable	45
Composite TLC-39	F0h 73h	Disable	46
UPC Composite Mode	F0h 58h	Always Linked	46
Composite Beep Mode	F0h 8Eh	Beep As Each Code Type is Decoded	46, 47
UCC/EAN Code 128 Emulation Mode for UCC/EAN Composite Codes	F0h ABh	Disable	47
<b>2D Symbologies</b>			
PDF417	0Fh	Enable	47
MicroPDF417	E3h	Disable	48
Code 128 Emulation	7Bh	Disable	48
Data Matrix	F0h 24h	Enable	49
Maxicode	F0h 26h	Enable	49
QR Code	F0h 25h	Enable	49
<b>Symbology-Specific Security Levels</b>			
Redundancy Level	4Eh	1	50
Security Level	4Dh	1	51
Intercharacter Gap Size	F0h 7Dh	Normal	52
Report Version			52
<b>Macro PDF</b>			
Macro PDF Transmit/Decode Mode Symbols	BCh	Passthrough Mode	53
Transmit Macro PDF Control Header	B8h	Disable	53, 54
Escape Characters	E9h	None	54
Flush Macro PDF Buffer			54
Abort Macro PDF Entry			54

# UPC/EAN

## Enable/Disable UPC-A

*Parameter # 01h*

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



**\*Enable UPC-A  
(01h)**



**Disable UPC-A  
(00h)**

## Enable/Disable UPC-E

*Parameter # 02h*

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



**\*Enable UPC-E  
(01h)**



**Disable UPC-E  
(00h)**

## Enable/Disable UPC-E1

*Parameter # 0Ch*

UPC-E1 is disabled by default. To enable or disable UPC-E1, scan the appropriate bar code below. UPC-E1 is not a UCC (Uniform Code Council) approved symbology.



**Enable UPC-E1  
(01h)**



**\*Disable UPC-E1  
(00h)**

## Enable/Disable EAN-8/JAN-8

*Parameter # 04h*

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



**\*Enable EAN-8/JAN-8  
(01h)**



**Disable EAN-8/JAN-8  
(00h)**

## Enable/Disable EAN-13/JAN-13

*Parameter # 03h*

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



**\*Enable EAN-13/JAN-13  
(01h)**



**Disable EAN-13/JAN-13  
(00h)**

## Enable/Disable Bookland EAN

*Parameter # 53h*

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



**Enable Bookland EAN  
(01h)**



**\*Disable Bookland EAN  
(00h)**

## Decode UPC/EAN/JAN Supplementals

### Parameter # 10h

Supplementals are bar codes appended according to specific format conventions (e.g., UPC A+2, UPC E+2, EAN 13+2). Six options are available.

- If **Decode UPC/EAN/JAN Only With Supplementals** is selected, UPC/EAN/JAN symbols without supplementals are not decoded.
- If **Ignore Supplementals** is selected, and the decoder is presented with a UPC/EAN/JAN with a supplemental, the UPC/EAN/JAN is decoded and the supplemental bar code is ignored.
- An **Autodiscriminate** Option is also available. If this option is selected, choose an appropriate **UPC/EAN/JAN Supplemental Redundancy** value from the next page. A value of 5 or more is recommended.
- **Enable 378/379 Supplemental Mode** to delay only EAN-13/JAN-13 bar codes starting with a '378' or '379' prefix by the supplemental search process. All other UPC/EAN/JAN bar codes are exempt from the search and are reported instantly upon decode.
- Select **Enable 978 Supplemental Mode** to delay only EAN-13/JAN-13 bar codes starting with a '978' prefix by the supplemental search process. All other UPC/EAN/JAN bar codes are exempt from the search and are reported instantly upon decode.
- Select **Enable Smart Supplemental Mode** to delay only EAN-13/JAN-13 bar codes starting with a '378', '379', or '978' prefix by the supplemental search process. All other UPC/EAN/JAN bar codes are exempt from the search and are reported instantly upon decode.

To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.



**Decode UPC/EAN/JAN Only With Supplementals**  
(01h)



**\*Ignore Supplementals**  
(00h)



**Autodiscriminate UPC/EAN/JAN Supplementals**  
(02h)



**Enable 378/379 Supplemental Mode**  
(04h)



**Enable 978 Supplemental Mode**  
(05h)



**Enable Smart Supplemental Mode**  
(03h)

## UPC/EAN/JAN Supplemental Redundancy

Parameter # 50h

With **Autodiscriminate UPC/EAN/JAN Supplementals** selected, this option adjusts the number of times a symbol without supplementals is decoded before transmission. The range is from two to thirty times. Five or above is recommended when decoding a mix of UPC/EAN/JAN symbols with and without supplementals, and the autodiscriminate option is selected. The default is set at 10. Scan the bar code below to set a decode redundancy value. Next, scan two numeric bar codes on page 67. Single digit numbers must have a leading zero. To correct an error or change a selection, scan **Cancel** on page 68.



**UPC/EAN/JAN Supplemental Redundancy**

## Transmit UPC-A Check Digit

Parameter # 28h

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-A check digit. It is always verified to guarantee the integrity of the data.



**\*Transmit UPC-A Check Digit  
(01h)**



**Do Not Transmit UPC-A Check Digit  
(00h)**

## Transmit UPC-E Check Digit

Parameter # 29h

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-E check digit. It is always verified to guarantee the integrity of the data.



**\*Transmit UPC-E Check Digit  
(01h)**



**Do Not Transmit UPC-E Check Digit  
(00h)**

## Transmit UPC-E1 Check Digit

*Parameter # 2Ah*

The check digit is the last character of the symbol used to verify the integrity of the data. Scan the appropriate bar code below to transmit the bar code data with or without the UPC-E1 check digit. It is always verified to guarantee the integrity of the data.



**\*Transmit UPC-E1 Check Digit  
(01h)**



**Do Not Transmit UPC-E1 Check Digit  
(00h)**

## UPC-A Preamble

*Parameter # 22h*

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-A preamble to the host device: transmit System Character only, transmit System Character and Country Code (“0” for USA), and transmit no preamble. Select the appropriate option to match the host system.



**No Preamble (<DATA>  
(00h)**



**\*System Character (<SYSTEM CHARACTER> <DATA>  
(01h)**



**System Character & Country Code  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>  
(02h)**

## UPC-E Preamble

*Parameter # 23h*

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E preamble to the host device: transmit System Character only, transmit System Character and Country Code (“0” for USA), and transmit no preamble. Select the appropriate option to match the host system.



**No Preamble (<DATA>  
(00h)**



**\*System Character (<SYSTEM CHARACTER> <DATA>)  
(01h)**



**System Character & Country Code  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)  
(02h)**

## UPC-E1 Preamble

*Parameter # 24h*

Preamble characters are part of the UPC symbol, and include Country Code and System Character. There are three options for transmitting a UPC-E1 preamble to the host device: transmit System Character only, transmit System Character and Country Code (“0” for USA), and transmit no preamble. Select the appropriate option to match the host system.



**No Preamble (<DATA>)  
(00h)**



**\*System Character (<SYSTEM CHARACTER> <DATA>)  
(01h)**



**System Character & Country Code  
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)  
(02h)**

## Convert UPC-E to UPC-A

*Parameter # 25h*

Enable this to convert UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit). When disabled, UPC-E decoded data is transmitted as UPC-E data, without conversion.



**Convert UPC-E to UPC-A (Enable)  
(01h)**



**\*Do Not Convert UPC-E to UPC-A (Disable)  
(00h)**

## Convert UPC-E1 to UPC-A

*Parameter # 26h*

Enable this to convert UPC-E1 decoded data to UPC-A format before transmission. After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit). When disabled, UPC-E1 decoded data is transmitted as UPC-E1 data, without conversion.



**Convert UPC-E1 to UPC-A (Enable)  
(01h)**



**\*Do Not Convert UPC-E1 to UPC-A (Disable)  
(00h)**

## EAN-8/JAN-8 Extend

*Parameter # 27h*

When enabled, this parameter adds five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols. When disabled, EAN-8 symbols are transmitted as is.



**Enable EAN/JAN Zero Extend  
(01h)**



**\*Disable EAN/JAN Zero Extend  
(00h)**

## UCC Coupon Extended Code

*Parameter # 55h*

When enabled, this parameter decodes UPC-A bar codes starting with digit '5', EAN-13 bar codes starting with digit '99', and UPCA/EAN-128 Coupon Codes. UPCA, EAN-13, and EAN-128 must be enabled to scan all types of Coupon Codes.



