

Honeywell

HF52X

Fixed Mount Barcode Scanner

User Guide

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TABLE OF CONTENTS

Customer Support and Technical Assistance	xix
Product Service and Repair	xix
Limited Warranty	xix

Chapter 1 - Getting Started..... 1

Introduction	1
About This Manual.....	1
Unpacking Your Device	1
Required Accessories (not provided).....	1
Optional Accessories	2
USB Connection	2
RS-232 Connection	3
Reading Barcodes	3
Menu Bar Code Security Settings.....	3
Setting Custom Defaults	4
Resetting the Custom Defaults	5

Chapter 2 - Programming the Interface..... 7

Introduction.....	7
Programming the Interface.....	7
RS232 Serial Port.....	7
USB IBM SurePos	8
USB PC or Macintosh Keyboard	8
USB HID.....	9
USB Serial.....	9

CTS/RTS Emulation.....	9
ACK/NAK Mode	9
Remote MasterMind™ for USB	10
Keyboard Country Layout.....	10
Keyboard Style	17
Keyboard Conversion	18
Control Character Output.....	19
Keyboard Modifiers	19
RS232 Modifiers	21
RS232 Baud Rate	21
RS232 Word Length: Data Bits, Stop Bits, and Parity	22
RS232 Receiver Time-Out	23
RS232 Handshaking.....	23
RS232 Timeout.....	24
XON/XOFF.....	24
ACK/NAK	25

Chapter 3 - Input/Output Settings..... 27

Power Up Beeper.....	27
Beep on BEL Character	27
Good Read and Error Indicators	28
Beeper – Good Read.....	28
Beeper Volume – Good Read	28
Beeper Pitch – Good Read	28
Beeper Pitch – Error	29
Beeper Duration – Good Read.....	29
LED – Good Read	30
Number of Beeps – Good Read.....	30
Number of Beeps – Error.....	30
Good Read Delay	31
User-Specified Good Read Delay.....	31
Beeper Signal Inversion.....	31
Mobile Phone Read Mode	32
Presentation Modes.....	32
Presentation Mode	32

Presentation Mode—Full Depth of Field.....	33
Streaming Presentation™ Mode	33
LED Illumination - Presentation Mode.....	33
Idle Illumination - Presentation Mode	34
Presentation LED Behavior after Decode.....	35
Presentation Sensitivity	35
Presentation Centering.....	35
CodeGate®	37
Character Activation Mode.....	37
Activation Character.....	38
End Character Activation After Good Read	38
Character Activation Timeout.....	38
Character Deactivation Mode	39
Deactivation Character	39
Poor Quality Codes.....	40
Poor Quality 1D Codes	40
Poor Quality PDF Bar Codes	40
Decode Security.....	40
Decode Time-Out.....	41
Reread Delay	41
User-Specified Reread Delay.....	42
2D Reread Delay	42
Illumination Lights.....	43
Centering.....	43
Preferred Symbology	45
High Priority Symbology.....	45
Low Priority Symbology	46
Preferred Symbology Time-out.....	46
Preferred Symbology Default	46
Output Sequence Overview.....	46
Output Sequence Editor	46
To Add an Output Sequence.....	47
Other Programming Selections	47

Output Sequence Example.....	48
Output Sequence Editor	49
Partial Sequence	49
Require Output Sequence	50
Multiple Symbols	50
No Read	51
Video Reverse	51
Working Orientation	52

Chapter 4 - Data Editing 53

Prefix/Suffix Overview	53
Points to Keep In Mind	53
To Add a Prefix or Suffix:.....	54
Example: Add a Tab Suffix to All Symbolologies.....	54
To Clear One or All Prefixes or Suffixes.....	55
To Add a Carriage Return Suffix to All Symbolologies.....	55
Prefix Selections.....	55
Suffix Selections.....	56
Function Code Transmit.....	56
Intercharacter, Interfunction, and Intermessage Delays.....	56
Intercharacter Delay	57
User Specified Intercharacter Delay.....	57
Interfunction Delay	58
Intermessage Delay.....	58

Chapter 5 - Data Formatting 59

Data Format Editor Introduction.....	59
Add a Data Format.....	60
Other Programming Selections.....	61
Data Format Editor Commands.....	62
Send Commands	62

F1—Send All Characters	62
F2—Send a number of characters	62
F3—Send all characters up to a particular character	63
B9—Send all characters up to a string.....	64
E9—Send all but the last characters	64
F4—Insert a character multiple times.....	64
BA—Insert a string	65
B3—Insert symbology name	66
B4—Insert bar code length.....	66
B5—Insert key strokes	67
Move Commands.....	67
F5—Move the cursor forward a number of characters.....	67
F6—Move the cursor backward a number of characters.....	68
F7—Move the cursor to the beginning	68
EA—Move the cursor to the end	68
Search Commands.....	69
F8—Search forward for a character	69
F9—Search backward for a character	69
B0—Search forward for a string	69
B1—Search backward for a string	70
E6—Search forward for a non-matching character	70
E7—Search backward for a non-matching character	71
Miscellaneous Commands	71
FB—Suppress characters	71
FC—Stop suppressing characters	72
E4—Replace characters.....	72
E5—Stop replacing characters	72
FE—Compare characters	73
B2—Compare string	73
EC—Check for a number.....	73
ED—Check for non-numeric character	73
EF—Insert a delay.....	74
B8—Discard Data	74
Data Formatter	75

Data Format Non-Match Error Tone	76
Primary/Alternate Data Formats	76
Single Scan Data Format Change	77

Chapter 6 - Symbolologies..... 79

All Symbolologies	80
Message Length Description.....	80
Codabar	81
Codabar On/Off	81
Codabar Start/Stop Characters.....	81
Codabar Check Character.....	81
Codabar Concatenation	82
Codabar Message Length	83
Code 39.....	83
Code 39 On/Off	83
Code 39 Start/Stop Characters	83
Code 39 Check Character	84
Code 39 Message Length	84
Code 39 Redundancy	85
Code 39 Append	85
Code 32 Pharmaceutical (PARAF).....	85
Full ASCII	86
Code 39 Code Page	86
Code 39 Unconventional Inter-Character Gaps	87
Trioptic Code.....	87
Trioptic Redundancy	87
Interleaved 2 of 5	88
Interleaved 2 of 5 On/Off	88
Check Digit.....	88
Interleaved 2 of 5 Message Length	89
FEBRABAN Decode.....	89
NEC 2 of 5.....	89
NEC 2 of 5 On/Off.....	90

Check Digit.....	90
NEC 2 of 5 Message Length	90
NEC 2 of 5 Redundancy.....	91
Code 93	91
Code 93 On/Off.....	91
Code 93 Message Length	92
Code 93 Redundancy.....	92
Code 93 Append.....	92
Code 93 Code Page.....	93
Straight 2 of 5 Industrial (three-bar start/stop).....	93
Straight 2 of 5 Industrial On/Off.....	93
Straight 2 of 5 Industrial Message Length	93
Straight 2 of 5 Industrial Redundancy.....	94
Straight 2 of 5 IATA (two-bar start/stop)	94
Straight 2 of 5 IATA On/Off.....	94
Straight 2 of 5 IATA Message Length	94
Straight 2 of 5 IATA Redundancy.....	95
Matrix 2 of 5	95
Matrix 2 of 5 On/Off.....	95
Matrix 2 of 5 Message Length.....	96
Matrix 2 of 5 Redundancy	96
Code 11	96
Code 11 On/Off.....	96
Check Digits Required	97
Code 11 Message Length	97
Code 11 Redundancy.....	97
Code 128	98
Code 128 On/Off	98
ISBT 128 Concatenation.....	98
ISBT 128 Concatenation Mode.....	99
ISBT 128 Strict Concatenation	99
ISBT 128 Concatenation Alignment	99
ISBT 128 Alternate ID.....	100
Code 128 Message Length.....	100

Code 128 Append.....	100
Code 128 Code Page	101
Code 128 Redundancy.....	101
GS1-128	101
GS1-128 On/Off.....	102
GS1-128 Message Length	102
GS1-128 Redundancy.....	102
Telepen.....	102
Telepen On/Off	103
Telepen Output.....	103
Telepen Message Length	103
Telepen Redundancy	103
UPC-A	104
UPC-A On/Off.....	104
UPC-A Check Digit.....	104
UPC-A Number System	105
UPC-A Redundancy.....	105
UPC-A Addenda	105
UPC-A Addenda Required.....	106
Addenda Timeout	106
UPC-A Addenda Separator	106
UPC-A/EAN-13 with Extended Coupon Code.....	107
Coupon GS1 DataBar Output	107
UPC-E0	108
UPC-E0 On/Off.....	108
UPC-E0 Expand	108
UPC-E0 Redundancy.....	108
UPC-E0 Addenda Required.....	109
UPC-E0 Addenda Separator	109
UPC-E0 Check Digit.....	109
UPC-E0 Leading Zero.....	110
UPC-E0 Addenda	110
UPC-E1	111
EAN/JAN-13	111

EAN/JAN-13 On/Off	111
Convert UPC-A to EAN-13	111
EAN/JAN-13 Check Digit	112
EAN/JAN-13 Redundancy	112
EAN/JAN-13 Addenda.....	112
EAN/JAN-13 Addenda Required	113
EAN-13 Beginning with 290 Addenda Required	113
EAN-13 Beginning with 378/379 Addenda Required.....	114
EAN-13 Beginning with 414/419 Addenda Required.....	114
EAN-13 Beginning with 434/439 Addenda Required.....	115
EAN-13 Beginning with 491 Addenda Required	116
EAN-13 Beginning with 977 Addenda Required	116
EAN-13 Beginning with 978 Addenda Required	117
EAN-13 Beginning with 979 Addenda Required	117
EAN/JAN-13 Addenda Separator.....	118
ISBN Translate	118
EAN/JAN-8	119
EAN/JAN-8 On/Off	119
EAN/JAN-8 Check Digit	119
EAN/JAN-8 Redundancy	119
EAN/JAN-8 Addenda.....	120
EAN/JAN-8 Addenda Required	120
EAN/JAN-8 Addenda Separator	120
MSI	121
MSI On/Off.....	121
MSI Check Character	121
MSI Message Length	122
MSI Redundancy.....	122
GS1 DataBar Omnidirectional	123
GS1 DataBar Omnidirectional On/Off.....	123
GS1 DataBar Omnidirectional Redundancy.....	123
GS1 DataBar Limited.....	123
GS1 DataBar Limited On/Off	124
GS1 DataBar Limited Redundancy	124

GS1 DataBar Expanded	124
GS1 DataBar Expanded On/Off	124
GS1 DataBar Expanded Message Length.....	125
GS1 DataBar Expanded Redundancy	125
Codablock A	126
Codablock A On/Off.....	126
Codablock A Message Length.....	126
Codablock F	126
Codablock F On/Off.....	127
Codablock F Message Length.....	127
Label Code.....	127
PDF417	128
PDF417 On/Off	128
PDF417 Message Length	128
PDF417 Code Page	128
MacroPDF417	129
MicroPDF417	129
MicroPDF417 On/Off.....	129
MicroPDF417 Message Length	129
MicroPDF417 Code Page	130
GS1 Composite Codes	130
UPC/EAN Version	131
GS1 Composite Code Message Length	131
GS1 Composite Code Code Page.....	131
GS1 Emulation.....	132
TCIF Linked Code 39 (TLC39)	133
QR Code.....	133
QR Code On/Off	133
QR Code Message Length	133
QR Code Append	134
QR Code Page.....	134
QR Code No Quiet Zone.....	134
DotCode.....	135

DotCode On/Off.....	135
Poor Quality DotCodes	135
DotCode Message Length	136
Digimarc Barcode™	136
Digimarc Decoder Attempts.....	136
Digimarc Barcode.....	136
Data Matrix	137
Data Matrix On/Off.....	137
Low Contrast Data Matrix Enhancements	138
Data Matrix Small Reflective Barcodes	138
Data Matrix Message Length	138
Data Matrix Append.....	139
Data Matrix Code Page.....	139
Grid Matrix	139
Grid Matrix On/Off.....	140
Grid Matrix Message Length	140
MaxiCode.....	140
MaxiCode On/Off	140
MaxiCode Message Format.....	141
MaxiCode Message Length.....	141
Aztec Code	141
Aztec Code On/Off.....	141
Aztec Code Message Length.....	142
Aztec Append.....	142
Aztec Code Page	142
Chinese Sensible (Han Xin) Code.....	143
Han Xin Code On/Off.....	143
Han Xin Code Message Length	143
Postal Codes - 2D.....	144
Single 2D Postal Codes:.....	144
Combination 2D Postal Codes:	145
Planet Code Check Digit.....	147
Postnet Check Digit	147
Australian Post Interpretation	148

Postal Codes - Linear	148
China Post (Hong Kong 2 of 5)	148
China Post (Hong Kong 2 of 5) On/Off	149
China Post (Hong Kong 2 of 5) Message Length	149
China Post Redundancy	149
Korea Post	149
Korea Post On/Off	150
Korea Post Message Length	150
Korea Post Check Digit	150

Chapter 7 - Imaging Commands151

Single-Use Basis	151
Command Syntax	151
Image Snap - IMGSNP	152
IMGSNP Modifiers	152
P - Imaging Style	152
B - Beeper	152
T - Wait for Trigger	153
L - LED State	153
E - Exposure	153
G - Gain	154
W - Target White Value	154
D - Delta for Acceptance	154
U - Update Tries	155
% - Target Set Point Percentage	155
Image Ship - IMGSHIP	155
IMGSHIP Modifiers	156

A - Infinity Filter	156
C - Compensation	156
D - Pixel Depth	156
E - Edge Sharpen	157
F - File Format	157
H - Histogram Stretch	158
I - Invert Image	158
IF- Noise Reduction	159
IR - Image Rotate.....	159
J - JPEG Image Quality	160
K - Gamma Correction	160
L, R, T, B, M - Image Cropping	161
P - Protocol.....	161
S - Pixel Ship	162
U - Document Image Filter.....	162
V - Blur Image	163
W - Histogram Ship	163
Image Size Compatibility.....	164
Intelligent Signature Capture - IMGBOX.....	164
Signature Capture Optimize	165
IMGBOX Modifiers	166
RF Default Imaging Device	169

Chapter 8 - Utilities..... 171

To Add a Test Code I.D. Prefix to All Symbolologies.....	171
Show Software Revision	171
Show Data Format	171
Test Menu.....	172
TotalFreedom.....	172
Application Plug-Ins (Apps).....	173
EZConfig for Scanning Introduction	173
EZConfig for Scanning Operations	174

Scan Data.....	174
Configure	174
Imaging.....	174
Install the EZConfig for Scanning Tool.....	174
Resetting the Factory Defaults.....	176

Chapter 9 - Serial Programming Commands.....177

Conventions.....	177
Menu Command Syntax	177
Serial Command Example	178
Query Commands.....	178
:Name: Field Usage (Optional)	178
Tag Field Usage	179
SubTag Field Usage	179
Data Field Usage.....	179
Concatenation of Multiple Commands	179
Responses	179
Setting the Custom Defaults.....	181
Resetting the Custom Defaults.....	181
Menu Commands	181

Chapter 10 - Product Specifications.....205

HF52X Product Specifications	205
Full Depth of Field	206
Typical Performance	206
Field of View	206

Chapter 11 - Maintenance and Troubleshooting207

Repairs	207
Inspecting Cords and Connectors.....	207
Troubleshooting	207

Appendix A - Reference Charts..... 209

Symbology Charts..... 209

 Linear Symbologies 209

 2D Symbologies 211

 Postal Symbologies 211

ASCII Conversion Chart (Code Page 1252) 212

Lower ASCII Reference Table..... 213

ISO 2022/ISO 646 Character Replacements 218

Keyboard Key References..... 220

Sample Symbols 221

Programming Chart..... 223

Programming Chart..... 225

Customer Support and Technical Assistance

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GETTING STARTED

Introduction

The HF52X fix mount barcode scanner is a 2D imager module designed to be integrated into an OEM enclosure, such as a self-service kiosks, access control system, and vending machines

About This Manual

This User Guide provides demonstration, installation, and programming instructions for the HF52X

The HF52X is factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the bar codes in this guide, using the EZConfig-Scanning tool (see [page 173](#)), or by sending serial commands (see [Chapter 9](#)).

An asterisk (*) next to an option indicates the default setting.

Unpacking Your Device

After you open the shipping carton, take the following steps:

- Check for damage during shipment. Report damage immediately to the carrier who delivered the carton.
- Make sure the items in the carton match your order.
- Save the shipping container for later storage or shipping.

Required Accessories (not provided)

- RS-232 cable + power supply, or
- USB cable

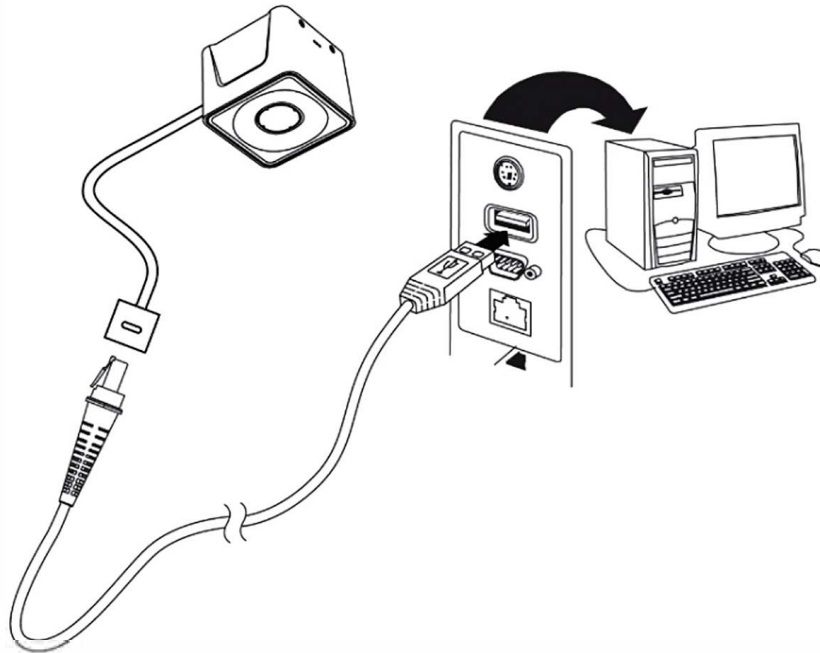
Optional Accessories

- Power adapter

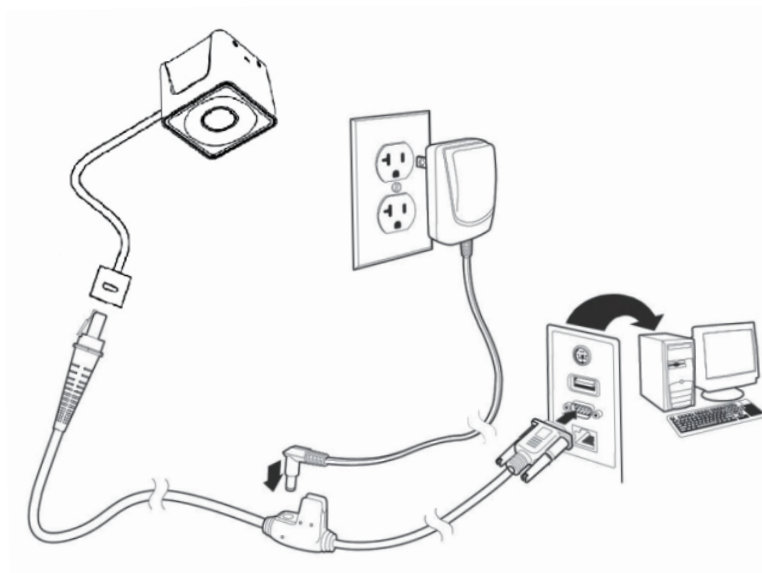
USB Connection



Caution: The computer must be turned off before connecting the scanner. Turn the computer on after the scanner is fully connected.