**Enable UCC Coupon Extended Code  
(01h)**



**\*Disable UCC Coupon Extended Code  
(00h)**

*Use the Decode UPC/EAN Supplemental Redundancy parameter to control autodiscrimination of the EAN128 (right half) of a coupon code.*

## Code 128

### Enable/Disable Code 128

*Parameter # 08h*

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



**\*Enable Code 128  
(01h)**



**Disable Code 128  
(00h)**

### Enable/Disable UCC/EAN-128

*Parameter # 0Eh*

To enable or disable UCC/EAN-128, scan the appropriate bar code below.



**\*Enable UCC/EAN-128  
(01h)**



**Disable UCC/EAN-128  
(00h)**

## Enable/Disable ISBT 128

*Parameter # 54h*

ISBT 128 is a variant of Code 128 used in the blood bank industry. Scan a bar code below to enable or disable ISBT 128. If necessary, the host must perform concatenation of the ISBT data.



**\*Enable ISBT 128  
(01h)**



**Disable ISBT 128  
(00h)**

## Code 39

### Enable/Disable Code 39

*Parameter # 00h*

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



**\*Enable Code 39  
(01h)**



**Disable Code 39  
(00h)**

### Enable/Disable Trioptic Code 39

*Parameter # 0Dh*

Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. Trioptic Code 39 symbols always contain six characters. To enable or disable Trioptic Code 39, scan the appropriate bar code below.



**Enable Trioptic Code 39  
(01h)**



**\*Disable Trioptic Code 39  
(00h)**

*Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously.*

## Convert Code 39 to Code 32

Parameter # 56h

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32. Code 39 must be enabled for this parameter to function.



**Enable Convert Code 39 to Code 32**  
(01h)



**\*Disable Convert Code 39 to Code 32**  
(00h)

## Code 32 Prefix

Parameter # E7h

Scan the appropriate bar code below to enable or disable adding the prefix character “A” to all Code 32 bar codes. Convert Code 39 to Code 32 must be enabled for this parameter to function.



**Enable Code 32 Prefix**  
(01h)



**\*Disable Code 32 Prefix**  
(00h)

## Set Lengths for Code 39

Parameter # L1 = 12h, L2 = 13h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 39 to any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, Length Within a Range or Any Length are the preferred options. When setting lengths for different bar code types by scanning single digit numbers, single digit numbers must always be preceded by a leading zero.

- **One Discrete Length** - Select this option to decode only Code 39 symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only Code 39 symbols with 14 characters, scan *Code 39 - One Discrete Length*, then scan 1 followed by 4. To correct an error or change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only Code 39 symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only those Code 39 symbols containing either 2 or 14 characters, select *Code 39 - Two Discrete Lengths*, then scan 0, 2, 1, and then 4. To correct an error or change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a Code 39 symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan *Code 39 - Length Within Range*. Then scan 0, 4, 1, and 2 (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Select this option to decode Code 39 symbols containing any number of characters within the decoder capability.



**Code 39 - One Discrete Length**



**Code 39 - Two Discrete Lengths**



**Code 39 - Length Within Range**



**Code 39 - Any Length**

## Code 39 Check Digit Verification

*Parameter # 30h*

When this feature is enabled, the decoder checks the integrity of all Code 39 symbols to verify that the data complies with specified check digit algorithm. Only Code 39 symbols which include a modulo 43 check digit are decoded. Enable this feature if the Code 39 symbols contain a Modulo 43 check digit.



**Enable Code 39 Check Digit  
(01h)**



**\*Disable Code 39 Check Digit  
(00h)**

## Transmit Code 39 Check Digit

*Parameter # 2Bh*

Scan a bar code below to transmit Code 39 data with or without the check digit.



**Transmit Code 39 Check Digit (Enable)  
(01h)**



**\*Do Not Transmit Code 39 Check Digit (Disable)  
(00h)**

*Code 39 Check Digit Verification must be enabled for this parameter to function.*

## Code 39 Full ASCII Conversion

*Parameter # 11h*

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. To enable or disable Code 39 Full ASCII, scan the appropriate bar code below.



**Enable Code 39 Full ASCII  
(01h)**



**\*Disable Code 39 Full ASCII  
(00h)**

*Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously.*

*Code 39 Full ASCII to Full ASCII Correlation is host-dependent, and is therefore described in the ASCII Character Set Table for the appropriate interface. See Appendix E, ASCII Character Set.*

## Code 39 Buffering (Scan & Store)

*Parameter # 71h*

This feature allows the decoder to accumulate data from multiple Code 39 symbols. Selecting the Scan and Store option (Buffer Code 39) temporarily buffers all Code 39 symbols having a leading space as a first character for later transmission. The leading space is not buffered. Decode of a valid Code 39 symbol with no leading space causes transmission in sequence of all buffered data in a first-in first-out format, plus transmission of the “triggering” symbol. See the following pages for further details.

When the **Do Not Buffer Code 39** option is selected, all decoded Code 39 symbols are transmitted immediately without being stored in the buffer. This feature affects Code 39 only. If selecting **Buffer Code 39**, we recommend configuring the decoder to decode Code 39 symbology only.



**Buffer Code 39 (Enable)  
(01h)**



**\*Do Not Buffer Code 39 (Disable)  
(00h)**

While there is data in the transmission buffer, selecting **Do Not Buffer Code 39** is not allowed. The buffer holds 200 bytes of information. To disable Code 39 buffering when there is data in the transmission buffer, first force the buffer transmission (see **Transmit Buffer** on page 29) or clear the buffer.

## Buffer Data

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

- Unless the data overflows the transmission buffer, the decoder issues a lo/hi beep to indicate successful decode and buffering. (For overflow conditions, see Overfilling Transmission Buffer.)
- The decoder adds the decoded data excluding the leading space to the transmission buffer.
- No transmission occurs.

## Clear Transmission Buffer

To clear the transmission buffer, scan the Clear Buffer bar code below, which contains only a start character, a dash (minus), and a stop character.

- The decoder issues a short hi/lo/hi beep.
- The decoder erases the transmission buffer.
- No transmission occurs.



## Clear Buffer

*The Clear Buffer contains only the dash (minus) character. In order to scan this command, be sure Code 39 length is set to include length 1.*

## Transmit Buffer

There are two methods to transmit the Code 39 buffer.

1. Scan the **Transmit Buffer** bar code below. Only a start character, a plus (+), and a stop character.
  - The decoder transmits and clears the buffer.
  - The decoder issues a Lo/Hi beep.



## Transmit Buffer

2. Scan a Code 39 bar code with a leading character other than a space.
  - The decoder appends new decode data to buffered data.
  - The decoder transmits and clears the buffer.
  - The decoder signals that the buffer was transmitted with a lo/hi beep.
  - The decoder transmits and clears the buffer.

*The Transmit Buffer contains only a plus (+) character. In order to scan this command, be sure Code 39 length is set to include length 1.*

## Overfilling Transmission Buffer

The Code 39 buffer holds 200 characters. If the symbol just read results in an overflow of the transmission buffer:

- The decoder indicates that the symbol was rejected by issuing three long, high beeps.
- No transmission occurs. The data in the buffer is not affected.

## Attempt to Transmit an Empty Buffer

If the symbol just read was the Transmit Buffer symbol and the Code 39 buffer is empty:

- A short lo/hi/lo beep signals that the buffer is empty.
- No transmission occurs.
- The buffer remains empty.

# Code 93

## Enable/Disable Code 93

Parameter # 09h

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



**Enable Code 93  
(01h)**



**\*Disable Code 93  
(00h)**

## Set Lengths for Code 93

Parameter # L1 = 1Ah, L2 = 1Bh

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

- **One Discrete Length** - Select this option to decode only Code 93 symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only Code 93 symbols with 14 characters, scan **Code 93 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only Code 93 symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only those Code 93 symbols containing either 2 or 14 characters, select **Code 93 - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a Code 93 symbol with a specific length range. Select lengths using the numeric bar codes on page 67. For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode Code 93 symbols containing any number of characters within the decoder's capability.



**Code 93 - One Discrete Length**



**Code 93 - Two Discrete Lengths**



Code 93 - Length Within Range



Code 93 - Any Length

## Code 11

### Code 11

Parameter # 0Ah

To enable or disable Code 11, scan the appropriate bar code below.



Enable Code 11  
(01h)



\*Disable Code 11  
(00h)

## Set Lengths for Code 11

Parameter # L1 = 1Ch, L2 = 1Dh

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Code 11 symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only Code 11 symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only those Code 11 symbols containing either 2 or 14 characters, select **Code 11 - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a Code 11 symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode Code 11 symbols containing between 4 and 12 characters, first scan **Code 11 - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode Code 11 symbols containing any number of characters within the decoder capability.



Code 11 - One Discrete Length



**Code 11 - Two Discrete Lengths**



**Code 11 - Length Within Range**



**Code 11 - Any Length**

## Code 11 Check Digit Verification

*Parameter # 34h*

This feature allows the decoder to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature. To enable this feature, scan the bar code below corresponding to the number of check digits encoded in the Code 11 symbols.



**\*Disable  
(00h)**



**One Check Digit  
(01h)**



**Two Check Digits  
(02h)**

## Transmit Code 11 Check Digits

*Parameter # 2Fh*

This feature selects whether or not to transmit the Code 11 check digit(s).



**Transmit Code 11 Check Digit(s) (Enable)  
(01h)**



**\*Do Not Transmit Code 11 Check Digit(s) (Disable)  
(00h)**

*Code 11 Check Digit Verification must be enabled for this parameter to function.*

## **Interleaved 2 of 5 (ITF) Enable/Disable Interleaved 2 of 5**

*Parameter # 06h*

To enable or disable Interleaved 2 of 5, scan the appropriate bar code below, and select an Interleaved 2 of 5 length from the following pages.



**\*Enable Interleaved 2 of 5  
(01h)**



**Disable Interleaved 2 of 5  
(00h)**

## **Set Lengths for Interleaved 2 of 5**

*Parameter # L1 = 16h, L2 = 17h*

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for I 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only I 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only I 2 of 5 symbols with 14 characters, scan **I 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only I 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only those I 2 of 5 symbols containing either 2 or 14 characters, select **I 2 of 5 - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode an I 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode I 2 of 5 symbols containing any number of characters within the decoder capability. Due to the construction of the I 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to be interpreted as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (I 2 of 5 - One Discrete Length - Two Discrete Lengths) for I 2 of 5 applications.



**I 2 of 5 - One Discrete Length**



**I 2 of 5 - Two Discrete Lengths**



**I 2 of 5 - Length Within Range**



**I 2 of 5 - Any Length**

## **I 2 of 5 Check Digit Verification**

*Parameter # 31h*

When this feature is enabled, the decoder checks the integrity of all I 2 of 5 symbols to verify the data complies with either the specified Uniform Symbology Specification (USS), or the Optical Product Code Council (OPCC) check digit algorithm.



**\*Disable  
(00h)**



**USS Check Digit  
(01h)**



**OPCC Check Digit  
(02h)**

## **Transmit I 2 of 5 Check Digit**

*Parameter # 2Ch*

Scan the appropriate bar code below to transmit I 2 of 5 data with or without the check digit.



**Transmit I 2 of 5 Check Digit (Enable)  
(01h)**



**\*Do Not Transmit I 2 of 5 Check Digit (Disable)  
(00h)**

## **Convert I 2 of 5 to EAN-13**

*Parameter # 52h*

Enable this parameter to convert 14-character I 2 of 5 codes to EAN-13, and transmit to the host as EAN-13. To accomplish this, the I 2 of 5 code must be enabled, and the code must have a leading zero and a valid EAN-13 check digit.



**Convert I 2 of 5 to EAN-13 (Enable)  
(01h)**



**\*Do Not Convert I 2 of 5 to EAN-13 (Disable)  
(00h)**

## **Discrete 2 of 5 (DTF)**

### **Enable/Disable Discrete 2 of 5**

*Parameter # 05h*

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



**Enable Discrete 2 of 5  
(01h)**



**\*Disable Discrete 2 of 5  
(00h)**

## Set Lengths for Discrete 2 of 5

Parameter # L1 = 14h, L2 = 15h

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for D 2 of 5 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only D 2 of 5 symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only D 2 of 5 symbols with 14 characters, scan **D 2 of 5 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only D 2 of 5 symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only those D 2 of 5 symbols containing either 2 or 14 characters, select **D 2 of 5 - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a D 2 of 5 symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode D 2 of 5 symbols containing any number of characters within the decoder capability. Due to the construction of the D 2 of 5 symbology, it is possible for a scan line covering only a portion of the code to be interpreted as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (D 2 of 5 - One Discrete Length - Two Discrete Lengths) for D 2 of 5 applications.



**D 2 of 5 - One Discrete Length**



**D 2 of 5 - Two Discrete Lengths**



**D 2 of 5 - Length Within Range**



**D 2 of 5 - Any Length**

# Codabar (NW - 7)

## Enable/Disable Codabar

Parameter # 07h

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



**Enable Codabar  
(01h)**



**\*Disable Codabar  
(00h)**

## Set Lengths for Codabar

Parameter # L1 = 18h, L2 = 19h

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

- **One Discrete Length** - Select this option to decode only Codabar symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only Codabar symbols with 14 characters, scan **Codabar - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only Codabar symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only Codabar symbols containing either 2 or 14 characters, select **Codabar - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a Codabar symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode Codabar symbols containing any number of characters within the decoder capability.



**Codabar - One Discrete Length**



**Codabar - Two Discrete Lengths**



**Codabar - Length Within Range**



**Codabar - Any Length**

## **CLSI Editing**

*Parameter # 36h*

When enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol. Enable this feature if the host system requires this data format.

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



**Enable CLSI Editing  
(01h)**



**\*Disable CLSI Editing  
(00h)**

## **NOTIS Editing**

*Parameter # 37h*

When enabled, this parameter strips the start and stop characters from a decoded Codabar symbol. Enable this feature if the host system requires this data format.



**Enable NOTIS Editing  
(01h)**



**\*Disable NOTIS Editing  
(00h)**

# MSI

## Enable/Disable MSI

Parameter # 0Bh

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



**Enable MSI  
(01h)**



**\*Disable MSI  
(00h)**

## Set Lengths for MSI

Parameter # L1 = 1Eh, L2 = 1Fh

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

- **One Discrete Length** - Select this option to decode only MSI symbols containing a selected length. Select the length using the numeric bar codes on page 67. For example, to decode only MSI symbols with 14 characters, scan **MSI - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Two Discrete Lengths** - Select this option to decode only MSI symbols containing either of two selected lengths. Select lengths using the numeric bar codes on page 67. For example, to decode only MSI symbols containing either 2 or 14 characters, select **MSI - Two Discrete Lengths**, then scan **0, 2, 1**, and then **4**. To correct an error or to change the selection, scan **Cancel** on page 68.
- **Length Within Range** - Select this option to decode a MSI symbol with a specific length range. Select lengths using numeric bar codes on page 67. For example, to decode MSI symbols containing between 4 and 12 characters, first scan **MSI - Length Within Range**. Then scan **0, 4, 1**, and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan **Cancel** on page 68.
- **Any Length** - Scan this option to decode MSI symbols containing any number of characters within the decoder capability.

*Due to the construction of the MSI symbology, it is possible for a scan line covering only a portion of the code to be interpreted as a complete scan, yielding less data than is encoded in the bar code. To prevent this, select specific lengths (MSI - One Discrete Length - Two Discrete Lengths) for MSI applications.*



**MSI - One Discrete Length**



**MSI - Two Discrete Lengths**



**MSI - Length Within Range**



**MSI - Any Length**

## MSI Check Digits

*Parameter # 32h*

With MSI symbols, one check digit is mandatory and always verified by the reader. The second check digit is optional. If the MSI codes include two check digits, scan the **Two MSI Check Digits** bar code to enable verification of the second check digit. See **MSI Check Digit Algorithm** on page 41 for the selection of second digit algorithms.



**\*One MSI Check Digit  
(00h)**



**Two MSI Check Digits  
(01h)**

## Transmit MSI Check Digit(s)

*Parameter # 2Eh*

Scan a bar code below to transmit MSI data with or without the check digit.



**Transmit MSI Check Digit(s) (Enable)  
(01h)**



**\*Do Not Transmit MSI Check Digit(s) (Disable)  
(00h)**

## MSI Check Digit Algorithm

*Parameter # 33h*

Two algorithms are possible for the verification of the second MSI check digit. Select the bar code below corresponding to the algorithm used to encode the check digit.



**MOD 10/MOD 11  
(00h)**



**\*MOD 10/MOD 10  
(01h)**

## Postal Codes

### US Postnet

*Parameter # 59h*

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



**\*Enable US Postnet  
(01h)**



**Disable US Postnet  
(00h)**

### US Planet

*Parameter # 5Ah*

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



**\*Enable US Planet  
(01h)**



**Disable US Planet  
(00h)**

## UK Postal

*Parameter # 5Bh*

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



**\*Enable UK Postal  
(01h)**



**Disable UK Postal  
(00h)**

## Transmit UK Postal Check Digit

*Parameter # 60h*

Select whether to transmit UK Postal data with or without the check digit.



**\*Transmit UK Postal Check Digit  
(01h)**



**Do Not Transmit UK Postal Check Digit  
(00h)**

## Japan Postal

*Parameter # F0h, 22h*

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



**\*Enable Japan Postal  
(01h)**



**Disable Japan Postal  
(00h)**

## Australian Postal

Parameter # F0h, 23h

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



**\*Enable Australian Postal  
(01h)**



**Disable Australian Postal  
(00h)**

## Dutch Postal

Parameter # F0h, 46h

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



**\*Enable Dutch Postal  
(01h)**



**Disable Dutch Postal  
(00h)**

## Transmit US Postal Check Digit

*Parameter # 5Fh*

Select whether to transmit US Postal data with or without the check digit.