RS-232 Connection



Note: Use a power adapter if necessary (not included).

Reading Barcodes

To read barcodes, follow these guidelines:

- Align the center of the scanner to the barcode. The scanner can be in any direction.
- For small barcodes, place the scanner close to the code. For larger barcodes, place the scanner away from the code so that the code is fully in the scanner's field of view.
- For highly reflective barcodes (e.g. film coating), incline the scanner to an angle for better reading.

Menu Bar Code Security Settings

Honeywell scan engines are programmed by scanning menu bar codes or by sending serial commands to the scan engine. If you want to restrict the ability to scan menu codes, you can use the Menu Bar Code Security settings. Contact the nearest technical support office (see [Customer Support and Technical Assistance](#) on page xix) for further information.

Setting Custom Defaults

You have the ability to create a set of menu commands as your own, custom defaults. To do so, scan the Set Custom Defaults bar code below before scanning the menu commands for your custom defaults. If a menu command requires scanning numeric codes from the back cover, then a Save code, that entire sequence will be saved to your custom defaults. When you have entered all the commands you want to save for your custom defaults, scan the Save Custom Defaults bar code.



You may have a series of custom settings and want to correct a single setting. To do so, just scan the new setting to overwrite the old one. For example, if you had previously saved the setting for Beeper Volume at Low to your custom defaults, and decide you want the beeper volume set to High, just scan the Set Custom Defaults bar code, then scan the Beeper Volume High menu code, and then Save Custom Defaults. The rest of the custom defaults will remain, but the beeper volume setting will be updated.

Note: *Custom defaults are not applied immediately after scanning the Save Custom Defaults bar code. To activate the custom defaults, you must read the Activate Defaults bar code below.*

Resetting the Custom Defaults

If you want the custom default settings restored to your scan engine, scan the Activate Defaults bar code below. This is the recommended default bar code for most users. It resets the scan engine to the custom default settings. If there are no custom defaults, it will reset the scan engine to the factory default settings. Any settings that have not been specified through the custom defaults will be defaulted to the factory default settings.



DEFAULT.

Activate Defaults

Note: You can also use serial commands to send the list of custom defaults to your scan engine. See [Setting the Custom Defaults](#) on page 181.

Note: To Remove custom defaults see [Resetting the Factory Defaults](#) on page 176.

PROGRAMMING THE INTERFACE

Introduction

This chapter describes how to program your system for the desired interface.

Programming the Interface

Use the following configuration bar codes to program the interface.

Note: After you scan one of the codes, power cycle the host terminal to have the interface in effect.

RS232 Serial Port

The RS232 Interface bar code is used when connecting to the serial port of a PC or terminal. The following RS232 Interface bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below.

Note: The HF52X automatically detects the RS-232 mode when the RS-232 cable is plugged in to the scanner.

Option	Setting
Baud Rate	115,200 bps
Data Format	8 data bits, no parity bit, 1 stop bit



TERMID0;232BAD9;232WRD2

RS-232 Interface

USB IBM SurePos

Scan one of the following “Plug and Play” codes to program the scan engine for an IBM SurePos (USB handheld scanner) or IBM SurePos (USB tabletop scanner) interface.

Note: After scanning one of these codes, you must power cycle the cash register.



Each bar code above also programs the following suffixes for each symbology:

Symbology	Suffix	Symbology	Suffix
EAN 8	0C	Code 39	00 0A 0B
EAN 13	16	Interleaved 2 of 5	00 0D 0B
UPC A	0D	Code 128	00 18 0B
UPC E	0A	Code 39	00 0A 0B

USB PC or Macintosh Keyboard

Scan one of the following codes to program the scan engine for USB PC Keyboard or USB Macintosh Keyboard. Scanning these codes also adds a CR suffix.



USB HID

Scan the following code to program the scan engine for USB HID.



TERMID131.

USB HID

USB Serial

Scan the following code to program the scan engine to emulate a regular RS232-based COM Port. If you are using a Microsoft® Windows® PC, you will need to download a driver from the Honeywell website (www.honeywellaidc.com). The driver will use the next available COM Port number. Apple® Macintosh computers recognize the scan engine as a USB CDC class device and automatically use a class driver.



TERMID130.

USB Serial

Note: No extra configuration (e.g., baud rate) is necessary.

CTS/RTS Emulation



USBCTS1.

CTS/RTS Emulation On



USBCTS0.

* CTS/RTS Emulation Off

ACK/NAK Mode



USBACK1.

ACK/NAK Mode On



USBACK0.

* ACK/NAK Mode Off

Remote MasterMind™ for USB

When using a USB interface, you may wish to configure your scanner to communicate with Remote MasterMind Scanner Management Software (ReM). Scan the ReM On bar code to communicate with ReM. To disable this capability, scan ReM Off.



Keyboard Country Layout

If your interface is USB Keyboard or Keyboard Wedge, your keyboard layout default is a US keyboard. To change this layout, refer to the chart below for your keyboard country. Scan the appropriate bar code below to change the layout.

By default, national character replacements are used for the following characters: # \$ @ [\] ^ ' { | } ~ See [ISO 2022/ISO 646 Character Replacements](#) on page A-218 to view the character replacements for each country.

Keyboard Countries



Keyboard Countries (Continued)



KBDCTY33.
Bosnia



KBDCTY59.
Brazil (MS)



KBDCTY53.
Bulgaria (Latin)



KBDCTY18.
Canada (French)



KBDCTY32.
Croatia



KBDCTY40.
Czech (Programmers)



KBDCTY1.
Belgium



KBDCTY16.
Brazil



KBDCTY52.
Bulgaria (Cyrillic)



KBDCTY54.
Canada (French legacy)



KBDCTY55.
Canada (Multilingual)



KBDCTY15.
Czech

Keyboard Countries (Continued)



KBDCTY38.
Czech (QWERTZ)



KBDCTY11.
Dutch (Netherlands)



KBDCTY83.
Faroese



KBDCTY3.
France



KBDCTY4.
Germany



KBDCTY64.
Greek (220 Latin)



KBDCTY39.
Czech (QWERTY)



KBDCTY8.
Denmark



KBDCTY41.
Estonia



KBDCTY2.
Finland



KBDCTY84.
Gaelic



KBDCTY17.
Greek

Keyboard Countries (Continued)



KBDCTY65.
Greek (319 Latin)



KBDCTY63.
Greek (Latin)



KBDCTY60.
Greek (Polytonic)



KBDCTY50.
Hungarian (101 key)



KBDCTY75.
Iceland



KBDCTY56.
Italian (142)



KBDCTY61.
Greek (220)



KBDCTY62.
Greek (319)



KBDCTY66.
Greek (MS)



KBDCTY12.
Hebrew



KBDCTY19.
Hungary



KBDCTY73.
Irish

Keyboard Countries (Continued)



KBDCTY28.
Japan ASCII



KBDCTY79.
Kyrgyz (Cyrillic)



KBDCTY42.
Latvia



KBDCTY44.
Lithuania



KBDCTY34.
Macedonia



KBDCTY86.
Mongolian (Cyrillic)



KBDCTY5.
Italy



KBDCTY78.
Kazakh



KBDCTY14.
Latin America



KBDCTY43.
Latvia (QWERTY)



KBDCTY45.
Lithuania (IBM)



KBDCTY74.
Malta

Keyboard Countries (Continued)



Keyboard Countries (Continued)



KBDCTY49.
Slovakia (QWERTY)



KBDCTY31.
Slovenia



KBDCTY51.
Spanish variation



KBDCTY29.
Switzerland (French)



KBDCTY85.
Tatar



KBDCTY24.
Turkey Q



KBDCTY22.
Slovakia



KBDCTY48.
Slovakia (QWERTZ)



KBDCTY10.
Spain



KBDCTY23.
Sweden



KBDCTY6.
Switzerland (German)



KBDCTY27.
Turkey F

Keyboard Countries (Continued)



Keyboard Style

This programs keyboard styles, such as Caps Lock and Shift Lock. If you have used [Keyboard Conversion](#) settings, they will override any of the following Keyboard Style settings. *Default = Regular.*

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



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



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



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



Autocaps via NumLock bar code should be scanned in countries (e.g., Germany, France) where the Caps Lock key cannot be used to toggle Caps Lock. The NumLock option works similarly to the regular Autocaps, but uses the NumLock key to retrieve the current state of the Caps Lock.



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



Note: After scanning the Emulate External Keyboard bar code, you must power cycle your computer.

Keyboard Conversion

Alphabetic keyboard characters can be forced to be all upper case or all lowercase. So if you have the following bar code: "abc569GK," you can make the output "ABC569GK" by scanning Convert All Characters to Upper Case, or to "abc569gk" by scanning Convert All Characters to Lower Case.

These settings override [Keyboard Style](#) selections.

Note: If your interface is a keyboard wedge, first scan the menu code for [Automatic Caps Lock](#) (page 18). Otherwise, your output may not be as expected.

Default = Keyboard Conversion Off.



Control Character Output

This selection sends a text string instead of a control character. For example, when the control character for a carriage return is expected, the output would display [CR] instead of the ASCII code of 0D. Refer to [ASCII Conversion Chart \(Code Page 1252\)](#) on page 212. Only codes 00 through 1F are converted (the first column of the chart).

Note: *Control + X (Control + ASCII) Mode overrides this mode.*

Default = Off



Keyboard Modifiers

This modifies special keyboard features, such as CTRL+ ASCII codes and Turbo Mode.

Control + X (Control + ASCII) Mode On: The scan engine sends key combinations for ASCII control characters for values 00-1F. Windows is the preferred mode. All keyboard country codes are supported. DOS mode is a legacy mode, and it does not support all keyboard country codes. New users should use the Windows mode.

Windows Mode Prefix/Suffix Off: The scan engine sends key combinations for ASCII control characters for values 00-1F, but it does not translate any prefix or suffix information.

Default = Control + X Mode Off.



KBDCAS2.

Windows Mode Control + X
Mode On



KBDCAS0.

* Control + X Mode Off



KBDCAS1.

DOS Mode Control + X Mode On



KBDCAS3.

Windows Mode Prefix/Suffix



KBDCAS4.

DOS Mode Control + X Mode On
with Windows Mode Prefix/
Suffix

Turbo Mode: The scan engine sends characters to a terminal faster. If the terminal drops characters, do not use Turbo Mode. *Default = Off*



KBDTMD1.

Turbo Mode On



KBDTMD0.

* Turbo Mode Off

Numeric Keypad Mode: Sends numeric characters as if entered from a numeric keypad. *Default = Off*



KBDNPS1.

Numeric Keypad Mode On



KBDNPS0.

* Numeric Keypad Mode Off

Automatic Direct Connect Mode: This selection can be used if you have an IBM AT style terminal and the system is dropping characters. *Default = Off*



RS232 Modifiers

RS232 Baud Rate

Baud Rate sends the data from the scan engine to the terminal at the specified rate. The host terminal must be set for the same baud rate as the scan engine. *Default = 115,200.*





232BAD6.
19200



232BAD7.
38400



232BAD8.
57,600



232BAD9.
* 115,200

RS232 Word Length: Data Bits, Stop Bits, and Parity

Data Bits sets the word length at 7 or 8 bits of data per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications that require use of the full ASCII set, select 8 data bits per character. *Default = 8.*

Stop Bits sets the stop bits at 1 or 2. *Default = 1.*

Parity provides a means of checking character bit patterns for validity. *Default = None.*



232WRD3.
7 Data, 1 Stop, Parity Even



232WRD0.
7 Data, 1 Stop, Parity None



232WRD6.
7 Data, 1 Stop, Parity Odd



232WRD4.
7 Data, 2 Stop, Parity Even



232WRD1.
7 Data, 2 Stop Parity None



232WRD7.
7 Data, 2 Stop, Parity Odd



232WRD5.
8 Data, 1 Stop, Parity Even



232WRD2.
* 8 Data, 1 Stop, Parity None



232WRD8.
8 Data, 1 Stop, Parity Odd



232WRD14.
8 Data, 1 Stop, Parity Mark

RS232 Receiver Time-Out

The unit stays awake to receive data until the RS232 Receiver Time-Out expires. A manual or serial trigger resets the time-out. When an RS232 receiver is sleeping, a character may be sent to wake up the receiver and reset the time-out. A transaction on the CTS line will also wake up the receiver. The receiver takes 300 milliseconds to completely come up. Change the RS232 receiver time-out by scanning the bar code below, then scanning digits from the inside back cover of this manual, then scanning Save. The range is 0 to 300 seconds. *Default = 0 seconds (no time-out - always on).*



232LPT.
RS232 Receiver Time-Out

RS232 Handshaking

RS232 Handshaking allows control of data transmission from the scan engine using software commands from the host device. When RTS/CTS is turned Off, no data flow control is used.

Flow Control, No Timeout: The scan engine asserts RTS when it has data to send, and will wait indefinitely for CTS to be asserted by the host.

Two-Direction Flow Control: The scan engine asserts RTS when it is OK for the host to transmit. The host asserts CTS when it is OK for the device to transmit.

Flow Control with Timeout: The scan engine asserts RTS when it has data to send and waits for a delay (see [RS232 Timeout](#) on page 24) for CTS to be asserted by the host. If the delay time expires and CTS is not asserted, the device transmit buffer is cleared and scanning may resume.

Default = RTS/CTS Off.



232CTS1.

Flow Control, No Timeout



232CTS2.

Two-Direction Flow Control



232CTS3.

Flow Control with Timeout



232CTS0.

* RTS/CTS Off

RS232 Timeout

When using Flow Control with Timeout, you must program the length of the delay you want to wait for CTS from the host. Set the length (in milliseconds) for a timeout by scanning the bar code below, then setting the timeout (from 1-5100 milliseconds) by scanning digits from the inside back cover, then scanning Save.



232DEL.

RS232 Timeout

XON/XOFF

Standard ASCII control characters can be used to tell the scan engine to start sending data (XON/XOFF On) or to stop sending data (XON/XOFF Off). When the host sends the XOFF character (DC3, hex 13) to the scan engine, data transmission stops. To resume transmission, the host sends the XON character (DC1, hex 11). Data transmission continues where it left off when XOFF was sent. *Default = XON/XOFF Off.*



232XON1.

XON/XOFF On



232XON0.

* XON/XOFF Off

ACK/NAK

After transmitting data, the scan engine waits for an ACK character (hex 06) or a NAK character (hex 15) response from the host. If ACK is received, the communications cycle is completed and the scan engine looks for more bar codes. If NAK is received, the last set of bar code data is retransmitted and the scan engine waits for ACK/NAK again. Turn on the ACK/NAK protocol by scanning the ACK/NAK On bar code below. To turn off the protocol, scan ACK/NAK Off. *Default = ACK/NAK Off.*



232ACK1.

ACK/NAK On



232ACK0.

* ACK/NAK Off

Power Up Beeper

The scan engine can be programmed to beep when it's powered up. Scan the **Off** bar code(s) if you don't want a power up beep. *Default = Power Up Beeper On - Scanner.*



BEPPWR0.

Power Up Beeper Off -
Scanner



BEPPWR1.

* Power Up Beeper On -
Scanner

Beep on BEL Character

You may wish to force the scan engine to beep upon a command sent from the host. If you scan the **Beep on BEL On** bar code below, the scan engine will beep every time a BEL character is received from the host. *Default = Beep on BEL Off.*



BELBEP0.

*Beep on BEL Off



BELBEP1.

Beep on BEL On

Good Read and Error Indicators

Beeper – Good Read

The beeper may be programmed **On** or **Off** in response to a good read. Turning this option off only turns off the beeper response to a good read indication. All error and menu beeps are still audible. *Default = Beeper - Good Read On.*



Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the scan engine emits on a good read. *Default = High.*



Beeper Pitch – Good Read

The beeper pitch codes modify the pitch (frequency) of the beep the scan engine emits on a good read. *Default = Medium.*





BEPFQ12700.

* Medium (2700 Hz)



BEPFQ14200.

High (4200 Hz)

Beeper Pitch – Error

The beeper pitch codes modify the pitch (frequency) of the sound the scan engine emits when there is a bad read or error. *Default = Razz.*



BEPFQ2250.

* Razz (250 Hz)



BEPFQ23250.

Medium (3250 Hz)



BEPFQ24200.

High (4200 Hz)

Beeper Duration – Good Read

The beeper duration codes modify the length of the beep the scan engine emits on a good read. *Default = Normal.*



BEPBIP0.

* Normal Beep



BEPBIP1.

Short Beep

LED – Good Read

The LED indicator can be programmed **On** or **Off** in response to a good read.
Default = On.



BEPLED1.

* LED – Good Read On



BEPLED0.

LED – Good Read Off

Number of Beeps – Good Read

The number of beeps of a good read can be programmed from 1 – 9. The same number of beeps will be applied to the beeper and LED in response to a good read. For example, if you program this option to have five beeps, there will be five beeps and five LED flashes in response to a good read. The beeps and LED flashes are in sync with one another. To change the number of beeps, scan the bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the [Programming Chart](#) inside the back cover of this manual. *Default = 1.*



BEPRPT.

Number of Good Read Beeps/LED Flashes

Number of Beeps – Error

The number of beeps and LED flashes emitted by the scan engine for a bad read or error can be programmed from 1 – 9. For example, if you program this option to have five error beeps, there will be five error beeps and five LED flashes in response to an error. To change the number of error beeps, scan the bar code below and then scan a digit (1-9) bar code and the Save bar code on the [Programming Chart](#) inside the back cover of this manual. *Default = 1.*



BEPERR.

Number of Error Beeps/LED Flashes

Good Read Delay

This sets the minimum amount of time before the scan engine can read another bar code. *Default = 0 ms (No Delay).*



DLYGRD0.

* No Delay



DLYGRD500.

Short Delay (500 ms)



DLYGRD1000.

Medium Delay (1,000 ms)



DLYGRD1500.

Long Delay (1,500 ms)

User-Specified Good Read Delay

If you want to set your own length for the good read delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**.



DLYGRD.

User-Specified Good Read Delay

Beeper Signal Inversion

Beeper signal inversion 0=PWM active low (idle high), 1=PWM active high (idle low), 2=DC active low (idle high), 3=DC active high (idle low). *Default = 1.*



BEPINV0.

PWM active low (idle high)



BEPINV1.

* PWM active high (idle low)



BEPINV2.

DC active low (idle high)



BEPINV3.

DC active high (idle low)

Mobile Phone Read Mode

When this mode is selected, your scan engine is optimized to read bar codes from mobile phone or other LED displays. However, the speed of scanning printed bar codes may be slightly lower when this mode is enabled. Global shutter engines are better for reading bar codes on cell phones and paper since there are dual exposure controls to optimize the reading for each on every other frame.



PAPSPC.

Streaming Presentation -
Mobile Phone

Note: To turn off Mobile Phone Read Mode, scan a different Presentation Mode configuration barcode.