**\*Transmit US Postal Check Digit  
(01h)**



**Do Not Transmit US Postal Check Digit  
(00h)**

# RSS (Reduced Space Symbology)

The variants of RSS are RSS 14, RSS Expanded, and RSS Limited. The limited and expanded versions have stacked variants. Scan the appropriate bar code below to enable or disable each variant of RSS.

## RSS-14

*Parameter # F0h 52h.*



**\*Enable RSS 14  
(01h)**



**Disable RSS 14  
(00h)**

## RSS Limited

*Parameter # F0h 53h.*



**\*Enable RSS Limited  
(01h)**



**Disable RSS Limited  
(00h)**

## RSS Expanded

*Parameter # F0h 54h.*



**\*Enable RSS Expanded  
(01h)**



**Disable RSS Expanded  
(00h)**

## Convert RSS to UPC/EAN

Parameter # F0h, 8Dh

This parameter only applies to RSS-14 and RSS Limited symbols not decoded as part of a Composite symbol. Enable this to strip the leading '010' from RSS-14 and RSS Limited symbols encoding a single zero as the first digit, and report the bar code as EAN-13. For bar codes beginning with two or more zeros but not six zeros, this parameter strips the leading '0100' and reports the bar code as UPC-A. The UPC-A Preamble parameter that transmits the system character and country code applies to converted bar codes. *Note that neither the system character nor the check digit can be stripped.*



**Enable Convert RSS to UPC/EAN  
(01h)**



**\*Disable Convert RSS to UPC/EAN  
(00h)**

## Composite

### Composite CC-C

Parameter # F0h 55h

Scan a bar code below to enable or disable Composite bar codes of type CC-C.



**Enable CC-C  
(01h)**



**\*Disable CC-C  
(00h)**

### Composite CC-A/B

Parameter # F0h 56h

Scan a bar code below to enable or disable Composite bar codes of type CC-A/B.



**Enable CC-A/B  
(01h)**



**\*Disable CC-A/B  
(00h)**

## Composite TLC-39

Parameter # F0h 73h

Scan a bar code below to enable or disable Composite bar codes of type TLC-39.



**Enable TLC39**  
(01h)



**\*Disable TLC39**  
(00h)

## UPC Composite Mode

Parameter # F0h 58h

UPC symbols can be “linked” with a 2D symbol during transmission as if they were one symbol. There are three options for these symbols:

- Select **UPC Never Linked** to transmit UPC bar codes regardless of whether a 2D symbol is detected.
- Select **UPC Always Linked** to transmit UPC bar codes and the 2D portion. If 2D is not present, the UPC bar code does not transmit.
- If **Autodiscriminate UPC Composites** is selected, the 510-2D determines if there is a 2D portion, then transmits the UPC, as well as the 2D portion if present.



**UPC Never Linked**  
(00h)



**\*UPC Always Linked**  
(01h)



**Autodiscriminate UPC Composites**  
(02h)

## Composite Beep Mode

Parameter # F0h, 8Eh

To select the number of decode beeps when a composite bar code is decoded, scan the appropriate bar code.



**Single Beep after both are decoded**  
(00h)



**\*Beep as each code type is decoded  
(01h)**



**Double Beep after both are decoded  
(02h)**

## UCC/EAN Code 128 Emulation Mode for UCC/EAN Composite Codes

*Parameter # F0h, ABh*

Select whether to enable or disable this mode.



**Enable UCC/EAN Code 128 Emulation Mode for UCC/EAN Composite Codes  
(01h)**



**\*Disable UCC/EAN Code 128 Emulation Mode for UCC/EAN Composite Codes  
(00h)**

## 2D Symbologies

### Enable/Disable PDF417

*Parameter # 0Fh*

To enable or disable PDF417, scan the appropriate bar code below.



**\*Enable PDF417  
(01h)**



**Disable PDF417  
(00h)**

## Enable/Disable MicroPDF417

*Parameter # E3h*

To enable or disable MicroPDF417, scan the appropriate bar code below.



**Enable MicroPDF417  
(01h)**



**\*Disable MicroPDF417  
(00h)**

## Code 128 Emulation

*Parameter # 7Bh*

When this parameter is enabled, the 510-2D transmits data from certain MicroPDF417 symbols as if it was encoded in Code 128 symbols. **Transmit AIM Symbology Identifiers** must be enabled for this parameter to work.

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

- JC1** if the first codeword is 903-907, 912, 914, 915
- JC2** if the first codeword is 908 or 909
- JC0** if the first codeword is 910 or 911

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

- JL3** if the first codeword is 903-907, 912, 914, 915
- JL4** if the first codeword is 908 or 909
- JL5** if the first codeword is 910 or 911

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



**Enable Code 128 Emulation  
(01h)**



**\*Disable Code 128 Emulation  
(00h)**

## Data Matrix

Parameter # F0h, 24h

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



**\*Enable Data Matrix  
(01h)**



**Disable Data Matrix  
(00h)**

## Maxicode

Parameter # F0h, 26h

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



**\*Enable Maxicode  
(01h)**



**Disable Maxicode  
(00h)**

## QR Code

Parameter # F0h, 25h

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



**\*Enable QR Code  
(01h)**



**Disable QR Code  
(00h)**

# Redundancy Level

Parameter # 4Eh

The decoder offers four levels of decode redundancy. Select higher redundancy levels for decreasing levels of bar code quality. As redundancy levels increase, the decoder's aggressiveness decreases. Select the redundancy level appropriate for the bar code quality.

## Redundancy Level 1

The following code types must be successfully read twice before being decoded:

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

## Redundancy Level 2

The following code types must be successfully read twice before being decoded:

Code Type	Code Length
All	All

## Redundancy Level 3

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

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

## Redundancy Level 4

The following code types must be successfully read three times before being decoded:

Code Type	Code Length
All	All



\*Redundancy Level 1  
(01h)



Redundancy Level 2  
(02h)



Redundancy Level 3  
(03h)



**Redundancy Level 4**  
(04h)

## Security Level

*Parameter # 4Dh*

The decoder offers four levels of decode security for delta bar codes, which include the Code 128 family, UPC/EAN, and Code 93. Select increasing levels of security for decreasing levels of bar code quality. There is an inverse relationship between security and decoder aggressiveness, so choose only that level of security necessary for any given application.

- **Security Level 0:** This setting allows the decoder to operate in its most aggressive state, while providing sufficient security in decoding most “in-spec” bar codes.
- **Security Level 1:** Select this option if misdecodes occur. This default setting should eliminate most misdecodes.
- **Security Level 2:** Select this option if Security level 1 fails to eliminate misdecodes.
- **Security Level 3:** If Security Level 2 was selected and misdecodes still occur, select this security level. Be advised, selecting this option is an extreme measure against mis-decoding severely out of spec bar codes. Selecting this level of security significantly impairs the decoding ability of the decoder. If this level of security is necessary, try to improve the quality of the bar codes.



**Security Level 0**  
(00h)



**\*Security Level 1**  
(01h)



**Security Level 2**  
(02h)



**Security Level 3**  
(03h)

# Intercharacter Gap Size

Parameter # F0h, 7Dh

The Code 39 and Codabar symbologies have an intercharacter gap that is typically quite small. Due to various bar code-printing technologies, this gap can grow larger than the maximum size allowed, preventing the decoder from decoding the symbol. If this problem occurs, scan the Large Intercharacter Gaps parameter to tolerate these out-of-specification bar codes.



**\*Normal Intercharacter Gaps (06h)**



**Large Intercharacter Gaps (0Ah)**

# Report Version

Scan the bar code below to report the version of software currently installed in the decoder.



**Report Software Version**

# Macro PDF Features

Macro PDF is a special feature for concatenating multiple PDF symbols into one file. The decoder can decode symbols that are encoded with this feature, and can store more than 64 kb of decoded data stored in up to 50 Macro PDF symbols.

*When printing, keep each Macro PDF sequence separate, as each sequence has unique identifiers. Do not mix bar codes from several Macro PDF sequences, even if they encode the same data. When scanning Macro PDF sequences, scan the entire Macro PDF sequence without interruption.*

# Macro PDF User Indications

In this mode the decoder provides the following feedback.

**Table 10. Macro PDF User Indications**

User Scans	Passthrough All Symbols		Transmit Any Symbol in		Set Buffer All Symbols	
	Beep	T	Beep	T	Beep	T
Last Macro PDF in set	Decode Beep	Y	Decode Beep	Y	Decode Beep	Y
Any Macro PDF in set except last	Decode Beep	Y	Decode Beep	Y	2 Short Low	N
Macro PDF is not in current Set	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Invalid formatted Macro PDF	Decode Beep	Y	2 Long Low	N	2 Long Low	N
Macro PDF from a set has already been scanned	Decode Beep	Y	4 Long Low	N	4 Long Low	N
Out of Macro PDF memory	N/A	-	3 Long Low	N	3 Long Low	N
Any non-Macro PDF scanned during a set	N/A	-	4 Long Low	N	4 Long Low	N
Flush Macro PDF	LowHi	N	5 Long Low	N	5 Long Low	Y
Abort Macro PDF	High Low High Low	N	High Low High Low	N	High Low High Low	N

**Notes:**

1. The beep only sounds if the \*BEEPER\_ON signal is connected.
2. The column marked T indicates whether the symbol is transmitted to the host. N = No transmission.

## Macro PDF Transmit / Decode Mode Symbols

*Parameter # BCh*

Select one of the options below for handling Macro PDF decoding. In Buffer All Symbols the decoder can handle sets of up to 50 maximum-sized Macro PDF symbols. In all other modes there is no limit to the size of the Macro PDF set.

- **Buffer All Symbols / Transmit Macro PDF When Complete:** This transmits all decode data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. Use the beeper and LED signals provided with the 510-2D when using this mode to ensure proper user feedback. If the decode data exceeds the limit of 50 symbols, there is no transmission because the entire sequence was not scanned. Use the parameter **Flush Macro Buffer** on page 54 to purge the buffer.
- **Transmit Any Symbol in Set / No Particular Order:** This transmits data from each Macro PDF symbol as decoded, regardless of the sequence (although some error handling is performed; see Table 10). When selecting this mode, enable **Transmit Macro PDF Control Header** on this page. Also use the beeper and LED signals provided with the 510-2D to ensure proper user feedback.
- **Passthrough All Symbols:** This transmits and decodes all Macro PDF symbols and performs no processing. In this mode the host is responsible for detecting and parsing the Macro PDF sequences. Use this mode when the decoder's BEEPER\_ON signal is not used to drive a beeper (see Table 2 on page 1). In the other modes, some Macro PDF scanning sequences provide audible feedback only, so if BEEPER\_ON is not used no user feedback is provided. In Table 10, all actions marked *No Transmission* provide no feedback unless the BEEPER\_ON signal is used. By using **Passthrough All Symbols** mode every user decode is transmitted to the host where the host software can provide the appropriate feedback.



**Buffer All Symbols / Transmit Macro PDF When Complete**  
(00h)



**Transmit Any Symbol in Set / No Particular Order**  
(01h)



**\*Passthrough All Symbols**  
(04h)

## Transmit Macro PDF Control Header

*Parameter # B8h*

When enabled, this activates transmission of the control header, which contains the segment index and the file ID, in Macro PDF symbols. For example, the field may be: \92800000\725\120\343. The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID. Enable this when selecting **Transmit Any Symbol in Set / No Particular Order for the Macro PDF Transmit / Decode Mode Symbols** above, and disable this when selecting **Buffer All Symbols / Transmit Macro PDF When Complete**. This parameter has no effect when **Passthrough All Symbols** is selected.



**Enable Macro PDF Control Header Transmit**  
(01h)



**\*Disable Macro PDF Control Header Transmit  
(00h)**

## Escape Characters

*Parameter # E9h*

This enables the backslash (\) character as an Escape character for systems that can process transmissions containing special data sequences. Scan a bar code below to either format special data according to the GLI (Global Label Identifier) protocol, or to disable this parameter. This parameter only affects the data portion of a Macro PDF symbol transmission; the Macro PDF Control Header (if enabled) is always sent with GLI formatting.



**GLI Protocol  
(02h)**



**\*None  
(00h)**

## Flush Macro Buffer

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



**Flush Macro PDF Buffer**

## Abort Macro PDF Entry

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



**Abort Macro PDF Entry**

This section includes commonly used bar codes to customize how data is transmitted to the host device. The decoder ships with the settings shown in the *Miscellaneous Scanner Options Default Table* below (also see page 59, **Standard Default Parameters** for all host device and miscellaneous scanner defaults). If the default values suit requirements, programming is not necessary.

## Miscellaneous Scanner Parameter Defaults

Table 11 lists the defaults for miscellaneous scanner options parameters. To change any option, scan the appropriate bar code(s) provided in the **Miscellaneous Scanner Parameters** on the following pages. See *page 59, Standard Default Parameters* for all user preferences, hosts, symbologies, and miscellaneous default parameters.

*Table 11. Miscellaneous Scanner Options Default Table*

Parameter	Parameter Number	Default	Page Number
Transmit Code ID Character	2Dh	None	55
SSI Prefix Value	69h	<CR>	56
SSI Suffix 1 Value	68h	<CR>	56
SSI Suffix 2 Value	6Ah	<CR>	56
Non-SSI Prefix Value	63h, 69h	<CR><LF>	56
Non-SSI Suffix 1 Value	62h, 68h	<CR><LF>	56
Non-SSI Suffix 2 Value	64h, 6Ah	<CR><LF>	56
Scan Data Transmission Format	EBh	Data as is	56, 57
FN1 Substitution Values	67h, 6Dh	Set	57, 58
Transmit "No Read" Message	5Eh	Disable	58

## Miscellaneous Scanner Parameters

### Transmit Code ID Character

*Parameter # 2Dh*

A Code ID character identifies the code type of a scanned bar code. This is useful when the decoder is decoding more than one code type. In addition to any single character prefix already selected, the Code ID character is inserted between the prefix and the decoded symbol. Select no Code ID character, a Symbol Code ID character, or an AIM Code ID character. For Code ID Characters, see **Symbol Code Identifiers** on page 63 and **AIM Code Identifiers** also on page 63.



**Symbol Code ID Character  
(02h)**



**AIM Code ID Character  
(01h)**



**\*None  
(00h)**

## Prefix/Suffix Values

### For SSI Hosts:

Parameter #  $P = 69h$ ,  $S1 = 68h$ ,  $S2 = 6Ah$

### For Non-SSI Hosts:

Key Category Parameter #  $P = 63h$ ,  $S1 = 62h$ ,  $S2 = 64h$

Decimal Value Parameter #  $P = 69h$ ,  $S1 = 68h$ ,  $S2 = 6Ah$

A prefix and/or one or two suffixes can be appended to scan data for use in data editing. To set a value for a prefix or suffix, scan a prefix or suffix bar code below, then scan a four-digit number (i.e., four bar codes from page 67.) that corresponds to that value. See **Table 16** on page 68 for the four-digit codes. To correct an error or change a selection, scan **Cancel** on page 68.

To use Prefix/Suffix values, first set the **Scan Data Transmission Format** below. For non-SSI hosts, when using host commands to set the prefix or suffix, set the key category parameter to 1, then set the 3-digit decimal value. See **Table 16** on page 68 for the four-digit codes.



**Scan Prefix**  
(07h)



**Scan Suffix 1**  
(06h)



**Scan Suffix 2**  
(08h)

## Scan Data Transmission Format

Parameter #  $EBh$

To change the scan data format, scan one of the following eight bar codes corresponding to the desired format. *If using this parameter do not use ADF rules to set the prefix/suffix.* To set values for the prefix and/or suffix, see **Prefix/Suffix Values** above.



**\*Data As Is**  
(00h)



**<DATA> <SUFFIX 1>**  
(01h)



<DATA> <SUFFIX 2>  
(02h)



<DATA> <SUFFIX 1> <SUFFIX 2>  
(03h)



<PREFIX> <DATA >  
(04h)



<PREFIX> <DATA> <SUFFIX 1>  
(05h)



<PREFIX> <DATA> <SUFFIX 2>  
(06h)



<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>  
(07h)

## FN1 Substitution Values

*Key Category Parameter # 67h*

*Decimal Value Parameter # 6Dh*

The Wedge and USB HID Keyboard hosts support a FN1 Substitution feature. When enabled any FN1 character (0x1b) in an EAN128 bar code is substituted with a value. This value defaults to 7013 (Enter Key).

When using host commands to set the FN1 substitution value, set the key category parameter to 1, then set the 3-digit keystroke value. See the ASCII Character Set table for the currently installed host interface for the desired value.

To select a FN1 substitution value via bar code menus:

1. Scan the bar code below for **Set FN1 Substitution Value**.



### Set FN1 Substitution Value

2. Look up the keystroke desired for **FN1 Substitution** in the *ASCII Character Set* table for the currently installed host interface. Enter the 4-digit ASCII Value by scanning each digit from the numeric bar codes on page 67. To correct an error or change the selection, scan **Cancel** on page 68. To enable FN1 substitution for USB HID keyboard, scan the **Enable FN1 Substitution** bar code on page 9.