Presentation Modes

Presentation Mode

Presentation Mode uses ambient light and scan engine illumination to detect bar codes. When in Presentation Mode, the LEDs remain dim until a bar code is presented to the scan engine, then the aimer turns on and the LEDs turn up to read the code. If the light level in the room is not high enough, Presentation Mode may not work properly.

Scan the following bar code to program your scan engine for Presentation Mode.

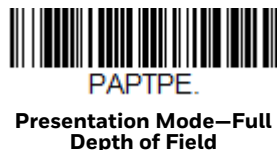


PAPTPR.

Presentation Mode

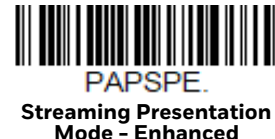
Presentation Mode—Full Depth of Field

Often Presentation Mode is used to read bar codes at a close distance. However there may be applications where you need to read bar codes at a further distance. In this case use Presentation Mode—Full Depth of Field when scanning at a far distance.



Streaming Presentation™ Mode

When in Streaming Presentation mode, the scan engine's aimer goes out after a short time, but the scan illumination remains on all the time to continuously search for bar codes. Two modes are available, Normal and Enhanced. Normal mode offers good scan speed and the longest working ranges (depth of field). Enhanced mode will give you the highest possible scan speed but slightly less range than Normal mode. Enhanced mode is best used when you require a very fast scan speed and don't require a long working range.



When using [Preferred Symbology](#) (page 3-45), a lower priority symbol must be centered on the aiming pattern to be read in Streaming Presentation Mode.

LED Illumination - Presentation Mode

If you wish to set the illumination LED brightness, scan one of the bar codes below. This sets the LED illumination for the scanner when it is in Presentation Mode. Default = High.

Note: The LEDs are like a flash on a camera. The lower the ambient light in the room, the brighter the LEDs need to be so the scanner can “see” the bar codes.

Note: Lower LED illumination settings are more visible to the user on rolling shutter engines than global shutter engines.



Note: LED Illumination - Presentation Mode does not apply to [Streaming Presentation™ Mode](#) or [Mobile Phone Read Mode](#).

Idle Illumination - Presentation Mode

Note: This setting is not supported by N360X Series.

Scan one of the bar codes below to set the LED illumination for the scanner when it is in an idle state in Presentation Mode. *Default = High.*

Note: If you use one of the lower Idle Illumination settings, and there is not enough ambient light, the scanner may have difficulty detecting when a bar code is presented to it. If the scanner has difficulty “waking up” to read bar codes, you may need to set the Idle Illumination to a brighter setting.



Presentation LED Behavior after Decode

When a scan engine is in presentation mode, the LEDs dim 30 seconds after a bar code is decoded. If you wish to dim the LEDs immediately after a bar code is decoded, scan the **LEDs Off** bar code, below. *Default = LEDs On.*



Presentation Sensitivity

Presentation Sensitivity is a numeric range that increases or decreases the scan engine's reaction time to bar code presentation. To set the sensitivity, scan the **Sensitivity** bar code, then scan the degree of sensitivity (from 0-20) from the inside back cover, and **Save**. 0 is the most sensitive setting, and 20 is the least sensitive. *Default = 1.*



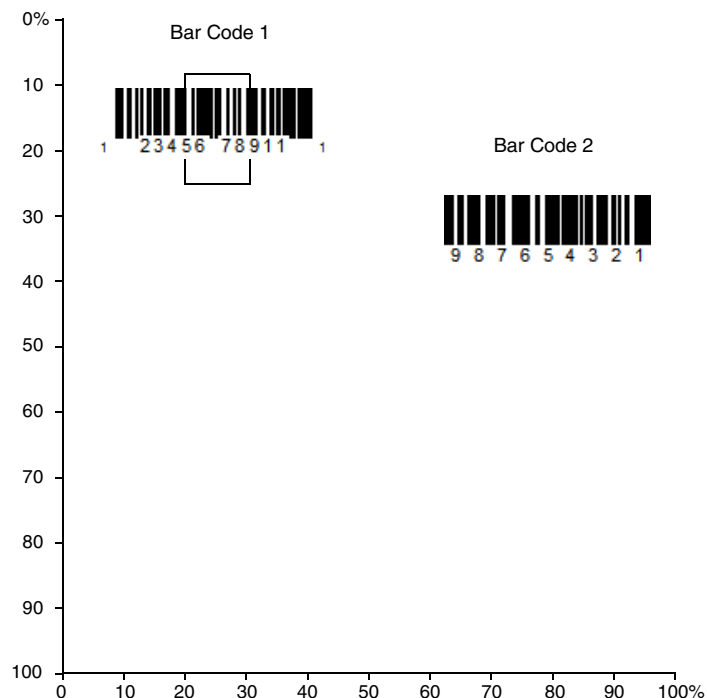
Presentation Centering

Use Presentation Centering to narrow the scanner's field of view when it is in the stand to make sure the scanner reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, Presentation Centering will insure that only the desired codes are read.

Note: To adjust centering when the scanner is hand-held, see [Centering](#) (page 3-43).

If a bar code is not touched by a predefined window, it will not be decoded or output by the scanner. If Presentation Centering is turned on by scanning **Presentation Centering On**, the scanner only reads codes that pass through the centering window you specify using the **Top of Presentation Centering Window**, **Bottom of Presentation Centering Window**, **Left**, and **Right of Presentation Centering Window** bar codes.

In the example below, the white box is the centering window. The centering window has been set to 20% left, 30% right, 8% top, and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



Note: A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Presentation Centering On**, then scan one of the following bar codes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**. Default Presentation Centering = 40% for Top and Left, 60% for Bottom and Right.



PDCWIN1.

Presentation Centering On



PDCWIN0.

* Presentation Centering Off



PDCTOP.

Top of Presentation
Centering Window



PDCBOT.

Bottom of Presentation
Centering Window



CodeGate[®]

When CodeGate is **On**, the trigger is used to allow decoded data to be transmitted to the host system. The scanner remains on, scanning and decoding bar codes, but the bar code data is not transmitted until the trigger is pressed. When CodeGate is **Off**, bar code data is transmitted when it is decoded. *Default = CodeGate Off Out-of-Stand.*



Character Activation Mode

You may use a character sent from the host to trigger the scan engine to begin scanning. When the activation character is received, the scan engine continues scanning until either the [Character Activation Timeout](#) (page 3-38), the deactivation character is received (see [Deactivation Character](#) on page 39), or a bar code is transmitted. Scan the following **On** bar code to use character activation, then use **Activation Character** (following) to select the character you will send from the host to start scanning. *Default = Off.*





Activation Character

This sets the character used to trigger scanning when using Character Activation Mode. On the [ASCII Conversion Chart \(Code Page 1252\)](#), page 212, find the hex value that represents the character you want to use to trigger scanning. Scan the following bar code, then use the [Programming Chart](#) to read the alphanumeric combination that represents that ASCII character. Scan **Save** to finish. *Default = 12 [DC2].*



End Character Activation After Good Read

After a bar code is successfully detected and read from the scan engine, the illumination can be programmed either to remain on and scanning, or to turn off. When **End Character Activation After Good Read** is enabled, the illumination turns off and stops scanning after a good read. If you scan **Do Not End Character Activation After Good Read**, the illumination remains on after a good read. *Default = Do Not End Character Activation After Good Read.*



Character Activation Timeout

You can set a timeout for the length of time the illumination remains on and attempting to decode bar codes when using Character Activation Mode. Set the length (in milliseconds) for a timeout by scanning the following bar code, then set-

ting the timeout (from 1-300,000 milliseconds) by scanning digits from the [Programming Chart](#) inside the back cover of this manual, then scanning Save. *Default = 30,000 ms.*



Character Deactivation Mode

If you have sent a character from the host to trigger the scan engine to begin scanning, you can also send a deactivation character to stop scanning. Scan the following **On** bar code to use character deactivation, then use Deactivation Character (following) to select the character you will send from the host to terminate scanning. *Default = Off.*



Deactivation Character

This sets the character used to terminate scanning when using Character Deactivation Mode. On the [ASCII Conversion Chart \(Code Page 1252\)](#), page 212, find the hex value that represents the character you want to use to terminate scanning. Scan the following bar code, then use the [Programming Chart](#) inside the back cover of this manual to read the alphanumeric combination that represents that ASCII character. Scan Save to finish. *Default = 14 [DC4].*



Poor Quality Codes

Poor Quality 1D Codes

This setting improves the scanner's ability to read damaged or badly printed linear bar codes. When **Poor Quality 1D Reading On** is scanned, poor quality linear bar code reading is improved, but the scanner's snappiness is decreased, making it less aggressive when reading good quality bar codes. This setting does not affect 2D bar code reading. *Default = Poor Quality 1D Reading Off.*



Poor Quality 1D Reading On



*** Poor Quality 1D Reading Off**

Poor Quality PDF Bar Codes

This setting improves the scanner's ability to read damaged or badly printed PDF bar codes by combining information from multiple images. When **Poor Quality PDF On** is scanned, poor quality PDF bar code reading is improved, but the scanner's snappiness is decreased, making it less aggressive when reading good quality bar codes. This setting does not affect 1D bar code reading. *Default = Poor Quality PDF Reading Off.*



Poor Quality PDF Reading On



*** Poor Quality PDF Reading Off**

Decode Security

Robust and aggressive processing on Code 39, UPC, and Code 128 for handling of damaged codes, print errors, and under sampling. **Very High Reading Tolerance** is the most permissive mode. When enabled, the scanner reads codes of variable quality. **Low Reading Tolerance** is the least permissive mode. *Default = Medium Reading Tolerance.*



Very High Reading Tolerance



High Reading Tolerance



* Medium Reading Tolerance



Low Reading Tolerance

Decode Time-Out

This setting defines the overall decode time-out. It is a number in milliseconds.

Scan the **Decode Time-Out** bar code, then scan the time-out duration from 0-2500 ms on the inside back cover, and **Save**. Default = 800 ms.



Decode Time-Out

Reread Delay

This sets the time period before the scan engine can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads. Use shorter delays in applications where repetitive bar code scanning is required. Reread Delay only works when in a [Presentation Mode](#) (see page 32). *Default = Medium.*



Short (500 ms)



* Medium (750 ms)



DLYRRD1000.
Long (1000 ms)



DLYRRD2000.
Extra Long (2000 ms)

User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning Save.



DLYRRD.
User-Specified Reread Delay

2D Reread Delay

Sometimes 2D bar codes can take longer to read than other bar codes. If you wish to set a separate Reread Delay for 2D bar codes, scan one of the programming codes that follows. **2D Reread Delay Off** indicates that the time set for [Reread Delay](#) is used for both 1D and 2D bar codes. *Default = 2D Reread Delay Off.*



DLY2RR0.

* 2D Reread Delay Off



DLY2RR1000.
Short (1000ms)



DLY2RR2000.

Medium (2000ms)



DLY2RR3000.

Long (3000ms)



DLY2RR4000.

Extra Long (4000ms)

Illumination Lights

If you want the illumination lights on while reading a bar code, scan the **Lights On** or **Lights On - Mobile Phone Reading** bar code, below. However, if you want to turn just the lights off, scan the **Lights Off** bar code. *Default = Lights On.*

Note: *This setting does not affect the aimer light. The aiming light can be set using [Centering](#) (page 43).*

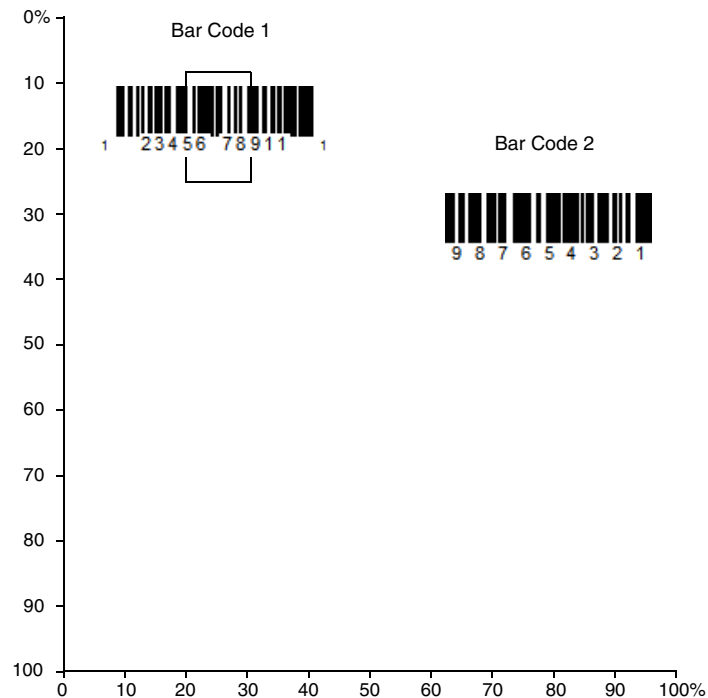


Centering

Use Centering to narrow the scan engine's field of view to make sure that when the scanner is hand-held, it reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read.

If a bar code is not touched by a predefined window, it will not be decoded or output by the scan engine. If centering is turned on by scanning **Centering On**, the scan engine only reads codes that pass through the centering window you specify using the **Top of Centering Window** and **Bottom of Centering Window** bar codes.

In the example below, the white box is the centering window. The centering window has been set to 8% top and 25% bottom. Since Bar Code 1 passes through the centering window, it will be read. Bar Code 2 does not pass through the centering window, so it will not be read.



A bar code needs only to be touched by the centering window in order to be read. It does not need to pass completely through the centering window.

Scan **Centering On**, then scan one of the following bar codes to change the top and bottom of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**.
Default Centering = 40% for Top, 60% for Bottom.



Preferred Symbolology

The scan engine can be programmed to specify one symbology as a higher priority over other symbologies in situations where both bar code symbologies appear on the same label, but the lower priority symbology cannot be disabled.

For example, you may be using the scanner in a retail setting to read U.P.C. symbols, but have occasional need to read a code on a drivers license. Since some licenses have a Code 39 symbol as well as the PDF417 symbol, you can use Preferred Symbolology to specify that the PDF417 symbol be read instead of the Code 39.

Preferred Symbolology classifies each symbology as **high priority**, **low priority**, or as an **unspecified type**. When a low priority symbology is presented, the scanner ignores it for a set period of time (see [Preferred Symbolology Time-out](#) on page 46) while it searches for the high priority symbology. If a high priority symbology is located during this period, then that data is read immediately.

If the time-out period expires before a high priority symbology is read, the scanner will read any bar code in its view (low priority or unspecified). If there is no bar code in the scanner's view after the time-out period expires, then no data is reported.

Note: A low priority symbol must be centered on the aiming pattern to be read.

Scan a bar code below to enable or disable Preferred Symbolology. *Default = Preferred Symbolology Off.*



High Priority Symbolology

To specify the high priority symbology, scan the High Priority Symbolology bar code below. On the [Symbology Charts](#) on page 209, find the symbology you want to set as high priority. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover). Scan Save to save your selection. *Default = None*



Low Priority Symbology

To specify the low priority symbology, scan the Low Priority Symbology bar code below. On the [Symbology Charts](#) on page 209, find the symbology you want to set as low priority. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover).

If you want to set additional low priority symbologies, scan FF, then scan the 2 digit hex value from the Programming Chart for the next symbology. You can program up to 5 low priority symbologies. Scan Save to save your selection. *Default = None*



PRFBLK.

Low Priority Symbology

Preferred Symbology Time-out

Once you have enabled Preferred Symbology and entered the high and low priority symbologies, you must set the time-out period. This is the period of time the scan engine will search for a high priority bar code after a low priority bar code has been encountered. Scan the bar code below, then set the delay (from 1-3,000 milliseconds) by scanning digits from the inside back cover, then scanning Save. *Default = 500 ms.*



PRFPTO.

Preferred Symbology Time-out

Preferred Symbology Default

Scan the bar code below to set all Preferred Symbology entries to their default values.



PRFDFT.

Preferred Symbology Default

Output Sequence Overview

Output Sequence Editor

This programming selection allows you to program the scan engine to output data (when scanning more than one symbol) in whatever order your application requires, regardless of the order in which the bar codes are scanned. Reading the

Default Sequence symbol programs the scan engine to the Universal values, shown below. These are the defaults. Be certain you want to delete or clear all formats before you read the **Default Sequence** symbol.

Note: To make Output Sequence Editor selections, you'll need to know the code I.D., code length, and character match(es) your application requires. Use the Alphanumeric symbols (inside back cover) to read these options. You must hold the trigger while reading each bar code in the sequence.

To Add an Output Sequence

1. Scan the **Enter Sequence** symbol (see [Require Output Sequence](#), page 50).
2. **Code I.D.**
On the [Symbology Charts](#) on page 209, find the symbology to which you want to apply the output sequence format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover).
3. **Length**
Specify what length (up to 9999 characters) of data output will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.) When calculating the length, you must count any programmed prefixes, suffixes, or formatted characters as part of the length (unless using 9999).
4. **Character Match Sequences**
On the [ASCII Conversion Chart \(Code Page 1252\)](#), page 212, find the Hex value that represents the character(s) you want to match. Use the Programming Chart to read the alphanumeric combination that represents the ASCII characters. (99 is the Universal number, indicating all characters.)
5. **End Output Sequence Editor**
Scan **FF** to enter an Output Sequence for an additional symbology, or **Save** to save your entries.

Other Programming Selections

- **Discard**
This exits without saving any Output Sequence changes.

Output Sequence Example

In this example, you are scanning Code 93, Code 128, and Code 39 bar codes, but you want the scanner to output Code 39 1st, Code 128 2nd, and Code 93 3rd, as shown below.

Note: Code 93 must be enabled to use this example.



A - Code 39



B - Code 128



C - Code 93

You would set up the sequence editor with the following command line:

SEQBLK62999941FF6A999942FF69999943FF

SEQBLK	sequence editor start command
62	code identifier for Code 39
9999	code length that must match for Code 39, 9999 = all lengths
41	start character match for Code 39, 41h = "A"
FF	termination string for first code
6A	code identifier for Code 128
9999	code length that must match for Code 128, 9999 = all lengths
42	start character match for Code 128, 42h = "B"
FF	termination string for second code
69	code identifier for Code 93
9999	code length that must match for Code 93, 9999 = all lengths
43	start character match for Code 93, 43h = "C"
FF	termination string for third code

To program the previous example using specific lengths, you would have to count any programmed prefixes, suffixes, or formatted characters as part of the length. If you use the example on [page 48](#), but assume a <CR> suffix and specific code lengths, you would use the following command line:

SEQBLK62001241FF6A001342FF69001243FF

SEQBLK	sequence editor start command
62	code identifier for Code 39
0012	A - Code 39 sample length (11) plus CR suffix (1) = 12

41	start character match for Code 39, 41h = "A"
FF	termination string for first code
6A	code identifier for Code 128
0013	B - Code 128 sample length (12) plus CR suffix (1) = 13
42	start character match for Code 128, 42h = "B"
FF	termination string for second code
69	code identifier for Code 93
0012	C - Code 93 sample length (11) plus CR suffix (1) = 12
43	start character match for Code 93, 43h = "C"
FF	termination string for third code

Output Sequence Editor



SEQBLK.
Enter Sequence



SEQDFT.
Default Sequence

Partial Sequence

If an output sequence operation is terminated before all your output sequence criteria are met, the bar code data acquired to that point is a "partial sequence."

Scan **Discard Partial Sequence** to discard partial sequences when the output sequence operation is terminated before completion. Scan **Transmit Partial Sequence** to transmit partial sequences. (Any fields in the sequence where no data match occurred will be skipped in the output.)



SEQTTS1.
Transmit Partial Sequence



SEQTTS0.
* Discard Partial Sequence

Require Output Sequence

When an output sequence is **Required**, all output data must conform to an edited sequence or the scan engine will not transmit the output data to the host device. When it's **On/Not Required**, the scan engine will attempt to get the output data to conform to an edited sequence but, if it cannot, the scan engine transmits all output data to the host device as is.

When the output sequence is **Off**, the bar code data is output to the host as the scan engine decodes it. *Default = Off.*

Note: This selection is unavailable when the Multiple Symbols Selection is turned on.



Multiple Symbols

When this programming selection is turned **On**, it allows you to read multiple symbols with a single pull of the scanner's trigger. If you press and hold the trigger, aiming the scanner at a series of symbols, it reads unique symbols once, beeping (if turned on) for each read. The scanner attempts to find and decode new symbols as long as the trigger is pulled. When this programming selection is turned **Off**, the scanner will only read the symbol closest to the aiming beam. *Default = Off.*



No Read

With No Read turned **On**, the scan engine notifies you if a code cannot be read. If using an EZConfig-Scanning Tool Scan Data Window (see page 173), an “NR” appears when a code cannot be read. If No Read is turned **Off**, the “NR” will not appear. *Default = Off.*



If you want a different notation than “NR,” for example, “Error,” or “Bad Code,” you can edit the output message (see [Data Formatting](#) beginning on page 5-59). The hex code for the No Read symbol is 9C.

Video Reverse

Video Reverse is used to allow the scan engine to read bar codes that are inverted. The **Video Reverse Off** bar code below is an example of this type of bar code. Scan **Video Reverse Only** to read *only* inverted bar codes. Scan **Video Reverse and Standard Bar Codes** to read both types of codes.

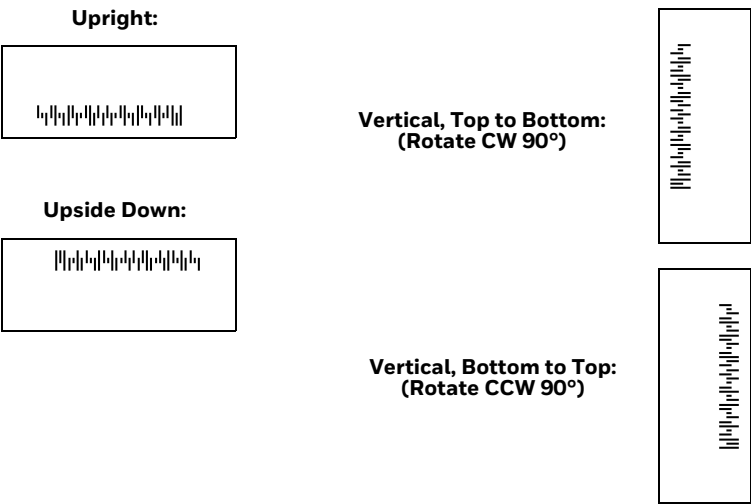
Note: After scanning **Video Reverse Only**, menu bar codes cannot be read. You must scan **Video Reverse Off** or **Video Reverse and Standard Bar Codes** in order to read menu bar codes.

Note: Images downloaded from the unit are not reversed. This is a setting for decoding only



Working Orientation

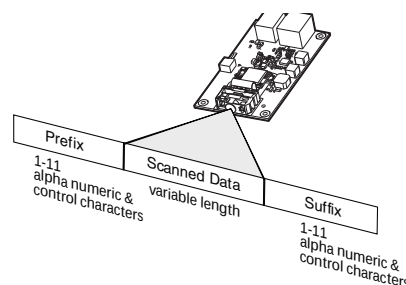
Some bar codes are direction-sensitive. For example, KIX codes and OCR can mis-read when scanned sideways or upside down. Use the working orientation settings if your direction-sensitive codes will not usually be presented upright to the scanner. *Default = Upright.*



Prefix/Suffix Overview

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None.*
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212, plus Code I.D. and AIM I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.

- When setting up for specific symbologies (as opposed to all symbologies), the specific symbology ID value counts as an added prefix or suffix character.
- The maximum size of a prefix or suffix configuration is 200 characters, which includes header information.

To Add a Prefix or Suffix:

- Step 1. Scan the **Add Prefix** or **Add Suffix** symbol ([page 55](#)).
- Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the [Symbology Charts](#), beginning on page 209) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Code ID is “j” and Hex ID is “6A”.
- Step 3. Scan the 2 hex digits from the [Programming Chart](#) inside the back cover of this manual or scan 9, 9 for all symbologies.
- Step 4. Determine the hex value from the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212, for the prefix or suffix you wish to enter.

Note: To add the Code I.D., scan **5, C, 8, 0**.

To add AIM I.D., scan **5, C, 8, 1**.

To add a backslash (\), scan **5, C, 5, C**.

To add a backslash (\) as in Step 7, you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.

- Step 5. Scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual.
 - Step 6. Repeat Steps 4 and 5 for every prefix or suffix character.
 - Step 7. Scan **Save** to exit and save, or scan Discard to exit without saving.
- Repeat Steps 1-6 to add a prefix or suffix for another symbology.

Example: Add a Tab Suffix to All Symbologies

- Step 1. Scan **Add Suffix**.
 - Step 2. Scan **9, 9** from the [Programming Chart](#) inside the back cover of this manual to apply this suffix to all symbologies.
 - Step 3. Scan **0, 9** from the [Programming Chart](#) inside the back cover of this manual. This corresponds with the hex value for a horizontal tab, shown in the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212.
- Scan **Save**, or scan **Discard** to exit without saving.

To Clear One or All Prefixes or Suffixes

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. If you have been entering prefixes and suffixes for single symbologies, you can use **Clear One Prefix (Suffix)** to delete a specific character from a symbology. When you **Clear All Prefixes (Suffixes)**, all the prefixes or suffixes for a symbology are deleted.

- Step 1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.
- Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the [Symbology Charts](#), beginning on page 209) for the symbology from which you want to clear the prefix or suffix.
- Step 3. Scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual or scan **9, 9** for all symbologies.

Your change is automatically saved.

To Add a Carriage Return Suffix to All Symbologies

Scan the following bar code if you wish to add a carriage return suffix to all symbologies at once. This action first clears all current suffixes, then programs a carriage return suffix for all symbologies.



VSUFCR.
Add CR Suffix
All Symbologies

Prefix Selections



PREBK2.
Add Prefix



PRECA2.
Clear All Prefixes



PRECL2.
Clear One Prefix

Suffix Selections



SUFBK2.
Add Suffix



SUFCL2.
Clear One Suffix



SUFCA2.
Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the scan engine transmits the function code to the terminal. Charts of these function codes are provided in [ASCII Conversion Chart \(Code Page 1252\)](#) starting on [page 212](#). When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted. *Default = Enable*.



RMVFNC0.
* Enable



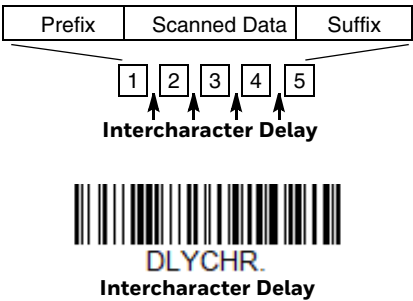
RMVFNC1.
Disable

Intercharacter, Interfunction, and Intermessage Delays

Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, increasing data integrity.

Intercharacter Delay

An intercharacter delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of delays to **0**. Scan the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.

Note: *Intercharacter delays are not supported in USB serial emulation.*

User Specified Intercharacter Delay

An intercharacter delay of up to 5000 milliseconds (in 5ms increments) may be placed after the transmission of a particular character of scanned data. Scan the **Delay Length** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.

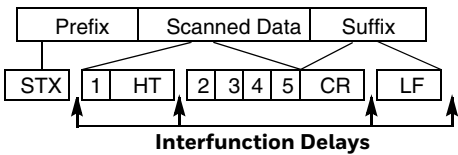
Next, scan the Character to Trigger Delay bar code, then the 2-digit hex value for the ASCII character that will trigger the delay [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212.



To remove this delay, scan the **Delay Length** bar code, and set the number of delays to **0**. Scan the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.

Interfunction Delay

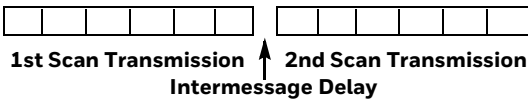
An interfunction delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each control character in the message string. Scan the **Interfunction Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Interfunction Delay** bar code, then set the number of delays to **0**. Scan the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.

Intermessage Delay

An intermessage delay of up to 5000 milliseconds (in 5ms increments) may be placed between each scan transmission. Scan the **Intermessage Delay** bar code below, then scan the number of 5ms delays, and the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.



To remove this delay, scan the **Intermesssage Delay** bar code, then set the number of delays to **0**. Scan the **Save** bar code using the [Programming Chart](#) inside the back cover of this manual.

Data Format Editor Introduction

You may use the Data Format Editor to change the scan engine's output. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned. The selections in the following pages are used only if you wish to alter the output. *Default Data Format setting = None.*

Normally, when you scan a bar code, it is output automatically. However, when you create a format, you must use a “send” command (see [Send Commands](#) on page 62) within the format program to output data.

Multiple formats may be programmed into the scan engine. They are stacked in the order in which they are entered. However, the following list presents the order in which formats are applied:

1. Specific Terminal ID, Actual Code ID, Actual Length
2. Specific Terminal ID, Actual Code ID, Universal Length
3. Specific Terminal ID, Universal Code ID, Actual Length
4. Specific Terminal ID, Universal Code ID, Universal Length
5. Universal Terminal ID, Actual Code ID, Actual Length
6. Universal Terminal ID, Actual Code ID, Universal Length
7. Universal Terminal ID, Universal Code ID, Actual Length
8. Universal Terminal ID, Universal Code ID, Universal Length

The maximum size of a data format configuration is 2000 bytes, which includes header information.

If a bar code is read that fails the first data format, the next data format, if there is one, will be used on the bar code data. If there is no other data format, the raw data is output.

If you have changed data format settings, and wish to clear all formats and return to the factory defaults, scan the **Default Data Format** code below.



Add a Data Format

- Step 1. Scan the **Enter Data Format** symbol ([page 61](#)).
- Step 2. **Select Primary/Alternate Format**
Determine if this will be your primary data format, or one of 3 alternate formats. This allows you to save a total of 4 different data formats. To program your primary format, scan 0 using the [Programming Chart](#) inside the back cover of this manual. If you are programming an alternate format, scan 1, 2, or 3, depending on which alternate format you are programming. (See "Primary/Alternate Data Formats" on page 76 for further information.)
- Step 3. **Terminal Type**
Refer to [Terminal ID Table](#) (page 62) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scan engine for your terminal ID (you must enter 3 digits). For example, scan 0 0 3 for an AT wedge.

Note: 099 indicates all terminal types.

- Step 4. **Code I.D.**
In the [Symbology Charts](#), beginning on page 209, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the [Programming Chart](#) inside the back cover of this manual.

If you wish to create a data format for all symbologies, with the exception of some specific symbologies, refer to B8 ([page 74](#)).

If you are creating a data format for Batch Mode Quantity, use 35 for the Code I.D.

Note: 99 indicates all symbologies.

- Step 5. **Length**
Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the [Programming Chart](#) inside the back cover of this manual. For example, 50 characters is entered as 0050.

Note: 9999 indicates all lengths.

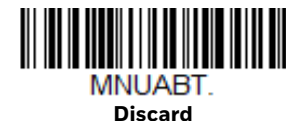
- Step 6. **Editor Commands**
Refer to [Data Format Editor Commands](#) (page 62). Scan the symbols that represent the command you want to enter.

Step 7. Scan **Save** to save your data format, or **Discard** to exit without saving your changes.



Other Programming Selections

- **Clear One Data Format**
This deletes one data format for one symbology. If you are clearing the primary format, scan 0 from the [Programming Chart](#) inside the back cover of this manual. If you are clearing an alternate format, scan 1, 2, or 3, depending on the format you are clearing. Scan the Terminal Type and Code I.D. (see [Symbology Charts](#) on page 209), and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.
- **Clear all Data Formats**
This clears all data formats.
- **Save** to exit and save your data format changes.
- **Discard** to exit without saving any data format changes.



Terminal ID Table

Terminal	Model(s)	Terminal ID
USB	PC keyboard (HID)	124
	Mac Keyboard	125
	PC Keyboard (Japanese)	134
	Serial (COM driver required)	130
	HID POS	131
	USB SurePOS Handheld	128
	USB SurePOS Tabletop	129
Serial	RS232 TTL	000
	RS232 True	000
Keyboard	PS2 compatibles	003
	AT compatibles	002

Data Format Editor Commands

When working with the Data Format Editor, a virtual cursor is moved along your input data string. The following commands are used to both move this cursor to different positions, and to select, replace, and insert data into the final output.

Send Commands

F1—Send All Characters

Include in the output message all of the characters from the input message, starting from current cursor position, followed by an insert character. *Syntax = F1xx* where xx stands for the insert character's hex value for its ASCII code. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

F2—Send a number of characters

Include in the output message a number of characters followed by an insert character. Start from the current cursor position and continue for "nn" characters or through the last character in the input message, followed by character "xx." *Syntax = F2nnxx* where nn stands for the numeric value (00-99) for the number of characters, and xx stands for the insert character's hex value for its ASCII code. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

Example: Send a number of characters



Send the first 10 characters from the bar code above, followed by a carriage return.
Command string: F2100D

F2	"Send a number of characters" command
10	Number of characters to send
0D	Hex value for a CR

The data is output as: **1234567890**

Example: Split characters into 2 lines

Send the first 10 characters from the bar code above, followed by a carriage return, followed by the rest of the characters.

Command string: F2100DF10D

F2	"Send a number of characters" command
10	Number of characters to send for the first line
0D	Hex value for a CR
F1	"Send all characters" command
0D	Hex value for a CR

The data is output as:

1234567890
ABCDEFGHIJ
<CR>

F3—Send all characters up to a particular character

Include in the output message all characters from the input message, starting with the character at the current cursor position and continuing to, but not including, the search character "ss," followed by an insert character. The cursor is moved forward to the "ss" character. *Syntax = F3ssxx* where ss stands for the search character's hex value for its ASCII code, and xx stands for the insert character's hex value for its ASCII code.

Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

Example: Send all characters up to a particular character



Using the bar code above, send all characters up to but not including "D," followed by a carriage return.

Command string: F3440D

F3	"Send all characters up to a particular character" command
----	--

44	Hex value for a 'D'
0D	Hex value for a CR

The data is output as:

1234567890ABC
<CR>

B9—Send all characters up to a string

Include in the output message all characters from the input message, starting with the character at the current cursor position and continuing to, but not including, the search string “s...s.” The cursor is moved forward to the beginning of the “s...s” string. *Syntax = B9nnns...s* where nnnn stands for the length of the string, and s...s stands for the string to be matched. The string is made up of hex values for the characters in the string. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B9 Example: Send all characters up to a defined string



Using the bar code above, send all characters up to but not including “AB.”

Command string: B900024142

B9	“Send all characters up to a string” command
0002	Length of the string (2 characters)
41	Hex value for A
42	Hex value for B

The data is output as: **1234567890**

E9—Send all but the last characters

Include in the output message all but the last “nn” characters, starting from the current cursor position. The cursor is moved forward to one position past the last input message character included. *Syntax = E9nn* where nn stands for the numeric value (00-99) for the number of characters that will not be sent at the end of the message.

F4—Insert a character multiple times

Send “xx” character “nn” times in the output message, leaving the cursor in the current position. *Syntax = F4xxnn* where xx stands for the insert character’s hex value for its ASCII code, and nn is the numeric value (00-99) for the number of times it should be sent. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

E9 and F4 Example: Send all but the last characters, followed by 2 tabs



Send all characters except for the last 8 from the bar code above, followed by 2 tabs.

Command string: E908F40902

E9	"Send all but the last characters" command
08	Number of characters at the end to ignore
F4	"Insert a character multiple times" command
09	Hex value for a horizontal tab
02	Number of times the tab character is sent

The data is output as: **1234567890AB <tab><tab>**

BA—Insert a string

Send "ss" string of "nn" length in the output message, leaving the cursor in the current position. *Syntax* = *BA**nnnn**s...s* where *nnnn* stands for the length of the string, and *s...s* stands for the string. The string is made up of hex values for the characters in the string. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B9 and BA Example: Look for the string "AB" and insert 2 asterisks (**)



Using the bar code above, send all characters up to but not including "AB." Insert 2 asterisks at that point, and send the rest of the data with a carriage return after.

Command string: B900024142BA00022A2AF10D

B9	"Send all characters up to a string" command
0002	Length of the string (2 characters)
41	Hex value for A
42	Hex value for B
BA	"Insert a string" command
0002	Length of the string to be added (2 characters)
2A	Hex value for an asterisk (*)
2A	Hex value for an asterisk (*)
F1	"Send all characters" command
0D	Hex value for a CR

The data is output as:
1234567890ABCEFGHIJ**
<CR>

B3—Insert symbology name

Insert the name of the bar code's symbology in the output message, without moving the cursor. Only symbologies with a Honeywell ID are included (see [Symbology Charts](#) on page 209). Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B4—Insert bar code length

Insert the bar code's length in the output message, without moving the cursor. The length is expressed as a numeric string and does not include leading zeroes.

B3 and B4 Example: Insert the symbology name and length



Send the symbology name and length before the bar code data from the bar code above. Break up these insertions with spaces. End with a carriage return.

Command string: B3F42001B4F42001F10D

B3	"Insert symbology name" command
F4	"Insert a character multiple times" command
20	Hex value for a space
01	Number of times the space character is sent
B4	"Insert bar code length" command
F4	"Insert a character multiple times" command
20	Hex value for a space
01	Number of times the space character is sent
F1	"Send all characters" command
0D	Hex value for a CR

The data is output as:
Code128 20 1234567890ABCEFGHIJ
<CR>

B5—Insert key strokes

Insert a key stroke or combination of key strokes. Key strokes are dependent on your keyboard (see [Keyboard Key References](#) on page 220). Any key can be inserted, including arrows and functions. *Syntax* = B5xxssnn where xx is the number of keys pressed (without key modifiers), ss is the key modifier from the table below, and nn is the key number from the [Keyboard Key References](#), page 220.

Key Modifiers	
No Key Modifier	00
Shift Left	01
Shift Right	02
Alt Left	04
Alt Right	08
Control Left	10
Control Right	20

Example: B501021F inserts an “A” on a 104 key, U.S. style keyboard. B5 = the command, 01 = number of keys pressed (without the key modifier), 02 is the key modifier for Shift Right, and 1F is the “a” key. If a lower case “a” were to be inserted, B501001F would be entered.

If there are three keystrokes, the syntax would change from B5xxssnn for one key-stroke to B5xxssnnssnnssnn. An example that would insert "abc" is as follows: B503001F00320030F833.

Note: Key modifiers can be added together when needed. Example: Control Left+Shift Left = 11.

Move Commands

F5—Move the cursor forward a number of characters

Move the cursor ahead “nn” characters from current cursor position. *Syntax* = F5nn where nn is the numeric value (00-99) for the number of characters the cursor should be moved ahead.