## Transmit “No Read” Message

*Parameter # 5Eh*

Scan a bar code below to select whether or not to transmit a No Read message. When enabled, the characters NR are transmitted when a bar code is not decoded. When disabled, if a symbol does not decode, nothing is sent to the host.



**Enable No Read  
(01h)**



**\*Disable No Read  
(00h)**

# Default Parameters

Table 12. Standard Default Parameters Table

Parameter	Parameter Number	Default	NAPage
<b>User Preferences</b>			
Set Default Parameter		All Defaults	1
Parameter Scanning	ECh	Enable	1
Beeper Tone	91h	Medium	1, 2
Beeper Volume	8Ch	High	2
Trigger Modes	8Ah	Level	2, 3
Power Mode	80h	Low Power	3
Time Delay to Low Power Mode	92h	1.0 Sec	3, 4
Decode Session Timeout	88h	9.9 Sec	4
Timeout Between Decodes, Same Symbol	89h	0.6 Sec	4
Beep After Good Decode	38h	Enable	5
Presentation Mode Session Timeout	F0h, 90h	2 Seconds	5
<b>Imager Preferences</b>			
Focus Mode	F0h A6h	Far Focus	NA
Decoding Autoexposure	F0h 29h	Enable	NA
Decoding Illumination	F0h 2Ah	Enable	NA
Decode Aiming Pattern	F0h 32h	Enable	NA
Image Capture Autoexposure	F0h 68h	Enable	NA
Image Capture Illumination	F0h 69h	Enable	NA
Gain	F4h F0h A7h	100	NA
Exposure Time	F4h F0h 38h	10 ms	NA
LED Illumination	F0h ADh	Internal LED Illumination	NA
Snapshot Mode Timeout	F0h 43h	0 (30 seconds)	NA
Snapshot Aiming Pattern	F0h 2Ch	Enable	NA
Image Cropping	F0h 2Dh	Disable	NA
Crop to Pixel Addresses	F4h F0h 3Bh;	0 top, 0 left, 479 bottom,	NA
	F4h F0h 3Ch;	639 right	
	F4h F0h 3Dh;		
	F4h F0h 3Eh		
Image Resolution	F0h 2Eh	Full	NA
JPEG Image Options	F0h 2Bh	Quality	NA
JPEG Quality Value	F0h 31h	65	NA
JPEG Size Value	F0h 33h	40 (41K)	NA
Image File Format Selection	F0h 30h	JPEG	NA
Bits per Pixel (BPP)	F0h 2Fh	8 BPP	NA
Signature Capture	5Dh	Disable	NA
Signature Capture Image File Format Selection	F0h 39h	JPEG	NA
Signature Capture Bits per Pixel (BPP)	F0h 3Ah	8 BPP	NA
Signature Capture Width	F4h F0h 6Eh	400	NA
Signature Capture Height	F4h F0h 6Fh	100	NA
Signature Capture JPEG Quality	F0h A5h	65	NA
Video View Finder	F0h 44h	Disable	NA
Target Video Frame Size	F0h 48h	2200 bytes	NA
Video View Finder Image Size	F0h 49h	1700 bytes	NA
<b>SSI Host Parameters</b>			
Select SSI Host	N/A	N/A	NA
Baud Rate	9Ch	9600	NA
Parity	9Eh	None	NA
Check Parity	97h	Disable	NA
Software Handshaking	9Fh	ACK/NAK	NA
Host RTS Line State	9Ah	Low	NA
Decode Data Packet Format	EEh	Send Raw Decode Data	NA
Stop Bits	9Dh	1	NA

*1User selection is required to configure this interface and this is the most common selection.*

Parameter	Parameter Number	Default	Page Number
Host Serial Response Time-out	9Bh	2 sec	NA
Host Character Time-out	EFh	200 msec	NA
Multipacket Option	F0h 4Eh	Option 1	NA
Event Reporting			
Decode Event	F0h 00h	Disable	NA
Boot Up Event	F0h 02h	Disable	NA
Parameter Event	F0h 03h	Disable	NA
<b>Serial Host Parameters</b>			
Serial Host Types	N/A	Standard	NA
Baud Rate	N/A	9600	NA
Parity Type	N/A	None	NA
Stop Bit Select	N/A	1 Stop Bit	NA
Data Bits	N/A	8-Bit	NA
Check Receive Errors	N/A	Enable	NA
Hardware Handshaking	N/A	None	NA
Software Handshaking	N/A	None	NA
Host Serial Response Time-out	N/A	2 Sec	NA
RTS Line State	N/A	Low RTS	NA
Beep on <BEL>	N/A	Disable	NA
Intercharacter Delay	N/A	0 msec	NA
Nixdorf Beep/LED Options	N/A	Normal Operation	NA
Ignore Unknown Characters	N/A	Send Bar Code	NA
<b>USB Host Parameters</b>			
USB Device Type	N/A	SNAPI with Imaging	6
Symbol Native API (SNAPI) Status Handshaking	N/A	Enable	NA
USB Country Keyboard Types (Country Codes)	N/A	North American	6, 7
USB Keystroke Delay	N/A	No Delay	7, 8
USB CAPS Lock Override	N/A	Disable	8
USB Ignore Unknown Characters	N/A	Enable	8
Emulate Keypad	N/A	Disable	8, 9
USB FN1 Substitution	N/A	Disable	9
Function Key Mapping	N/A	Disable	9
Simulated Caps Lock	N/A	Disable	9
Convert Case	N/A	None	10
<b>UPC/EAN</b>			
UPC-A	01h	Enable	17
UPC-E	02h	Enable	17
UPC-E1	0Ch	Disable	17
EAN-8/JAN 8	04h	Enable	18
EAN-13/JAN 13	03h	Enable	18
Bookland EAN	53h	Disable	18
Decode UPC/EAN/JAN Supplementals (2 & 5 digits)	10h	Ignore	19
UPC/EAN/JAN Supplemental Redundancy	50h	10	20
Transmit UPC-A Check Digit	28h	Enable	20
Transmit UPC-E Check Digit	29h	Enable	20
Transmit UPC-E1 Check Digit	2Ah	Enable	21
UPC-A Preamble	22h	System Character	21
UPC-E Preamble	23h	System Character	21, 22
UPC-E1 Preamble	24h	System Character	22
Convert UPC-E to A	25h	Disable	22, 23
Convert UPC-E1 to A	26h	Disable	23
EAN-8/JAN-8 Extend	27h	Disable	23
UCC Coupon Extended Code	55h	Disable	23, 24

*User selection is required to configure this interface and this is the most common selection.*

Parameter	Parameter Number	Default	Page Number
<b>Code 128</b>			
Code 128	08h	Enable	24
UCC/EAN-128	0Eh	Enable	24
ISBT 128	54h	Enable	25
<b>Code 39</b>			
Code 39	00h	Enable	25
Trioptic Code 39	0Dh	Disable	25
Convert Code 39 to Code 32 (Italian Pharmacy Code)	56h	Disable	26
Code 32 Prefix	E7h	Disable	26
Set Length(s) for Code 39	12h 13h	2 to 55	26, 27
Code 39 Check Digit Verification	30h	Disable	27
Transmit Code 39 Check Digit	2Bh Disable	11-27	27, 28
Code 39 Full ASCII Conversion	11h	Disable	28
Buffer Code 39	71h	Disable	28, 29
<b>Code 93</b>			
Code 93	09h	Disable	30
Set Length(s) for Code 93	1Ah 1Bh	4 to 55	30, 31
<b>Code 11</b>			
Code 11	0Ah	Disable	31
Set Lengths for Code 11	1Ch 1Dh	4 to 55	31, 32
Code 11 Check Digit Verification	34h	Disable	32
Transmit Code 11 Check Digit(s)	2Fh	Disable	32, 33
<b>Interleaved 2 of 5 (ITF)</b>			
Interleaved 2 of 5 (ITF)	06h	Enable	33
Set Lengths for I 2 of 5	16h 17h	14	33, 34
I 2 of 5 Check Digit Verification	31h	Disable	34
Transmit I 2 of 5 Check Digit	2Ch	Disable	34, 35
Convert I 2 of 5 to EAN 13	52h	Disable	35
<b>Discrete 2 of 5 (DTF)</b>			
Discrete 2 of 5	05h	Disable	35
Set Length(s) for D 2 of 5	14h 15h	12	36
<b>Codabar (NW - 7)</b>			
Codabar	07h	Disable	37
Set Lengths for Codabar	18h 19h	5 to 55	37, 38
CLSI Editing	36h	Disable	38
NOTIS Editing	37h	Disable	38
<b>MSI</b>			
MSI	0Bh	Disable	39
Set Length(s) for MSI	1Eh 1Fh	4 to 55	39, 40
MSI Check Digits	32h	One	40
Transmit MSI Check Digit	2Eh	Disable	40
MSI Check Digit Algorithm	33h	Mod 10/Mod 10	41
<b>Postal Codes</b>			
US Postnet	59h	Enable	41
US Planet	5Ah	Enable	41
UK Postal	5Bh	Enable	42
Transmit UK Postal Check Digit	60h	Enable	42
Japan Postal	F0h 22h	Enable	42
Australian Postal	F0h 23h	Enable	43
Dutch Postal	F0h 46h	Enable	43
Transmit US Postal Check Digit	5Fh	Enable	43
<b>RSS (Reduced Space Symbology)</b>			
RSS 14	F0h 52h	Enable	44
RSS Limited	F0h 53h	Enable	44
RSS Expanded	F0h 54h	Enable	44
Convert RSS to UPC/EAN	F0h 8Dh	Disable	45

*User selection is required to configure this interface and this is the most common selection.*

Parameter	Parameter Number	Default	Page Number
<b>Composite</b>			
Composite CC-C	F0h 55h	Disable	45
Composite CC-A/B	F0h 56h	Disable	45
Composite TLC-39	F0h 73h	Disable	46
UPC Composite Mode	F0h 58h	Always Linked	46
Composite Beep Mode	F0h 8Eh	Beep As Each Code Type is Decoded	46,47
UCC/EAN Code 128 Emulation Mode for UCC/EAN Composite Codes	F0h ABh	Disable	47
<b>2D Symbologies</b>			
PDF417	0Fh	Enable	47
MicroPDF417	E3h	Disable	48
Code 128 Emulation	7Bh	Disable	48
Data Matrix	F0h 24h	Enable	49
Maxicode	F0h 26h	Enable	49
QR Code	F0h 25h	Enable	49
<b>Symbology-Specific Security Levels</b>			
Redundancy Level	4Eh	1	50
Security Level	4Dh	1	51
Intercharacter Gap Size	F0h 7Dh	Normal	52
Report Version			52
<b>Macro PDF</b>			
Macro PDF Transmit/Decode Mode Symbols	BCh	Passthrough Mode	53
Transmit Macro PDF Control Header	B8h	Disable	53, 54
Escape Characters	E9h	None	54
Flush Macro PDF Buffer			54
Abort Macro PDF Entry			54
<b>Miscellaneous Scanner Options</b>			
Transmit Code ID Character	2Dh	None	55
SSI Prefix Value	69h	<CR>	56
SSI Suffix 1 Value	68h	<CR>	56
SSI Suffix 2 Value	6Ah	<CR>	56
Non-SSI Prefix Value	63h, 69h	<CR><LF>	56
Non-SSI Suffix 1 Value	62h, 68h	<CR><LF>	56
Non-SSI Suffix 2 Value	64h, 6Ah	<CR><LF>	56
Scan Data Transmission Format	EBh	Data as is	56, 57
FN1 Substitution Values	67h, 6Dh	Set	57, 58
Transmit "No Read" Message	5Eh	Disable	58

*User selection is required to configure this interface and this is the most common selection.*

## Reserved Parameters

The 510-2D reports the following parameters, however these parameters are reserved for future use.

- 0x20
- 0x21
- 0x3A
- 0x3B
- 0x3C
- 0x3D
- 0x3E
- 0x3F
- 0x40
- 0x41
- 0x42
- 0x45
- 0x71
- 0xCF
- 0xD0
- 0xD1
- 0xD2
- 0xD5
- 0xEA
- 0xF0, 0x01
- 0xF0, 0x04
- 0xF0, 0x05
- 0xF0, 0x28
- 0xF0, 0x94
- 0xF0, 0x96
- 0xF0, 0x97
- 0xF0, 0x98
- 0xF0, 0x99
- 0xF0, 0xA8
- 0xF0, 0xA9

# Symbol Code Identifiers

Table 13. Symbol Code Characters

Code Character	Code Type
A	UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
B	Code 39, Code 32
C	Codabar
D	Code 128
E	Code 93
F	Interleaved 2 of 5
G	Discrete 2 of 5, or Discrete 2 of 5 IATA
H	Code 11
J	MSI
K	UCC/EAN-128
L	Bookland EAN
M	Trioptic Code 39
N	Coupon Code
R	RSS Family
T	UCC Composite, TLC 39
X	PDF417, Macro PDF417, Micro PDF417
P00	Data Matrix
P01	QR Code
P02	Maxicode
P03	US Postnet
P04	US Planet
P05	Japan Postal
P06	UK Postal
P08	Dutch Postal
P09	Australian Postal
P09	UK Postal

# AIM Code Identifiers

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

- ] = Flag Character (ASCII 93)**
- c = Code Character (see Table 14)**
- m = Modifier Character (see Table 15)**

Table 14. Aim Code Characters

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, Coupon (Code 128 portion)
d	Data Matrix
E	UPC/EAN, Coupon (UPC portion)
e	RSS Family
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
L	PDF417, Macro PDF417, Micro PDF417
M	MSI
Q	QR Code
S	Discrete 2 of 5, IATA 2 of 5
U	Maxicode
X	Bookland EAN, Trioptic Code 39, US Postnet, US Planet, UK Postal, Japan Postal, Australian Postal, Dutch Postal

The modifier character is the sum of the applicable option values based on Table 15.

Table 15. Modifier Characters

Code Type	Option Value	Option
Code 39	0	No check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, A+I+MI+DW, is transmitted as JA7AIMID where 7 = (3+4).	
Trioptic Code 39	0	No option specified at this time. Always transmit 0.
	Example: A Trioptic bar code 412356 is transmitted as JX0412356	
Code 128	0	Standard data packet, no Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
Example: A Code (EAN) 128 bar code with Function 1 character FNC1 in the first position, AIMID is transmitted as JC1AIMID		
I 2 of 5	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as JI04123		
Codabar	0	No check digit processing.
	1	Reader has checked check digit.
	3	Reader has stripped check digit before transmission.
Example: A Codabar bar code without check digit, 4123, is transmitted as JF04123		
Code 93	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as JG0012345678905	
MSI	0	Check digits are sent.
	1	No check digit is sent.
	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as JM14123	
D 2 of 5	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as JS04123	
UPC/EAN	0	Standard packet in full EAN country code format, which is 13 digits for UPC-A and UPC-E (not including supplemental data).
	1	Two-digit supplement data only.
	2	Five-digit supplement data only.
	4	EAN-8 data packet.
Example: A UPC-A bar code 012345678905 is transmitted as JE00012345678905		
Bookland EAN	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as JX0123456789X	
Code 11	0	Single check digit
	1	Two check digits
	3	Check characters validated but not transmitted.
RSS Family	No option specified at this time. Always transmit 0. RSS-14 and RSS-Limited transmit with an Application Identifier "01".	
	Note: In UCC/EAN-128 emulation mode, RSS is transmitted using Code 128 rules (i.e., JC1). Example: An RSS-14 bar code 100123456788902 is transmitted as Je001100123456788902.	

Code Type	Option	Value Option
EAN.UCC Composites (RSS, UCC/EAN-128, 2D portion of UPC composite)		Native mode transmission.
		Note: UPC portion of composite is transmitted using UPC rules.
	0	Standard data packet.
	1	Data packet containing the data following an encoded symbol separator character.
	2	Data packet containing the data following an escape mechanism character. The data packet does not support the ECI protocol.
	3	Data packet containing the data following an escape mechanism character. The data packet supports the ECI protocol.
		UCC/EAN-128 emulation <b>Note:</b> UPC portion of composite is transmitted using UPC rules.
	1	Data packet is a UCC/EAN-128 symbol (i.e., data is preceded with ]JC1).
PDF417, Micro PDF417	0	Reader set to conform to protocol defined in 1994 PDF417 symbology specifications. <b>Note:</b> When this option is transmitted, the receiver cannot reliably determine whether ECIs have been invoked or whether data byte 92DEC has been doubled in transmission.
	1	Reader set to follow the ECI protocol (Extended Channel Interpretation). All data characters 92DEC are doubled.
	2	Reader set for Basic Channel operation (no escape character transmission protocol). Data characters 92DEC are not doubled. <b>Note:</b> When decoders are set to this mode, unbuffered Macro symbols and symbols requiring the decoder to convey ECI escape sequences cannot be transmitted.
	3	The bar code contains a UCC/EAN-128 symbol, and the first codeword is 903-907, 912, 914, 915.
	4	The bar code contains a UCC/EAN-128 symbol, and the first codeword is in the range 908-909.
	5	The bar code contains a UCC/EAN-128 symbol, and the first codeword is in the range 910-911.
		Example: A PDF417 bar code ABCD, with no transmission protocol enabled, is transmitted as ]L2ABCD.
Data Matrix	0	ECC 000-140, not supported.
	1	ECC 200.
	2	ECC 200, FNC1 in first or fifth position.
	3	ECC 200, FNC1 in second or sixth position.
	4	ECC 200, ECI protocol implemented.
	5	ECC 200, FNC1 in first or fifth position, ECI protocol implemented.
	6	ECC 200, FNC1 in second or sixth position, ECI protocol implemented.
MaxiCode	0	Symbol in Mode 4 or 5.
	1	Symbol in Mode 2 or 3.
	2	Symbol in Mode 4 or 5, ECI protocol implemented.
	3	Symbol in Mode 2 or 3, ECI protocol implemented in secondary message.
QR Code	0	Model 1 symbol.
	1	Model 2 symbol, ECI protocol not implemented.
	2	Model 2 symbol, ECI protocol implemented.
	3	Model 2 symbol, ECI protocol not implemented, FNC1 implied in first position.
	4	Model 2 symbol, ECI protocol implemented, FNC1 implied in first position.
	5	Model 2 symbol, ECI protocol not implemented, FNC1 implied in second position.
	6	Model 2 symbol, ECI protocol implemented, FNC1 implied in second position.