F5 Example: Move the cursor forward and send the data



Move the cursor forward 3 characters, then send the rest of the bar code data from the bar code above. End with a carriage return.

Command string: F503F10D

F5	“Move the cursor forward a number of characters” command
03	Number of characters to move the cursor

F1 "Send all characters" command
0D Hex value for a CR

The data is output as:
4567890ABCDEFGHJ
<CR>

F6—Move the cursor backward a number of characters

Move the cursor back "nn" characters from current cursor position.
Syntax = F6nn where nn is the numeric value (00-99) for the number of characters the cursor should be moved back.

F7—Move the cursor to the beginning

Move the cursor to the first character in the input message. *Syntax = F7.*

FE and F7 Example: Manipulate bar codes that begin with a 1



Search for bar codes that begin with a 1. If a bar code matches, move the cursor back to the beginning of the data and send 6 characters followed by a carriage return. Using the bar code above:

Command string: FE31F7F2060D

FE "Compare characters" command
31 Hex value for 1
F7 "Move the cursor to the beginning" command
F2 "Send a number of characters" command
06 Number of characters to send
0D Hex value for a CR

The data is output as:
123456
<CR>

EA—Move the cursor to the end

Move the cursor to the last character in the input message. *Syntax = EA.*

Search Commands

F8—Search forward for a character

Search the input message forward for “xx” character from the current cursor position, leaving the cursor pointing to the “xx” character. *Syntax = F8xx* where xx stands for the search character’s hex value for its ASCII code.

Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

F8 Example: Send bar code data that starts after a particular character



Search for the letter “D” in bar codes and send all the data that follows, including the “D.” Using the bar code above:

Command string: F844F10D

F8	“Search forward for a character” command
44	Hex value for “D”
F1	“Send all characters” command
0D	Hex value for a CR

The data is output as:

DEFGHIJ
<CR>

F9—Search backward for a character

Search the input message backward for “xx” character from the current cursor position, leaving the cursor pointing to the “xx” character. *Syntax = F9xx* where xx stands for the search character’s hex value for its ASCII code.

Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B0—Search forward for a string

Search forward for “s” string from the current cursor position, leaving cursor pointing to “s” string. *Syntax = B0nnnnS* where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B0000454657374 will search forward for the first occurrence of the 4 character string “Test.”

Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B0 Example: Send bar code data that starts after a string of characters



Search for the letters “FGH” in bar codes and send all the data that follows, including “FGH.” Using the bar code above:

Command string: B00003464748F10D

B0	“Search forward for a string” command
0003	String length (3 characters)
46	Hex value for “F”
47	Hex value for “G”
48	Hex value for “H”
F1	“Send all characters” command
0D	Hex value for a CR

The data is output as:

FGHIJ
<CR>

B1—Search backward for a string

Search backward for “s” string from the current cursor position, leaving cursor pointing to “s” string. Syntax = B1nnnnS where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B1000454657374 will search backward for the first occurrence of the 4 character string “Test.”

Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

E6—Search forward for a non-matching character

Search the input message forward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character. Syntax = E6xx where xx stands for the search character’s hex value for its ASCII code. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

E6 Example: Remove zeroes at the beginning of bar code data



This example shows a bar code that has been zero filled. You may want to ignore the zeroes and send all the data that follows. E6 searches forward for the first character that is not zero, then sends all the data after, followed by a carriage return. Using the bar code above:

Command string: E630F10D

E6	“Search forward for a non-matching character” command
30	Hex value for 0
F1	“Send all characters” command
0D	Hex value for a CR

The data is output as:

37692

<CR>

E7—Search backward for a non-matching character

Search the input message backward for the first non-“xx” character from the current cursor position, leaving the cursor pointing to the non-“xx” character. *Syntax = E7xx* where xx stands for the search character’s hex value for its ASCII code. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

Miscellaneous Commands

FB—Suppress characters

Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command.

Syntax = FBnnxyy . .zz where nn is a count of the number of suppressed characters in the list, and xyxy .. zz is the list of characters to be suppressed.

FB Example: Remove spaces in bar code data



This example shows a bar code that has spaces in the data. You may want to remove the spaces before sending the data. Using the bar code above:

Command string: FB0120F10D

FB	“Suppress characters” command
01	Number of character types to be suppressed
20	Hex value for a space
F1	“Send all characters” command
0D	Hex value for a CR

The data is output as:
34567890
<CR>

FC—Stop suppressing characters

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

E4—Replace characters

Replaces up to 15 characters in the output message, without moving the cursor. Replacement continues until the E5 command is encountered. *Syntax = E4nnxx-₁xx₂yy₁yy₂...zz₁zz₂* where nn is the total count of the number of characters in the list (characters to be replaced plus replacement characters); xx₁ defines characters to be replaced and xx₂ defines replacement characters, continuing through zz₁ and zz₂.

E4 Example: Replace zeroes with CRs in bar code data



If the bar code has characters that the host application does not want included, you can use the E4 command to replace those characters with something else. In this example, you will replace the zeroes in the bar code above with carriage returns.

Command string: E402300DF10D

E4	"Replace characters" command
02	Total count of characters to be replaced, plus the replacement characters (0 is replaced by CR, so total characters = 2)
30	Hex value for 0
0D	Hex value for a CR (the character that will replace the 0)
F1	"Send all characters" command
0D	Hex value for a CR

The data is output as:
1234
5678
ABC
<CR>

E5—Stop replacing characters

Terminates character replacement. *Syntax = E5.*

FE—Compare characters

Compare the character in the current cursor position to the character “xx.” If characters are equal, move the cursor forward one position. Syntax = FExx where xx stands for the comparison character’s hex value for its ASCII code. Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

B2—Compare string

Compare the string in the input message to the string “s.” If the strings are equal, move the cursor forward past the end of the string. Syntax = B2nnnnS where nnnn is the string length (up to 9999), and S consists of the ASCII hex value of each character in the match string. For example, B2000454657374 will compare the string at the current cursor position with the 4 character string “Test.” Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 212 for decimal, hex and character codes.

EC—Check for a number

Check to make sure there is an ASCII number at the current cursor position. The format is aborted if the character is not numeric.

EC Example: Only output the data if the bar code begins with a number

If you want only data from bar codes that begin with a number, you can use EC to check for the number.

Command string: ECF10D

EC	“Check for a number” command
F1	“Send all characters” command
0D	Hex value for a CR

If this bar code is read,  the next data format, if there is one, will
AB1234

be used on the data. If there is no other format, the format fails and the raw data is output as **AB1234**.

If this bar code is read:  the data is output as:
1234AB

1234AB
<CR>

ED—Check for non-numeric character

Check to make sure there is a non-numeric ASCII character at the current cursor position. The format is aborted if the character is numeric.

ED Example: Only output the data if the bar code begins with a letter

If you want only data from bar codes that begin with a letter, you can use ED to check for the letter.

Command string: EDF10D

ED	“Check for a non-numeric character” command
F1	“Send all characters” command
0D	Hex value for a CR

If this bar code is read,  the next data format, if there is one, will be used on this data. If there is no other format, the format fails and the raw data is output as **1234AB**.

If this bar code is read:  the data is output as:

AB1234
<CR>

EF—Insert a delay

Inserts a delay of up to 49,995 milliseconds (in multiples of 5), starting from the current cursor position. Syntax = EFnnnn where nnnn stands for the delay in 5ms increments, up to 9999. This command can only be used with keyboard emulation.a

B8—Discard Data

Discards types of data. For example, you may want to discard Code 128 bar codes that begin with the letter A. In step 4 ([page 60](#)), select 6A (for Code 128), and in step 5, select 9999 (for all lengths). Enter FE41B8 to compare and discard Code 128 bar codes that begin with the letter A. Syntax = B8.

Note: The B8 command must be entered after all other commands.

The Data Format must be Required (see [page 75](#)) in order for the B8 command to work.

If Data Format is On, but Not Required ([page 75](#)), bar code data that meets the B8 format is scanned and output as usual.

Because the data format needs to be On and Required ([page 76](#)) for the B8 command, you must input data formats for all bar codes you wish to discard as well as all bar codes you wish to output.

Other data format settings impact the B8 command. If Data Format Non-Match Error Tone is On ([page 76](#)), the scan engine emits an error tone. If Data format Non-Match Error Tone is Off, the code is disabled for reading and no tone is sounded.

Data Formatter

When Data Formatter is turned Off, the bar code data is output to the host as read, including prefixes and suffixes.



You may wish to require the data to conform to a data format you have created and saved. The following settings can be applied to your data format:

- **Data Formatter On, Not Required, Keep Prefix/Suffix**
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted.
- **Data Formatter On, Not Required, Drop Prefix/Suffix**
Scanned data is modified according to your data format. If a data format is found for a particular symbol, those prefixes and suffixes are not transmitted. If a data format is *not* found for that symbol, the prefixes and suffixes *are* transmitted.
- **Data Format Required, Keep Prefix/Suffix**
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted. Any data that does not match your data format requirements generates an error tone and the data in that bar code is not transmitted. If you wish to process this type of bar code without generating an error tone, see [Data Format Non-Match Error Tone](#).
- **Data Format Required, Drop Prefix/Suffix**
Scanned data is modified according to your data format. If a data format is found for a particular symbol, those prefixes and suffixes are not transmitted. Any data that does not match your data format requirements generates an error tone. If you wish to process this type of bar code without generating an error tone, see [Data Format Non-Match Error Tone](#).

Choose one of the following options. *Default = Data Formatter On, Not Required, Keep Prefix/Suffix.*





Data Format Non-Match Error Tone

When a bar code is encountered that doesn't match your required data format, the scan engine normally generates an error tone. However, you may want to continue scanning bar codes without hearing the error tone. If you scan the Data Format Non-Match Error Tone Off bar code, data that doesn't conform to your data format is not transmitted, and no error tone will sound. If you wish to hear the error tone when a non-matching bar code is found, scan the Data Format Non-Match Error Tone On bar code. *Default = Data Format Non-Match Error Tone On.*



Primary/Alternate Data Formats

You can save up to four data formats, and switch between these formats. Your primary data format is saved under 0. Your other three formats are saved under **1**, **2**, and **3**. To set your device to use one of these formats, scan one of the bar codes below.





ALTFNM2.

Data Format 2



ALTFNM3.

Data Format 3

Single Scan Data Format Change

You can also switch between data formats for a single scan. The next bar code is scanned using an alternate data format, then reverts to the format you have selected above (either Primary, 1, 2, or 3).

For example, you may have set your device to the data format you saved as Data Format 3. You can switch to Data Format 1 for a single trigger pull by scanning the Single Scan-Data Format 1 bar code below. The next bar code that is scanned uses Data Format 1, then reverts back to Data Format 3.



VSAF_0.

**Single Scan-Primary
Data Format**



VSAF_1.

Single Scan-Data Format 1



VSAF_2.

Single Scan-Data Format 2



VSAF_3.

Single Scan-Data Format 3

This programming section contains the following menu selections. Refer to [Chapter 9](#) for settings and defaults.

- All Symbolologies
- Aztec Code
- China Post (Hong Kong 2 of 5)
- Chinese Sensible (Han Xin) Code
- Codabar
- Codablock A
- Codablock F
- Code 11
- Code 128
- Code 32 Pharmaceutical (PARAF)
- Code 39
- Code 93
- Data Matrix
- Digimarc Barcode™
- DotCode
- EAN/JAN-13
- EAN/JAN-8
- Grid Matrix
- GS1 Composite Codes
- GS1 DataBar Expanded
- GS1 DataBar Limited
- MSI Redundancy
- GS1 Emulation
- GS1-128
- Interleaved 2 of 5
- Korea Post On/Off
- Matrix 2 of 5
- MaxiCode
- MicroPDF417
- MSI
- NEC 2 of 5
- Postal Codes - 2D
- Postal Codes - Linear
- PDF417
- QR Code
- Straight 2 of 5 IATA (two-bar start/stop)
- Straight 2 of 5 Industrial (three-bar start/stop)
- TCIF Linked Code 39 (TLC39)
- Telepen
- Trioptic Code
- UPC-A
- UPC-A/EAN-13 with Extended Coupon Code
- UPC-E0
- UPC-E1

All Symbologies

If you want to decode all the symbologies allowable for your scanner, scan the **All Symbologies On** code. If on the other hand, you want to decode only a particular symbology, scan **All Symbologies Off** followed by the **On** symbol for that particular symbology.

Note: *Scanner performance may reduce by scanning **All Symbologies On**. Only scan when needed.*



Note: *When **All Symbologies On** is scanned, 2D Postal Codes are not enabled. 2D Postal Codes must be enabled separately.*

Message Length Description

You are able to set the valid reading length of some of the bar code symbologies. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a mis-read.

Example: Decode only those bar codes with a count of 9-20 characters.

Min. length = 09Max. length = 20

Example: Decode only those bar codes with a count of 15 characters.

Min. length = 15Max. length = 15

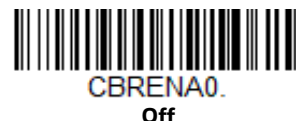
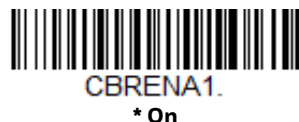
For a value other than the minimum and maximum message length defaults, scan the bar codes included in the explanation of the symbology, then scan the digit value of the message length and Save bar codes on the [Programming Chart](#) inside the back cover of this manual. The minimum and maximum lengths and the defaults are included with the respective symbologies.

Codabar

<Default All Codabar Settings>



Codabar On/Off



Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*



Codabar Check Character

Codabar check characters are created using different “modulos.” You can program the scanner to read only Codabar bar codes with Modulo 16 check characters. *Default = No Check Character.*

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate and Transmit**, the scanner will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

When Check Character is set to **Validate, but Don't Transmit**, the unit will only read Codabar bar codes printed *with* a check character, but will not transmit the check character with the scanned data.



Codabar Concatenation

Codabar supports symbol concatenation. When you enable concatenation, the scanner looks for a Codabar symbol having a “D” start character, adjacent to a symbol having a “D” stop character. In this case the two messages are concatenated into one with the “D” characters omitted.



Select Require to prevent the scanner from decoding a single “D” Codabar symbol without its companion. This selection has no effect on Codabar symbols without Stop/Start D characters.



Codabar Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.



Code 39

< Default All Code 39 Settings >



Code 39 On/Off



If your are reading Code 39 bar codes, Codablock A should remain disabled. If you are enabling Codablock A (see page [126](#)), you should disable Code 39.

Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*





Code 39 Check Character

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate, but Don't Transmit**, the unit only reads Code 39 bar codes printed with a check character, but will not transmit the check character with the scanned data.

When Check Character is set to **Validate and Transmit**, the scanner only reads Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data. *Default = No Check Character.*



Code 39 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.



Code 39 Redundancy

If you are encountering errors when reading Code 39 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Code 39 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



C39VOT.

Code 39 Redundancy

Code 39 Append

This function allows the scanner to append the data from several Code 39 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 39 bar code with the append trigger character(s), it buffers Code 39 bar codes until it reads a Code 39 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO). *Default = Off.*



C39APP1.

On



C39APP0.

* Off

Code 32 Pharmaceutical (PARAF)

Code 32 Pharmaceutical is a form of the Code 39 symbology used by Italian pharmacies. This symbology is also known as PARAF.

Note: Trioptic Code ([page 87](#)) must be turned off while scanning Code 32 Pharmaceutical codes.



C39B321.

On



C39B320.

* Off

Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the bar code symbol will be interpreted as a single character. For example: \$V will be decoded as the ASCII character SYN, and /C will be decoded as the ASCII character #. *Default = Off.*

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

Character pairs /M and /N decode as a minus sign and period respectively.
Character pairs /P through /Y decode as 0 through 9.



C39ASC1.
Full ASCII On



C39ASC0.
* Full ASCII Off

Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646](#))

Character Replacements on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 39 Unconventional Inter-Character Gaps

Use this setting to configure the scanner to read Code 39 bar codes with unconventional inter-character gaps. Default = Off.



Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes ([page 85](#)), Trioptic Code must be off.

Trioptic Code is used for labeling magnetic storage media.



Trioptic Redundancy

If you are encountering errors when reading Trioptic bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To

adjust the redundancy, scan the Trioptic Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



TRIVOT.

Trioptic Redundancy

Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >



I25DFT.

Interleaved 2 of 5 On/Off



I25ENA1.

* On



I25ENA0.

Off

Check Digit

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads Interleaved 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the scanner only reads Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*



I25CK20.

* No Check Digit



I25CK21.

Validate, but Don't Transmit



I25CK22.

Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 2-80. *Minimum Default = 4, Maximum Default = 80.*



I25MIN.

Minimum Message Length



I25MAX.

Maximum Message Length

FEBRABAN Decode

Febraban is an I 2 of 5 bar code that requires special check characters to be inserted in the transmitted data stream. It is used by the Brazilian Federation of Banks. Scan the bar codes below to turn FEBRABAN Boletó decoding on or off. *Default = Off.*



I25PAY1.

FEBRABAN Decode On



I25PAY0.

FEBRABAN Decode Off

NEC 2 of 5

< Default All NEC 2 of 5 Settings >



N25DFT.

NEC 2 of 5 On/Off



Check Digit

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads NEC 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the scanner only reads NEC 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*



NEC 2 of 5 Message Length

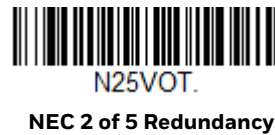
Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.





NEC 2 of 5 Redundancy

If you are encountering errors when reading NEC 2 of 5 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the NEC 2 of 5 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Code 93

< Default All Code 93 Settings >



Code 93 On/Off



Code 93 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



C93MIN.
Minimum Message Length



C93MAX.
Maximum Message Length

Code 93 Redundancy

If you are encountering errors when reading Code 93 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Code 93 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



C93VOT.
Code 93 Redundancy

Code 93 Append

This function allows the scanner to append the data from several Code 93 bar codes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 93 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The scanner stores the data in the order in which the bar codes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 93 bar code that starts with a character other than a space. *Default = Off.*



C93APP1.
On



C93APP0.
* Off

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



C93DCP.
Code 93 Code Page

Straight 2 of 5 Industrial (three-bar start/stop)

<Default All Straight 2 of 5 Industrial Settings>



R25DFT.

Straight 2 of 5 Industrial On/Off



R25ENA1.

On



R25ENA0.

* Off

Straight 2 of 5 Industrial Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



R25MIN.

Minimum Message Length



R25MAX.

Maximum Message Length

Straight 2 of 5 Industrial Redundancy

If you are encountering errors when reading Straight 2 of 5 Industrial bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Straight 2 of 5 Industrial Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



N25VOT.

Straight 2 of 5 Industrial
Redundancy

Straight 2 of 5 IATA (two-bar start/stop)

<Default All Straight 2 of 5 IATA Settings>



A25DFT.

Straight 2 of 5 IATA On/Off



A25ENA1.

On



A25ENA0.

* Off

Straight 2 of 5 IATA Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



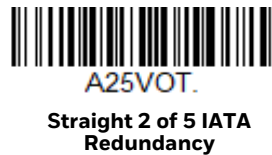
A25MIN.

Minimum Message Length



Straight 2 of 5 IATA Redundancy

If you are encountering errors when reading Straight 2 of 5 IATA bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Straight 2 of 5 IATA Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>



Matrix 2 of 5 On/Off



Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Matrix 2 of 5 Redundancy

If you are encountering errors when reading Matrix 2 of 5 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Matrix 2 of 5 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Matrix 2 of 5 Redundancy

Code 11

<Default All Code 11 Settings>



C11DFT.