# Sample Bar Codes

**Code 39**



**UPC/EAN  
UPC-A, 100 %**



**EAN-13, 100 %**



**Code 128**



**Interleaved 2 of 5**



**RSS 14**

RSS 14 must be enabled to read the bar code below (see RSS-14 on page 11-50).



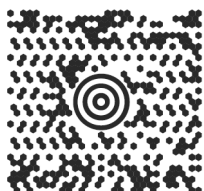
**PDF417**



**Data Matrix**



**Maxicode**



# Numeric Bar Codes

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



0



1



2



3



4



5



6



7



8



9

# Cancel

To correct an error or change a selection, scan the bar code below.



## ASCII Character Set

Table 16. ASCII Value Table

ASCII Value	Full ASCII Code 39 Encode Char	Keystroke
1000	%U	CTRL 2
1001	\$A	CTRL A
1002	\$B	CTRL B
1003	\$C	CTRL C
1004	\$D	CTRL D
1005	\$E	CTRL E
1006	\$F	CTRL F
1007	\$G	CTRL G
1008	\$H	CTRL H / <b>BACKSPACE</b> <sup>1</sup>
1009	\$I	CTRL I / <b>HORIZONTAL TAB</b> <sup>1</sup>
1010	\$J	CTRL J
1011	\$K	CTRL K
1012	\$L	CTRL L
1013	\$M	CTRL M / <b>ENTER</b> <sup>1</sup>
1014	\$N	CTRL N
1015	\$O	CTRL O
1016	\$P	CTRL P
1017	\$Q	CTRL Q
1018	\$R	CTRL R
1019	\$S	CTRL S
1020	\$T	CTRL T
1021	\$U	CTRL U
1022	\$V	CTRL V
1023	\$W	CTRL W
1024	\$X	CTRL X
1025	\$Y	CTRL Y
1026	\$Z	CTRL Z
1027	%A	CTRL [
1028	%B	CTRL \
1029	%C	CTRL ]
1030	%D	CTRL 6
1031	%E	CTRL -
1032	Space	Space
1033	/A	!
1034	/B	"
1035	/C	#
1036	/D	\$
1037	/E	%
1038	/F	&
1039	/G	'
1040	/H	(
1041	/I	)
1042	/J	*
1043	/K	+
1044	/L	,
1045	-	-
1046	.	.
1047	/o	/
1048	0	0
1049	1	1
1050	2	2

<sup>1</sup>The keystroke in bold is sent only if the Function Key Mapping is enabled. Otherwise, the unbold keystroke is sent.

1051	3	3
1052	4	4
1053	5	5
1054	6	6
1055	7	7
1056	8	8
1057	9	9
1058	/Z	:
1059	%F	;
1060	%G	<
1061	%H	=
1062	%I	>
1063	%J	?
1064	%V	@
1065	A	A
1066	B	B
1067	C	C
1068	D	D
1069	E	E
1070	F	F
1071	G	G
1072	H	H
1073	I	I
1074	J	J
1075	K	K
1076	L	L
1077	M	M
1078	N	N
1079	O	O
1080	P	P
1081	Q	Q
1082	R	R
1083	S	S
1084	T	T
1085	U	U
1086	V	V
1087	W	W
1088	X	X
1089	Y	Y
1090	Z	Z
1091	%K	[
1092	%L	\
1093	%M	]
1094	%N	^
1095	%O	_
1096	%W	'
1097	+A	a
1098	+B	b
1099	+C	c
1100	+D	d
1101	+E	e
1102	+F	f
1103	+G	g
1104	+H	h
1105	+I	i

*<sup>1</sup>The keystroke in bold is sent only if the Function Key Mapping is enabled.  
Otherwise, the unbold keystroke is sent.*

1106	+J	j
1107	+K	k
1108	+L	l
1109	+M	m
1110	+N	n
1111	+O	o
1112	+P	p
1113	+Q	q
1114	+R	r
1115	+S	s
1116	+T	t
1117	+U	u
1118	+V	v
1119	+W	w
1120	+X	x
1121	+Y	y
1122	+Z	z
1123	%P	{
1124	%Q	
1125	%R	}
1126	%S	~
<i><sup>1</sup>The keystroke in bold is sent only if the Function Key Mapping is enabled. Otherwise, the unbold keystroke is sent.</i>		

Table 17. ALT Key Standard Default Tables

<b>ALT Keys</b>	<b>Keystroke</b>
2064	ALT 2
2065	ALT A
2066	ALT B
2067	ALT C
2068	ALT D
2069	ALT E
2070	ALT F
2071	ALT G
2072	ALT H
2073	ALT I
2074	ALT J
2075	ALT K
2076	ALT L
2077	ALT M
2078	ALT N
2079	ALT O
2080	ALT P
2081	ALT Q
2082	ALT R
2083	ALT S
2084	ALT T
2085	ALT U
2086	ALT V
2087	ALT W
2088	ALT X
2089	ALT Y
2090	ALT Z

Table 18. USB GUI Key Character Set

GUI Key	Keystroke
3000	Right Control Key
3048	GUI 0
3049	GUI 1
3050	GUI 2
3051	GUI 3
3052	GUI 4
3053	GUI 5
3054	GUI 6
3055	GUI 7
3056	GUI 8
3057	GUI 9
3065	GUI A
3066	GUI B
3067	GUI C
3068	GUI D
3069	GUI E
3070	GUI F
3071	GUI G
3072	GUI H
3073	GUI I
3074	GUI J
3075	GUI K
3076	GUI L
3077	GUI M
3078	GUI N
3079	GUI O
3080	GUI P
3081	GUI Q
3082	GUI R
3083	GUI S
3084	GUI T
3085	GUI U
3086	GUI V
3087	GUI W
3088	GUI X
3089	GUI Y
3090	GUI Z

*Note: GUI Shift Keys - The Apple™ iMac keyboard has an apple key on either side of the space bar. Windows-based systems have a GUI key to the left of the left ALT key, and to the right of the right ALT key.*

Table 19. PF Key Standard Default Table

PF Keys	Keystroke
4001	PF 1
4002	PF 2
4003	PF 3
4004	PF 4
4005	PF 5
4006	PF 6
4007	PF 7
4008	PF 8
4009	PF 9
4010	PF 10
4011	PF 11
4012	PF 12
4013	PF 13
4014	PF 14
4015	PF 15
4016	PF 16

Table 20. F key Standard Default Table

F Keys	Keystroke
5001	F 1
5002	F 2
5003	F 3
5004	F 4
5005	F 5
5006	F 6
5007	F 7
5008	F 8
5009	F 9
5010	F 10
5011	F 11
5012	F 12
5013	F 13
5014	F 14
5015	F 15
5016	F 16
5017	F 17
5018	F 18
5019	F 19
5020	F 20
5021	F 21
5022	F 22
5023	F 23
5024	F 24

Table 21. Numeric Key Standard Default Table

<b>Numeric Keypad</b>	<b>Keystroke</b>
6042	*
6043	+
6044	Undefined
6045	-
6046	.
6047	/
6048	0
6049	1
6050	2
6051	3
6052	4
6053	5
6054	6
6055	7
6056	8
6057	9
6058	Enter
6059	Num Lock

Table 22. Extended Keypad Standard Default Table

<b>Extended Keypad</b>	<b>Keystroke</b>
7001	Break
7002	Delete
7003	Pg Up
7004	End
7005	Pg Dn
7006	Pause
7007	Scroll Lock
7008	Backspace
7009	Tab
7010	Print Screen
7011	Insert
7012	Home
7013	Enter
7014	Escape
7015	Up Arrow
7016	Dn Arrow
7017	Left Arrow
7018	Right Arrow