Code 11 On/Off



C11ENA1.

On



Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 bar codes.
Default = Two Check Digits.



Code 11 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Code 11 Redundancy

If you are encountering errors when reading Code 11 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Code 11 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Code 128

<Default All Code 128 Settings>



Code 128 On/Off



If you are reading Code 128 bar codes, Codablock F should remain disabled. If you are enabling Codablock F (see page [127](#)), you should disable Code 128.

ISBT 128 Concatenation

In 1994 the International Society of Blood Transfusion (ISBT) ratified a standard for communicating critical blood information in a uniform manner. The use of ISBT formats requires a paid license. The ISBT 128 Application Specification describes 1) the critical data elements for labeling blood products, 2) the current recommendation to use Code 128 due to its high degree of security and its space-efficient design, 3) a variation of Code 128 that supports concatenation of neighboring symbols, and 4) the standard layout for bar codes on a blood product label. Use the bar codes below to turn concatenation on or off. *Default =Off.*



ISBT 128 Concatenation Mode

Specifies the ISBT concatenation mode according to the ISBT specification recommendations. None = Concatenated read prohibited, Required = Concatenated read required, and Optional = Concatenated read permitted but not required. *Default = Required.*



ISBCCT0.
None



ISBCCT1.
* Required



ISBCCT2.
* Optional

ISBT 128 Strict Concatenation

This setting specifies the rules for ISBT concatenation. When strict concatenation is on, only ISBT codes specified by the specification can be concatenated. When off, any ISBT code can be concatenated. *Default = On.*



ISBSTR1.
* On



ISBSTR0.
Off

ISBT 128 Concatenation Alignment

This setting is used to define the alignment required for ISBT concatenation. Off = can concatenate codes from different images, whatever the relative position, On = only codes that are horizontally aligned in the same image can be concatenated. *Default = Off.*



ISBALI1.
On



ISBT 128 Alternate ID

When on, ISBT codes have a specific code ID to differentiate them from regular Code 128 and they cannot be read as Code 128. *Default = Off.*



Code 128 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



Code 128 Append

This function allows the scanner to append the data from several Code 128 bar codes together before transmitting them to the host computer. When the scanner encounters a Code 128 bar code with the append trigger character(s), it buffers Code 128 bar codes until it reads a Code 128 bar code that does not have the append trigger. The data is then transmitted in the order in which the bar codes were read (FIFO). *Default = On.*





Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Code 128 Redundancy

If you are encountering errors when reading Code 128 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Code 128 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



GS1-128

<Default All GS1-128 Settings>



GS1-128 On/Off



GS1-128 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 1, Maximum Default = 80.



GS1-128 Redundancy

If you are encountering errors when reading GS1-128 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the GS1-128 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Telepen

<Default All Telepen Settings>



Telepen On/Off



Telepen Output

Using AIM Telepen Output, the scanner reads symbols with start/stop pattern 1 and decodes them as standard full ASCII (start/stop pattern 1). When Original Telepen Output is selected, the scanner reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2). *Default = AIM Telepen Output.*



Telepen Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.



Telepen Redundancy

If you are encountering errors when reading Telepen bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that

the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the Telepen Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



Telepen Redundancy

UPC-A

<Default All UPC-A Settings>



UPADFT.

UPC-A On/Off



UPBENA1.

* On



UPBENA0.

Off

Note: To convert UPC-A bar codes to EAN-13, see [Convert UPC-A to EAN-13](#) on page 111.

UPC-A Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



UPACKX1.

* On



UPACKX0.

Off

UPC-A Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. *Default = On.*



UPC-A Redundancy

If you are encountering errors when reading UPC-A bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the UPC-A Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



UPC-A Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-A data. *Default = Off for both 2 Digit and 5 Digit Addenda.*





UPC-A Addenda Required

When *Required* is scanned, the scanner will only read UPC-A bar codes that have addenda. You must then turn on a 2 or 5 digit addenda listed on [page 105](#). *Default = Not Required.*



Addenda Timeout

You can set a time during which the scanner looks for an addenda. If an addenda is not found within this time period, the data can be either transmitted or discarded, based on the setting you are using for [UPC-A Addenda Required](#) (page 6-106). Set the length (in milliseconds) for this timeout by scanning the bar code below, then setting the timeout (from 0-65535 milliseconds) by scanning digits from the [Programming Chart](#), then scanning Save. Default = 100.



UPC-A Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space. *Default = On.*



UPC-A/EAN-13 with Extended Coupon Code

Use the following codes to enable or disable UPC-A and EAN-13 with Extended Coupon Code. When left on the default setting (Off), the scanner treats Coupon Codes and Extended Coupon Codes as single bar codes.

If you scan the **Allow Concatenation** code, when the scanner sees the coupon code and the extended coupon code in a single scan, it transmits both as one symbologies. Otherwise, it transmits the first coupon code it reads.

If you scan the **Require Concatenation** code, the scanner must see and read the coupon code and extended coupon code in a single read to transmit the data. No data is output unless both codes are read. *Default = Off.*



Coupon GS1 DataBar Output

If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code. Scan the **GS1 Output On** code below to scan and output only the GS1 DataBar code data. *Default = GS1 Output Off.*



UPC-E0

<Default All UPC-E Settings>



UPC-E0 On/Off

Most U.P.C. bar codes lead with the 0 number system. To read these codes, use the UPC-E0 On selection. If you need to read codes that lead with the 1 number system, use [UPC-E1](#) (page 111). *Default = On.*



UPC-E0 Expand

UPC-E Expand expands the UPC-E code to the 12 digit, UPC-A format. *Default = Off.*



UPC-E0 Redundancy

If you are encountering errors when reading UPC-E0 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To

adjust the redundancy, scan the UPC-EO Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



UPEVOT.

UPC-EO Redundancy

UPC-EO Addenda Required

When Required is scanned, the scanner will only read UPC-E bar codes that have addenda. *Default = Not Required.*



UPEARQ1.

Required



UPEARQ0.

*** Not Required**

UPC-EO Addenda Separator

When this feature is On, there is a space between the data from the bar code and the data from the addenda. When turned Off, there is no space. *Default = On.*



UPEADS1.

*** On**



UPEADS0.

Off

UPC-EO Check Digit

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



UPECKX1.

*** On**



UPC-E0 Leading Zero

This feature allows the transmission of a leading zero (0) at the beginning of scanned data. To prevent transmission, scan Off. *Default = On.*



UPC-E0 Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC-E data. *Default = Off for both 2 Digit and 5 Digit Addenda.*



UPC-E1

Most U.P.C. bar codes lead with the 0 number system. For these codes, use [UPC-E0](#) (page 108). If you need to read codes that lead with the 1 number system, use the **UPC-E1** On selection. *Default = Off.*



EAN/JAN-13

<Default All EAN/JAN Settings>

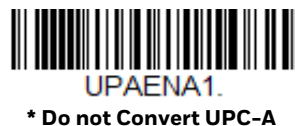


EAN/JAN-13 On/Off



Convert UPC-A to EAN-13

When **UPC-A Converted to EAN-13** is selected, UPC-A bar codes are converted to 13 digit EAN-13 codes by adding a zero to the front. When **Do not Convert UPC-A** is selected, UPC-A codes are read as UPC-A.



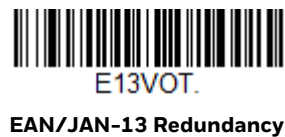
EAN/JAN-13 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



EAN/JAN-13 Redundancy

If you are encountering errors when reading EAN/JAN-13 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the EAN/JAN-13 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



EAN/JAN-13 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-13 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*





EAN/JAN-13 Addenda Required

When Required is scanned, the scanner will only read EAN/JAN-13 bar codes that have addenda. *Default = Not Required.*



EAN-13 Beginning with 290 Addenda Required

This setting programs the scanner to require a 5 digit addenda only on EAN-13 bar codes that begin with "290." The following settings can be programmed:

Require 5 Digit Addenda: All EAN-13 bar codes that begin with "290" must have a 5 digit addendum. The EAN-13 bar code with the 5 digit addendum is then transmitted as a single, concatenated bar code. If a 5 digit addendum is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Note: *if you are using EAN-13 Beginning with 290 Addenda Required, this setting will take precedence.*

Don't Require 5 Digit Addenda: If you have selected Require 5 Digit Addenda, and you want to disable this feature, scan **Don't Require 5 Digit Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require 5 Digit Addenda.



***Don't Require 5 Digit Addenda**



EAN-13 Beginning with 378/379 Addenda Required

This setting programs the scanner to require any combination of a 2 digit addenda or a 5 digit addenda on EAN-13 bar codes that begin with a “378” or “379.” The following settings can be programmed:

Require Addenda: All EAN-13 bar codes that begin with a “378” or “379” must have a 2 digit addenda, a 5 digit addenda, or a combination of these addenda. The EAN-13 bar code with the addenda is then transmitted as a single, concatenated bar code. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don’t Require Addenda: If you have selected Require Addenda, and you want to disable this feature, scan **Don’t Require Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don’t Require Addenda.



ARQ3780.

* Don’t Require Addenda



ARQ3781.

Require 2 Digit Addenda



ARQ3782.

Require 5 Digit Addenda



ARQ3783.

Require 2 or 5 Digit Addenda

EAN-13 Beginning with 414/419 Addenda Required

This setting programs the scanner to require any combination of a 2 digit addenda or a 5 digit addenda on EAN-13 bar codes that begin with a “414” or “419.” The following settings can be programmed:

Require Addenda: All EAN-13 bar codes that begin with a “414” or “419” must have a 2 digit addenda, a 5 digit addenda, or a combination of these addenda. The EAN-13 bar code with the addenda is then transmitted as a single, concatenated bar code. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don’t Require Addenda: If you have selected Require Addenda, and you want to disable this feature, scan **Don’t Require Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require Addenda.



EAN-13 Beginning with 434/439 Addenda Required

This setting programs the scanner to require any combination of a 2 digit addenda or a 5 digit addenda on EAN-13 bar codes that begin with a "434" or "439." The following settings can be programmed:

Require Addenda: All EAN-13 bar codes that begin with a "434" or "439" must have a 2 digit addenda, a 5 digit addenda, or a combination of these addenda. The EAN-13 bar code with the addenda is then transmitted as a single, concatenated bar code. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don't Require Addenda: If you have selected Require Addenda, and you want to disable this feature, scan **Don't Require Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require Addenda.





Require 2 or 5 Digit Addenda

EAN-13 Beginning with 491 Addenda Required

This setting programs the scanner to require any combination of a 2 digit addenda or a 5 digit addenda on EAN-13 bar codes that begin with a “491.” The following settings can be programmed:

Require Addenda: All EAN-13 bar codes that begin with a “491” must have a 2 digit addenda, a 5 digit addenda, or a combination of these addenda. The EAN-13 bar code with the addenda is then transmitted as a single, concatenated bar code. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don't Require Addenda: If you have selected Require Addenda, and you want to disable this feature, scan **Don't Require Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require Addenda.



* Don't Require Addenda



Require 2 Digit Addenda



Require 5 Digit Addenda



Require 2 or 5 Digit Addenda

EAN-13 Beginning with 977 Addenda Required

This setting programs the scanner to require a 2 digit addenda only on EAN-13 bar codes that begin with “977.” The following settings can be programmed:

Require 2 Digit Addenda: All EAN-13 bar codes that begin with “977” must have a 2 digit addendum. The EAN-13 bar code with the 2 digit addendum is then transmitted as a single, concatenated bar code. If a 2 digit addendum is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don't Require 2 Digit Addenda: If you have selected Require 2 Digit Addenda, and you want to disable this feature, scan **Don't Require 2 Digit Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require 2 Digit Addenda.



ARQ9770.

* Don't Require 2 Digit Addenda



ARQ9771.

Require 2 Digit Addenda

EAN-13 Beginning with 978 Addenda Required

These settings program the scanner to require a 5 digit addenda only on EAN-13 bar codes that begin with “978.” The following settings can be programmed:

Require 5 Digit Addenda: All EAN-13 bar codes that begin with “978” must have a 5 digit addendum. The EAN-13 bar code with the 5 digit addendum is then transmitted as a single, concatenated bar code. If a 5 digit addendum is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don't Require 5 Digit Addenda: If you have selected Require 5 Digit Addenda, and you want to disable this feature, scan **Don't Require 5 Digit Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require 5 Digit Addenda.



ARQ9780.

* Don't Require 5 Digit Addenda



ARQ9781.

Require 5 Digit Addenda

EAN-13 Beginning with 979 Addenda Required

These settings program the scanner to require a 5 digit addenda only on EAN-13 bar codes that begin with “979.” The following settings can be programmed:

Require 5 Digit Addenda: All EAN-13 bar codes that begin with “979” must have a 5 digit addendum. The EAN-13 bar code with the 5 digit addendum is then transmitted as a single, concatenated bar code. If a 5 digit addendum is not found within the [Addenda Timeout](#) period, the EAN-13 bar code is discarded.

Don’t Require 5 Digit Addenda: If you have selected Require 5 Digit Addenda, and you want to disable this feature, scan **Don’t Require 5 Digit Addenda**. EAN-13 bar codes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don’t Require 5 Digit Addenda.



ARQ9790.

* Don’t Require 5 Digit Addenda



ARQ9791.

Require 5 Digit Addenda

EAN/JAN-13 Addenda Separator

When this feature is **On**, there is a space between the data from the bar code and the data from the addenda. When turned Off, there is no space. *Default = On.*



E13ADS1.

* On



E13ADS0.

Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to [UPC-A/ EAN-13 with Extended Coupon Code](#) (page 107).

ISBN Translate

When On is scanned, EAN-13 Bookland symbols are translated into their equivalent ISBN number format. *Default = Off.*



E13ISB1.

On



E13ISB0.

* Off

EAN/JAN-8

<Default All EAN/JAN-8 Settings>



EAN/JAN-8 On/Off



EAN/JAN-8 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*



EAN/JAN-8 Redundancy

If you are encountering errors when reading EAN/JAN-8 bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the EAN/JAN-8 Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



EAN/JAN-8 Redundancy

EAN/JAN-8 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-8 data. *Default = Off for both 2 Digit and 5 Digit Addenda.*



EA8AD21.
2 Digit Addenda On



EA8AD20.
* 2 Digit Addenda Off



EA8AD51.
5 Digit Addenda On



EA8AD50.
* 5 Digit Addenda Off

EAN/JAN-8 Addenda Required

When Required is scanned, the scanner will only read EAN/JAN-8 bar codes that have addenda. *Default = Not Required.*



EA8ARQ1.
Required



EA8ARQ0.
* Not Required

EAN/JAN-8 Addenda Separator

When this feature is **On**, there is a space between the data from the bar code and the data from the addenda. When turned **Off**, there is no space. *Default = On.*



EA8ADS1.
* On



EA8ADS0.
Off

MSI

<Default All MSI Settings>



MSI On/Off



MSI Check Character

Different types of check characters are used with MSI bar codes. You can program the scanner to read MSI bar codes with Type 10 check characters. *Default = Validate Type 10, but Don't Transmit.*

When Check Character is set to **Validate Type 10/11 and Transmit**, the scanner will only read MSI bar codes printed with the specified type check character(s), and will transmit the character(s) at the end of the scanned data.

When Check Character is set to **Validate Type 10/11, but Don't Transmit**, the unit will only read MSI bar codes printed with the specified type check character(s), but will not transmit the check character(s) with the scanned data.





MSCHK4.
Validate Type 11 then Type 10
Character, but Don't Transmit



MSCHK5.
Validate Type 11 then
Type 10 Character and Transmit



MSCHK6.
Disable MSI Check Characters

MSI Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.



MSIMIN.
Minimum Message Length



MSIMAX.
Maximum Message Length

MSI Redundancy

If you are encountering errors when reading MSI bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the MSI Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



MSIVOT.
MSI Redundancy

GS1 DataBar Omnidirectional

< Default All GS1 DataBar Omnidirectional Settings >



GS1 DataBar Omnidirectional On/Off



GS1 DataBar Omnidirectional Redundancy

If you are encountering errors when reading GS1 DataBar Omnidirectional bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the GS1 DataBar Omnidirectional Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



GS1 DataBar Limited

< Default All GS1 DataBar Limited Settings >



GS1 DataBar Limited On/Off



GS1 DataBar Limited Redundancy

If you are encountering errors when reading GS1 DataBar Limited bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the GS1 DataBar Limited Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



GS1 DataBar Expanded

< Default All GS1 DataBar Expanded Settings >



GS1 DataBar Expanded On/Off



GS1 DataBar Expanded Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.



RSEMIN.

Minimum Message Length



RSEMAX.

Maximum Message Length

GS1 DataBar Expanded Redundancy

If you are encountering errors when reading GS1 DataBar Expanded bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the GS1 DataBar Expanded Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*



RSEVOT.

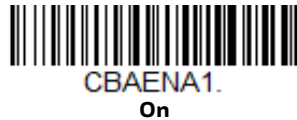
GS1 DataBar Expanded
Redundancy

Codablock A

<Default All Codablock A Settings>



Codablock A On/Off



If you are reading Code 39 bar codes, Codablock A should remain disabled. If you are enabling Codablock A, you should disable Code 39 (see page [83](#)).

Codablock A Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-600. Minimum Default = 1, Maximum Default = 600.



Minimum Message Length



Maximum Message Length

Codablock F

<Default All Codablock F Settings>



Codablock F On/Off



If you are reading Code 128 bar codes, Codablock F should remain disabled. If you are enabling Codablock F, you should disable Code 128 (see page [98](#)).

Codablock F Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.



Label Code

The standard Label Code is used in libraries. *Default = Off.*



PDF417

< Default All PDF417 Settings >



PDF417 On/Off



PDF417 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.



PDF417 Code Page

PDF417 Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



MacroPDF417

MacroPDF417 is an implementation of PDF417 capable of encoding very large amounts of data into multiple PDF417 bar codes. When this selection is enabled, these multiple bar codes are assembled into a single data string. *Default = On.*



MicroPDF417

< Default All MicroPDF417 Settings >



MicroPDF417 On/Off



MicroPDF417 Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.





MicroPDF417 Code Page

MicroPDF417 Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



GS1 Composite Codes

Linear codes are combined with a unique 2D composite component to form a new class called GS1 Composite symbology. GS1 Composite symbologies allow for the co-existence of symbologies already in use. *Default = Off.*



UPC/EAN Version

Scan the **UPC/EAN Version On** bar code to decode GS1 Composite symbols that have a U.P.C. or an EAN linear component. (This does not affect GS1 Composite symbols with a GS1-128 or GS1 linear component.) *Default = UPC/EAN Version Off.*



Note: *If you scan coupons that have both UPC and GS1 DataBar codes, you may wish to scan and output only the data from the GS1 DataBar code. See [Coupon GS1 DataBar Output](#) (page 107) for further information.*

GS1 Composite Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.



GS1 Composite Code Code Page

GS1 Composite Code Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



GS1 Composite Code Code
Page

GS1 Emulation

The scanner can automatically format the output from any GS1 data carrier to emulate what would be encoded in an equivalent GS1-128 or GS1 DataBar symbol. GS1 data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, GS1-128, and GS1-128 DataBar and GS1 Composites. (Any application that accepts GS1 data can be simplified since it only needs to recognize one data carrier type.)

If **GS1-128 Emulation** is scanned, all retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see [Symbology Charts](#) on page 209).

If **GS1 DataBar Emulation** is scanned, all retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-DataBar AIM ID,]em (see [Symbology Charts](#) on page 209).

If **GS1 Code Expansion Off** is scanned, retail code expansion is disabled, and UPC-E expansion is controlled by the [UPC-E0 Expand](#) (page 108) setting. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see [Symbology Charts](#) on page 209).

If **EAN8 to EAN13 Conversion** is scanned, all EAN8 bar codes are converted to EAN13 format.

Default = GS1 Emulation Off.



EANEMU1.
GS1-128 Emulation



EANEMU2.
GS1 DataBar Emulation



EANEMU3.
GS1 Code Expansion Off



EANEMU4.
EAN8 to EAN13 Conversion



EANEMU0.
* GS1 Emulation Off

TCIF Linked Code 39 (TLC39)

This code is a composite code since it has a Code 39 linear component and a MicroPDF417 stacked code component. All bar code readers are capable of reading the Code 39 linear component. The MicroPDF417 component can only be decoded if **TLC39 On** is selected. The linear component may be decoded as Code 39 even if TLC39 is off. *Default = Off.*



QR Code

< Default All QR Code Settings >



QR Code On/Off

This selection applies to both QR Code and Micro QR Code.



QR Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-7089. Minimum Default = 1, Maximum Default = 7089.



Minimum Message Length



QR Code Append

This function allows the scanner to append the data from several QR Code bar codes together before transmitting them to the host computer. When the scanner encounters an QR Code bar code with the append trigger character(s), it buffers the number of QR Code bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*



QR Code Page

QR Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the **Save** bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



QR Code No Quiet Zone

Activate QR Code No Quiet Zone to be able to decode bar codes with no quiet zone around the patterns.





DotCode

< Default All DotCode Settings >



DotCode On/Off



Poor Quality DotCodes

This setting improves the scanner's ability to read damaged or badly printed DotCodes. *Default = Poor Quality DotCodes Off.*

Note: When enabled decoding may be longer.



DotCode Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-2400. Minimum Default = 1, Maximum Default = 2400.



DOTMIN.

Minimum Message Length



DOTMAX.

Maximum Message Length

Digimarc Barcode™

Digimarc Decoder Attempts

Set the number of attempts by scanning the bar code below, then setting the number of attempts (0-10) by scanning digits from the [Programming Chart](#) beginning on page 223 of this manual, the **Save**. *Minimum to Maximum attempts = 0-10. Default = 3.*



DIGSTR.

Digimarc Decoder Attempts

Digimarc Barcode

This setting programs the scanner to decode Digimarc Barcode using Digimarc and ID decoders. When Digimarc Barcode is set to **On**, the Digimarc decoder is used on most frames and the Honeywell decoder will read every fifth frame.

When Digimarc Barcode is set to **Use Honeywell Decoder then Both Decoders**, the Honeywell decoder will read the number of attempts set by the Digimarc Decoder Attempts and then will use both Honeywell and Digimarc decoders. When Digimarc Barcode is set to **Use Digimarc Decoder then Both Decoders**, the Digimarc decoder will read the number of attempts set by the Digimarc Decoder Attempts and then will use both Honeywell and Digimarc decoders.

When Digimarc Barcode is set to **Use Honeywell Decoder then Alternates Decoders**, the Honeywell decoder will read the number of attempts set by the Digimarc Decoder Attempts and then will alternate between Honeywell and Digimarc decoders. When Digimarc Barcode is set to **Uses Digimarc Decoder then Alternates Decoders**, the Digimarc decoder will read the number of attempts set by the Digimarc Decoder Attempts and then will alternate between Honeywell and Digimarc decoders.

Default = Uses Digimarc Decoder then Both Decoders.



DIGENA0.

Off



DIGENA1.

On



DIGENA2.

Use Honeywell Decoder then
Both Decoders



DIGENA3.

* Use Digimarc Decoder then
Both Decoders



DIGENA4.

Use Honeywell Decoder then
Alternates Decoders



DIGENA5.

Use Digimarc Decoder then
Alternates Decoders

Data Matrix

< Default All Data Matrix Settings >



IDMDFT.

Data Matrix On/Off



IDMENA1.

* On



IDMENA0.

Off

Low Contrast Data Matrix Enhancements

Use this setting if you are reading low contrast Data Matrix and dot peened direct part mark bar codes. If you are having trouble reading non-dot peen Data Matrix bar codes, it may be helpful to turn this setting off by scanning the **Low Contrast Data Matrix Enhancements Off**. Default = Low Contrast Data Matrix Enhancements On.



DPMENA1.

***Low Contrast Data Matrix Enhancements On**



DPMENA0.

Low Contrast Data Matrix Enhancements Off



DPMENA2.

Reflective Low Contrast Data Matrix Enhancements On

Data Matrix Small Reflective Barcodes

Use this setting if Reflective Low Contrast Data Matrix Enhancements are on (DPMENA2). This setting improves decoding of small reflective DPM symbols. *Default = Off.*



DPMRSZ0.

***Data Matrix Small Reflective Codes Off**



DPMRSZ1.

Data Matrix Small Reflective Codes On

Data Matrix Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-3116. Minimum Default = 1, Maximum Default = 3116.



IDMMIN.

Minimum Message Length



Data Matrix Append

This function allows the scanner to append the data from several Data Matrix bar codes together before transmitting them to the host computer. When the scanner encounters an Data Matrix bar code with the append trigger character(s), it buffers the number of Data Matrix bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*



Data Matrix Code Page

Data Matrix Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 218), and scan the value and the Save bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Grid Matrix

<Default All Grid Matrix Settings>



Grid Matrix On/Off



On



* Off

Grid Matrix Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-2751. Minimum Default = 1, Maximum Default = 2751.



Minimum Message Length



Maximum Message Length

MaxiCode

< Default All MaxiCode Settings >



MaxiCode On/Off



On



* Off

MaxiCode Message Format

Use this setting to specify whether the secondary message of a MaxiCode bar code is decoded or not. Default = Primary Required, Secondary if Available.



Primary Message Only



***Primary Required, Secondary if Available**



Both Primary and Secondary Required

MaxiCode Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-150. Minimum Default = 1, Maximum Default = 150.



Minimum Message Length



Maximum Message Length

Aztec Code

< Default All Aztec Code Settings >



Aztec Code On/Off



*** On**



Aztec Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-3832. Minimum Default = 1, Maximum Default = 3832.



Aztec Append

This function allows the scanner to append the data from several Aztec bar codes together before transmitting them to the host computer. When the scanner encounters an Aztec bar code with the append trigger character(s), it buffers the number of Aztec bar codes determined by information encoded in those bar codes. Once the proper number of codes is reached, the data is output in the order specified in the bar codes. *Default = On.*



Aztec Code Page

Aztec Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see [ISO 2022/ISO 646](#)

[Character Replacements](#) on page 218), and scan the value and the Save bar code from the [Programming Chart](#) on the inside the back cover of this manual. The data characters should then appear properly.



Chinese Sensible (Han Xin) Code

< Default All Han Xin Settings >



Han Xin Code On/Off



Han Xin Code Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 1-7833. Minimum Default = 1, Maximum Default = 7833.



Postal Codes - 2D

The following lists the possible 2D postal codes, and 2D postal code combinations that are allowed. Only one 2D postal code selection can be active at a time. If you scan a second 2D postal code selection, the first selection is overwritten. *Default = 2D Postal Codes Off.*



Single 2D Postal Codes:





POSTAL6.

Postnet On

Also see [Postnet](#)



POSTAL11.

Postnet with B and B' Fields On



POSTAL2.

InfoMail On

Combination 2D Postal Codes:



POSTAL8.

InfoMail and British
Post On



POSTAL20.

Intelligent Mail Bar Code and
Postnet with B and B' Fields On



POSTAL14.

Postnet and
Postal-4i On



POSTAL16.

Postnet and
Intelligent Mail Bar Code On



POSTAL17.

Postal-4i and
Intelligent Mail Bar Code On



POSTAL19.

Postal-4i and
Postnet with B and B' Fields On



POSTAL12.
Planet Code and
Postnet On



POSTAL18.
Planet Code and
Postnet with B and B' Fields On



POSTAL13.
Planet Code and
Postal-4i On



POSTAL15.
Planet Code and
Intelligent Mail Bar Code



POSTAL21.
Planet Code,
Postnet, and
Postal-4i On



POSTAL22.
Planet Code,
Postnet, and
Intelligent Mail Bar Code On



POSTAL23.
Planet Code,
Postal-4i, and
Intelligent Mail Bar Code On



POSTAL24.
Postnet,
Postal-4i, and
Intelligent Mail Bar Code On



POSTAL25.
Planet Code,
Postal-4i, and
Postnet with B and B' Fields On



POSTAL26.
Planet Code,
Intelligent Mail Bar Code, and
Postnet with B and B' Fields On



POSTAL27.
 Postal-4i,
 Intelligent Mail Bar Code, and
 Postnet with B and B' Fields On



POSTAL28.
 Planet Code,
 Postal-4i,
 Intelligent Mail Bar Code, and
 Postnet On



POSTAL29.
 Planet Code,
 Postal-4i,
 Intelligent Mail Bar Code, and
 Postnet with B and B' Fields On

Planet Code Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of Planet Code data. *Default = Don't Transmit.*



PLNCKX1.
 Transmit Check Digit



PLNCKX0.
 * Don't Transmit Check Digit

Postnet Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of Postnet data. *Default = Don't Transmit.*



NETCKX1.
 Transmit Check Digit



NETCKX0.
 * Don't Transmit Check Digit

Australian Post Interpretation

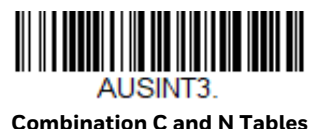
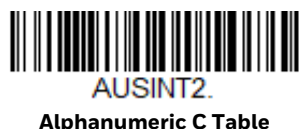
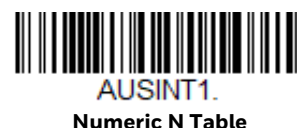
This option controls what interpretation is applied to customer fields in Australian 4-State symbols.

Bar Output lists the bar patterns in “0123” format.

Numeric N Table causes that field to be interpreted as numeric data using the N Table.

Alphanumeric C Table causes the field to be interpreted as alphanumeric data using the C Table. Refer to the Australian Post Specification Tables.

Combination C and N Tables causes the field to be interpreted using either the C or N Tables.



Postal Codes - Linear

The following lists linear postal codes. Any combination of linear postal code selections can be active at a time.

China Post (Hong Kong 2 of 5)

<Default All China Post (Hong Kong 2 of 5) Settings>



China Post (Hong Kong 2 of 5) On/Off



China Post (Hong Kong 2 of 5) Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



China Post Redundancy

If you are encountering errors when reading China Post bar codes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a bar code is decoded before transmission, which may reduce the number of errors. Note that the higher the redundancy count, the longer it will take to decode the bar code. To adjust the redundancy, scan the China Post Redundancy bar code below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#). Then scan the **Save** bar code. *Default = 0.*

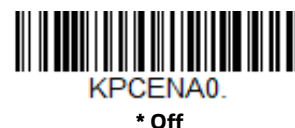


Korea Post

<Default All Korea Post Settings>



Korea Post On/Off



Korea Post Message Length

Scan the bar codes below to change the message length. Refer to [Message Length Description](#) (page 80) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



Korea Post Check Digit

This selection allows you to specify whether the check digit should be transmitted. *Default = Don't Transmit.*



IMAGING COMMANDS

The scan engine is like a digital camera in the way it captures, manipulates, and transfers images. The following commands allow you to alter the way the scan engine performs these functions.

Single-Use Basis

Imaging Commands with their modifiers send instructions to the scan engine on a single-use basis, and take effect for a single image capture. Once that capture is complete, the scan engine reverts to its imaging default settings. If you want to permanently change a setting, you must use the serial default commands (see [Chapter 9](#)). When the serial default command is used, that selection becomes the new, permanent setting for the scan engine.

Command Syntax

Multiple modifiers and commands can be issued within one sequence. If additional modifiers are to be applied to the same command, just add the modifiers to that command. For example, to add 2 modifiers to the Image Snap command, such as setting the Imaging Style to 1P and the Wait for Trigger to 1T, you would enter IMGSNP1P1T.

Note: After processing an image capture command (IMGSNP or IMGBOX), you must follow it with an IMGSHIP command if you want to see it on your terminal.

To add a command to a sequence, each new command is separated with a semicolon. For example, to add the Image Ship command to the above sequence, you would enter IMGSNP1P1T;IMGSHIP.

The imaging commands are:

[Image Snap - IMGSNP](#) (page 152)

[Image Ship - IMGSHIP](#) (page 155)

[Intelligent Signature Capture - IMGBOX](#) (page 164)

The modifiers for each of these commands follow the command description.

Note: *The images included with each command description are examples only. The results you achieve may be different from those included in this manual. The quality of the output you receive will vary depending on lighting, quality of the initial image/object being captured, and distance of the scan engine from the image/object. To achieve a high quality image, it is recommended that you position your scan engine 4-6" (10.2-15.2 cm) away from the image/object you are capturing.*

Step 1 - Take a Picture Using IMGSNP

Image Snap - IMGSNP

An image is taken whenever the hardware button is pressed, or when the Image Snap (IMGSNP) command is processed.

The image snap command has many different modifiers that can be used to change the look of the image in memory. Any number of modifiers may be appended to the IMGSNP command. For example, you can use the following command to snap an image, increase the gain, and have the beeper sound once the snap is complete: IMGSNP2G1B

IMGSNP Modifiers

P - Imaging Style

This sets the Image Snap style.

- | | |
|----|---|
| 0P | Decoding Style
This processing allows a few frames to be taken until the exposure parameters are met. The last frame is then available for further use. |
| 1P | Photo Style (default)
This mimics a simple digital camera, and results in a visually optimized image. |
| 2P | Manual Style
This is an advanced style that should only be used by an experienced user. It allows you the most freedom to set up the scan engine, and has no auto-exposure. |

B - Beeper

Causes a beep to sound after an image is snapped.

- | | |
|----|---|
| 0B | No beep (<i>default</i>) |
| 1B | Sounds a beep when the image is captured. |

T - Wait for Trigger

Waits for a hardware button push before taking the image. This is only available when using Photo Style (1P).

0T	Takes image immediately (<i>default</i>)
1T	Waits for a button push, then takes the image

L - LED State

Determines if the LEDs should be on or off, and when. Ambient illumination (0L) is preferred for taking pictures of color documents, such as ID cards, especially when the scan engine is in a stand. LED illumination (1L) is preferred when the scanner is handheld. LED State is not available when using Decoding Style (0P).

0L	LEDs off (<i>default</i>)
1L	LEDs on

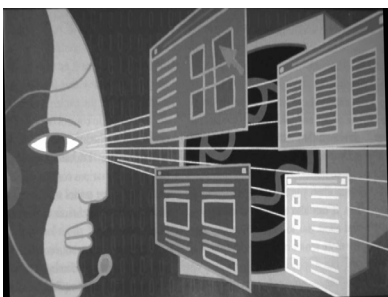
E - Exposure

Exposure is used in Manual Style only (1P|2P), and allows you to set the exposure time. This is similar to setting a shutter speed on a camera. The exposure time determines how long the scanner takes to record an image. On a bright day, exposure times can be very short because plenty of light is available to help record an image. At nighttime, exposure time can increase dramatically due to the near absence of light. Units are 127 microseconds. *Default = 500*.

nE	Range: 1-26 000
----	-----------------

Example:

**Exposure at 7874E with
fluorescent lighting:**



**Exposure at 100E with
fluorescent lighting:**



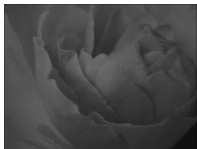
G - Gain

Gain is used in Manual Style only (2P). Like a volume control, the gain modifier boosts the signal and multiplies the pixel value. As you increase the gain, the noise in an image is also amplified. *Default = 6.*

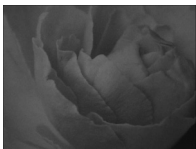
- 40G Medium gain
- 64G Heavy gain (*default*)
- 96G Maximum gain

Example:

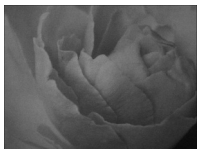
Gain at 1G:



Gain at 4G:



Gain at 8G:



W - Target White Value

Sets the target for the median grayscale value in the captured image. For capturing close-up images of high contrast documents, a lower setting, such as 75, is recommended. Higher settings result in longer exposure times and brighter images, but if the setting is too high, the image may be overexposed. Target White Value is only available when using Photo Style (1P). (*Default = 125*)

nW Range: 0 - 255

Example:

White Value at 75W:



White Value at 125W:



White Value at 200W:



D - Delta for Acceptance

This sets the allowable range for the white value setting (see [W - Target White Value](#)). Delta is only available when using Photo Style (1P). (*Default = 25*)

nD Range: 0 - 255

U - Update Tries

This sets the maximum number of frames the scan engine should take to reach the [D - Delta for Acceptance](#). Update Tries is only available when using Photo Style (1P). (Default = 6)

nU Range: 0 - 10

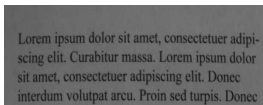
% - Target Set Point Percentage

Sets the target point for the light and dark values in the captured image. A setting of 75% means 75% of the pixels are at or below the target white value, and 25% of the pixels are above the target white value. Altering this setting from the default is not recommended under normal circumstances. To alter grayscale values, [W - Target White Value](#) should be used. (Default = 50)

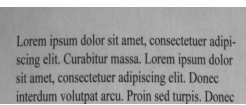
n% Range: 0 - 99

Example:

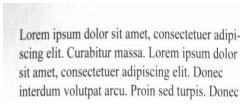
Target Set Point Percentage at 97%:



Target Set Point Percentage at 50%:



Target Set Point Percentage at 40%:



Step 2 - Ship a Picture Using IMGSHIP

Image Ship - IMGSHIP

An image is taken whenever the button is pressed, or when the Image Snap (IMGSNP) command is processed. The last image is always stored in memory. You can “ship” the image by using the **IMGSHIP** command.

The image ship commands have many different modifiers that can be used to change the look of the image output. Modifiers affect the image that is transmitted, but do not affect the image in memory. Any number of modifiers may be appended to the **IMGSHIP** command.

Example: You can use the following command to snap and ship a bitmap image with gamma correction and document image filtering: **IMGSNP;IMGSHIP8F75K26U**

IMGSHS Modifiers

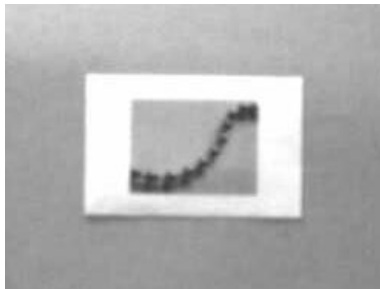
A - Infinity Filter

Enhances pictures taken from very long distances (greater than 10 feet or 3m). The Infinity Filter should not be used with [IMGSNP Modifiers](#) (page 152).

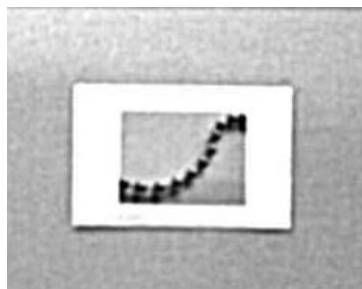
- 0A Infinity filter off (*default*)
- 1A Infinity filter on

Example:

Infinity Filter off (0A)
from approximately 12 feet
(3.66m) away:



Infinity Filter on (1A)
from approximately 12 feet
(3.66m) away:



C - Compensation

Flattens the image to account for variations in illumination across the image.

- 0C Compensation disabled (*default*)
- 1C Compensation enabled

Example:

Compensation at 0C:



Compensation at 1C:



D - Pixel Depth

Indicates the number of bits per pixel in the transmitted image (KIM or BMP format only).

- 8D 8 bits per pixel, grayscale image (*default*)
- 1D 1 bit per pixel, black and white image

E - Edge Sharpen

An edge sharpen filter cleans up the edges of an image, making it look cleaner and sharper. While edge sharpening does make the image look cleaner, it also removes some fine detail from the original image. The strength of the edge sharpen filter can be entered from 1 to 24. Entering a 23E gives the sharpest edges, but also increases noise in the image.

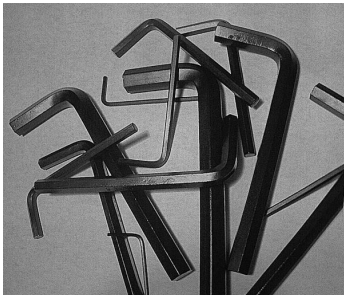
- 0E Don't sharpen image (*default*)
- 14E Apply edge sharpen for typical image
- ne Apply edge sharpen using strength *n* (*n* = 1-24)

Example:

Edge Sharpen at 0E:



Edge Sharpen at 24E:



F - File Format

Indicates the desired format for the image.

- 0F KIM format
- 1F TIFF binary
- 2F TIFF binary group 4, compressed
- 3F TIFF grayscale
- 4F Uncompressed binary (upper left to lower right, 1 pixel/bit, 0 padded end of line)
- 5F Uncompressed grayscale (upper left to lower right, bitmap format)
- 6F JPEG image (*default*)
- 8F BMP format (lower right to upper left, uncompressed)
- 15F BMP Uncompressed raw image

H - Histogram Stretch

Increases the contrast of the transmitted image. Not available with some image formats.

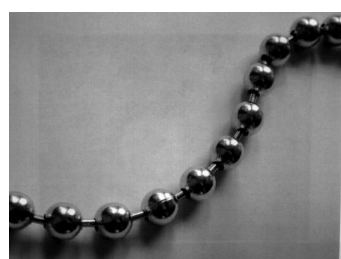
- 0H No stretch (*default*)
- 1H Histogram stretch

Example:

Histogram Stretch at 0H:



Histogram Stretch at 1H:



I - Invert Image

Invert image is used to rotate the image around the X or Y axis.

- 1ix Invert around the X axis (flips picture upside down)
- 1iy Invert around the Y axis (flips picture left to right)

Example:

Image not inverted:

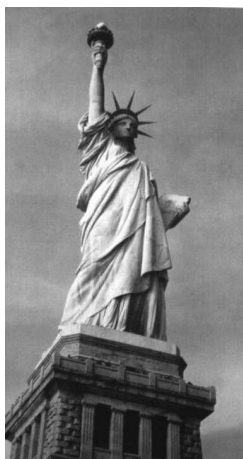


Image with Invert Image set to 1ix:



Image with Invert Image set to 1iy:



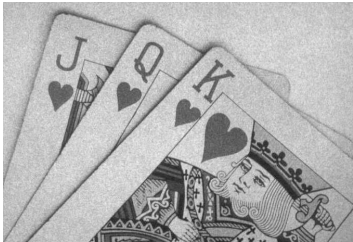
IF- Noise Reduction

Used to reduce the salt and pepper noise in an image.

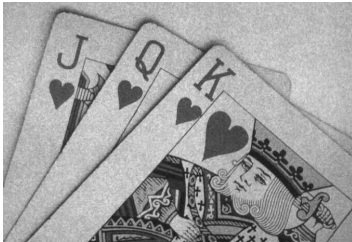
- 0if No salt and pepper noise reduction (default)
- 1if Salt and pepper noise reduction

Example:

Noise Reduction Off (0if):



Noise Reduction On (1if):



IR - Image Rotate

- 0ir Image as snapped (rightside up) (default)
- 1ir Rotate image 90 degrees to the right
- 2ir Rotate image 180 degrees (upside down)
- 3ir Rotate image 90 degrees to the left

Example:

Image Rotate set to 0ir:



Image Rotate set to 2ir:

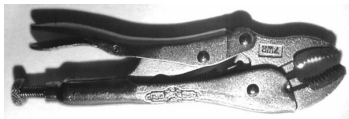


Image Rotate set to 1ir:



Image Rotate set to 3ir:



J - JPEG Image Quality

Sets the desired quality when the JPEG image format is selected. Higher numbers result in higher quality, but larger files. Smaller numbers result in greater amounts of lossy compression, faster transmission times, lower quality, but smaller files.
(Default = 50)

- nJ* Image is compressed as much as possible while preserving quality factor of *n* (*n* = 0 - 100)
- 0J Worst quality (smallest file)
- 100J Best quality (largest file)

K - Gamma Correction

Gamma measures the brightness of midtone values produced by the image. You can brighten or darken an image using gamma correction. A higher gamma correction yields an overall brighter image. The lower the setting, the darker the image. The optimal setting for text images is 50K.

- 0K Gamma correction off (default)
- 50K Apply gamma correction for brightening typical document image
- nK* Apply gamma correction factor *n* (*n* = 0-1,000)

Example:

Gamma Correction
set to 0K:



Gamma Correction
set to 50K:



Gamma Correction
set to 255K:



L, R, T, B, M - Image Cropping

Ships a window of the image by specifying the left, right, top, and bottom pixel coordinates. Device columns are numbered 0 through 1279, and device rows are numbered 0 through 959.

- n*L The left edge of the shipped image corresponds to column *n* of the image in memory.
Range: 000 - 639. (Default = 0)
- n*R The right edge of the shipped image corresponds to column *n* - 1 of the image in memory.
Range: 000 - 639. (Default = all columns)
- n*T The top edge of the shipped image corresponds to row *n* of the image in memory. Range:
000 - 479. (Default = 0)
- n*B The bottom edge of the shipped image corresponds to row *n* - 1 of the image in memory.
Range: 000 - 479. (Default = all rows)

Example:

Uncropped Image:


Image Crop set to 300R:

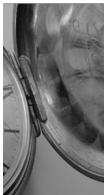

Image Crop set to 300L:


Image Crop set to 200B:


Image Crop set to 200T:


Alternately, specify the number of pixels to cut from the outside margin of the image; thus only the center pixels are transmitted.

- n*M Margin: cut *n* columns from the left, *n* + 1 columns from the right, *n* rows from the top, and
n + 1 rows from the bottom of the image. Ship the remaining center pixels. Range: 0 - 238.
(Default = 0, or full image)

Example:

Image Crop set to 238M:



P - Protocol

Used for shipping an image. Protocol covers two features of the image data being sent to the host. It addresses the protocol used to send the data (Hmodem, which is an Xmodem 1K variant that has additional header information), and the format of the image data that is sent.

- OP None (raw data)

- 2P None (*default for USB*)
- 3P Hmodem compressed (*default for RS232*)
- 4P Hmodem

S - Pixel Ship

Pixel Ship sizes an image in proportion to its original size. It decimates the image by shipping only certain, regularly spaced pixels. For example, 4S would transmit every fourth pixel from every fourth line. The smaller number of pixels shipped, the smaller the image, however, after a certain point the image becomes unusable.

- 1S Ship every pixel (*default*)
- 2S Ship every 2nd pixel, both horizontally and vertically
- 3S Ship every 3rd pixel, both horizontally and vertically

Example:

Pixel Ship set to 1S:



Pixel Ship set to 2S:



Pixel Ship set to 3S:



Pixel Ship set to 4S:



U - Document Image Filter

Allows you to input parameters to sharpen the edges and smooth the area between the edges of text in an image. This filter should be used with gamma correction (see [page 160](#)), with the scan engine in a stand, and the image captured using the command:

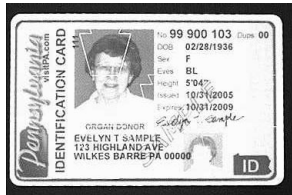
IMGSNP1POL168W90%32D

This filter typically provides better JPEG compression than the standard E - Edge Sharpen command (see [page 163](#)). This filter also works well when shipping pure black and white images (1 bit per pixel). The optimal setting is 26U.

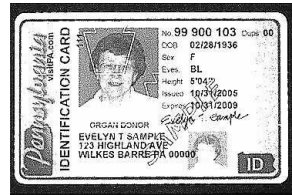
- 0U Document image filter off (*default*)
- 26U Apply document image filter for typical document image
- nU Apply document image filter using grayscale threshold n. Use lower numbers when the image contrast is lower. 1U will have a similar effect to setting E - Edge Sharpen (page 157) to 22e. Range: 0-255

Example:

Document Image Filter set to 0U:



Document Image Filter set to 26U:



V - Blur Image

Smooths transitions by averaging the pixels next to the hard edges of defined lines and shaded areas in an image.

- 0V Don't blur (*default*)
- 1V Blur

Example of Blur Image Off



Example of Blur Image On



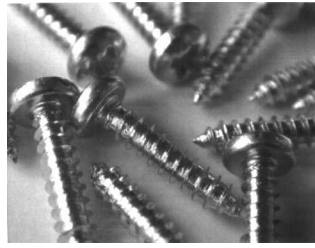
W - Histogram Ship

A histogram gives a quick picture of the tonal range of an image, or key type. A low-key image has detail concentrated in the shadows; a high-key image has detail concentrated in the highlights; and an average-key image has detail concentrated in the midtones. This modifier ships the histogram for an image.

- 0W Don't ship histogram (*default*)

- 1WShip histogram

Image used for histogram:



Histogram of image at left:



Image Size Compatibility

If you have applications that expect an image ship to return exactly 640x480 pixels, scan the Force VGA Resolution bar code. *Default = Native Resolution.*



Intelligent Signature Capture - IMGBOX

IMGBOX allows you to configure the size and location of a signature capture area relative to its proximity to a bar code. This allows you to tailor a signature capture area to a specific form. In order to use IMGBOX, you need a set form where the signature box location is in a known location relative to a bar code. You can input the overall size of the signature area, as well as specify how far the signature area is from the bar code, vertically and horizontally. You can also set the resolution and file format for the final output of the signature capture image.

Note: *IMGBOX commands can only be triggered by one of the following types of bar codes: PDF417, Code 39, Code 128, Aztec, Codabar, and Interleaved 2 of 5. Once one of these symbologies has been read, the image is retained for a possible IMGBOX command.*

Signature Capture Optimize

If you will be using your scan engine to capture signatures frequently, you should optimize it for this purpose. However, the speed of scanning bar codes may be slowed when this mode is enabled. *Default = Off.*



Below is an example of a signature capture application. In this example, the aimer is centered over the signature capture area and the trigger is pressed. A single beep is emitted, indicating that the scan engine has read a Code 128 bar code and the data has been transferred to the host. If using a Granit scan engine, the scan engine also vibrates. An IMGBOX command may now be sent from the host to specify the coordinates of the signature capture area below that code, and indicating that only that area containing the signature should be transferred as an image to the host.

To see this example, align the aimer with the signature area (not with the bar code), then press the trigger.

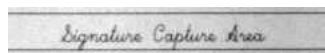


Send the following IMGBOX command string after the button push:

Example: *IMGBOX245w37h55y.*

Note: *Case is not important in the command string. It is used here only for clarity.*

The following image is captured:



The IMGBOX commands have many different modifiers that can be used to change the size and appearance of the signature image output by the scan engine. Modifiers affect the image that is transmitted, but do not affect the image in memory. Any number of modifiers may be appended to the IMGBOX command.

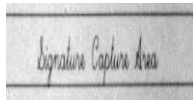
Note: The IMGBOX command will return a NAK unless a window size (width and height) are specified. See [H - Height of Signature Capture Area](#) (page 167) and [W - Width of Signature Capture Area](#) (page 168).

IMGBOX Modifiers

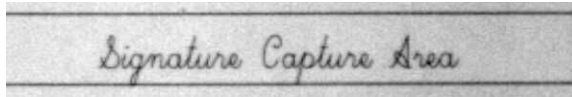
A - Output Image Width

This option is used to size the image horizontally. If using this option, set the resolution (R) to zero.

Example of Image Width set to



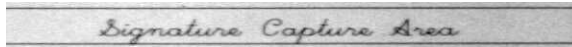
Example of Image Width set to



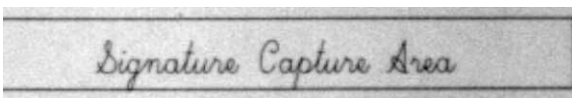
B - Output Image Height

This option is used to size the image vertically. If using this option, set the resolution (R) to zero.

Example of Image Height set to 50B:



Example of Image Height set to 100B:



D - Pixel Depth

This indicates the number of bits per pixel in the transmitted image, which defines whether it will be grayscale or black and white.

- 8D8 bits per pixel, grayscale image (default)
- 1D1 bit per pixel, black and white image

F - File Format

This option indicates the type of file format in which to save the image.

- OFKIM format

- 1FTIFF binary
- 2FTIFF binary group 4, compressed
- 3FTIFF grayscale
- 4FUncompressed Binary
- 5FUncompressed grayscale
- 6FJPEG image (*default*)
- 7FOutlined image
- 8FBMP format

H - Height of Signature Capture Area

The height of the signature capture area must be measured in inches divided by .01. In the example, the height of the area to be captured is 3/8 inch, resulting in a value of $H = .375 / 0.01 = 37.5$.

Example: **IMGBOX245w37h55y.**

K - Gamma Correction

Gamma measures the brightness of midtone values produced by the image. You can brighten or darken an image using gamma correction. A higher gamma correction yields an overall brighter image. The lower the setting, the darker the image. The optimal setting for text images is 50K.

- 0KGamma correction off (*default*)
- 50KApply gamma correction for brightening typical document image
- nKApply gamma correction factor n ($n = 1-255$)

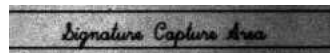
Example of Gamma Correction set to 0K:



Example of Gamma Correction set to 50K:



Example of Gamma Correction set to 255K:

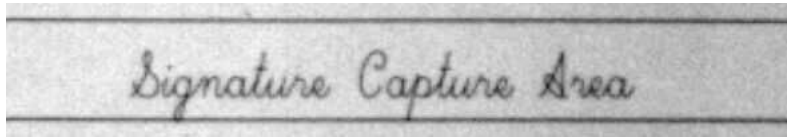


R - Resolution of Signature Capture Area

The resolution is the number of pixels that the scan engine outputs per each minimum bar width. The higher the value for R, the higher the quality of the image, but also the larger the file size. Values begin at 1000. The scan engine automatically

inserts a decimal point between the first and second digit. For example, use 2500 to specify a resolution of 2.5. Set to zero when using the A and B modifiers (see [A - Output Image Width](#) and [B - Output Image Height](#) on page 166).

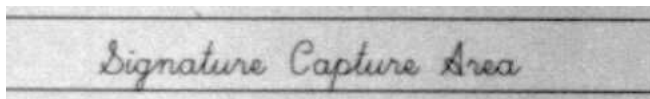
Example of Resolution set to 0R:



Example of Resolution set to



Example of Resolution set to



S - Bar Code Aspect Ratio

All dimensions used in IMGBOX are measured as multiples of the minimum element size of the bar code. The bar code aspect ratio allows you to set the ratio of the bar code height to the narrow element width. In the example, the narrow element width is .010 inches and the bar code height is 0.400 inches, resulting in a value of $S = 0.4/0.01 = 40$.

W - Width of Signature Capture Area

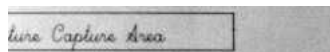
The width of the signature capture area must be measured in inches divided by .01. In the example, the width of the area to be captured is 2.4 inches, resulting in a value of $W = 2.4/0.01 = 240$. (A value of 245 was used in the example to accommodate a slightly wider image area.)

Example: *IMGBOX245w37h55y.*

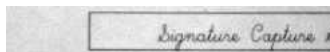
X - Horizontal Bar Code Offset

The horizontal bar code offset allows you to offset the horizontal center of the signature capture area. Positive values move the horizontal center to the right and negative values to the left. Measurements are in multiples of the minimum bar width.

Example of Horizontal Offset set to



Example of Horizontal Offset set to -



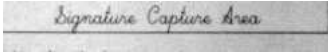
Y - Vertical Bar Code Offset

The vertical bar code offset allows you to offset the vertical center of the signature capture area. Negative numbers indicate that the signature capture is above the bar code, and positive numbers indicate that the area is below the bar code. Measurements are in multiples of the minimum bar width.

Example of Vertical Offset set to -7Y:



Example of Vertical Offset set to 65Y:



RF Default Imaging Device

The scan engine supports imaging command processing (IMGSHF, IMGSHF, IMGSHF) so that EZConfig-Scanning (see page [173](#)) and other applications are able to perform imaging functions as if they were communicating directly with a scanner. To accomplish this, the scanner uses a menu command called RF_DID (RF Default Imaging Device). RF_DID is the name of the scanner (BT_NAM) that is to receive imaging commands. The default for RF_DID is "*" indicating that imaging commands are to be sent to all associated scanners. Change this setting to RF_DID-scanner_name to ensure that they are sent to a particular scanner.

To Add a Test Code I.D. Prefix to All Symbologies

This selection allows you to turn on transmission of a Code I.D. before the decoded symbology. (See the [Symbology Charts](#), beginning on page 209) for the single character code that identifies each symbology.) This action first clears all current prefixes, then programs a Code I.D. prefix for all symbologies. This is a temporary setting that will be removed when the unit is power cycled.



PRECA2,BK2995C80!

Add Code I.D. Prefix to
All Symbologies (Temporary)

Show Software Revision

Scan the bar code below to output the current software revision, unit serial number, and other product information for both the scan engine and base.



REVINF.

Show Software Revision

Show Data Format

Scan the bar code below to show current data format settings.



DFMBK3?.

Data Format Settings

Test Menu

When you scan the **Test Menu On** code, then scan a programming code in this manual, the scan engine displays the content of a programming code. The programming function will still occur, but in addition, the content of that programming code is output to the terminal.

Note: *This feature should not be used during normal scan engine operation.*



TotalFreedom

TotalFreedom is an open system architecture that makes it possible for you create applications that reside on your scan engine. Decoding apps and Data Formatting apps can be created using TotalFreedom. For further information about TotalFreedom, go to our website at www.honeywellaidc.com.

Application Plug-Ins (Apps)

Any apps that you are using can be turned off or on by scanning the following bar codes. Apps are stored in groups: Decoding, and Formatting. You can enable and disable these groups of apps by scanning that group's **On** or **Off** bar code below. You can also scan the **List Apps** bar code to output a list of all your apps.



PLGDCE1.
* Decoding Apps On



PLGDCE0.
Decoding Apps Off



PLGFOE1.
* Formatting Apps On



PLGFOE0.
Formatting Apps Off



PLGINF.
List Apps

Note: You must reset your device in order for the apps setting to take effect.

EZConfig for Scanning Introduction

EZConfig for Scanning provides a wide range of PC-based programming functions that can be performed on a scan engine connected to your PC's COM port. EZConfig for Scanning allows you to download upgrades to the scan engine's firmware, change programmed parameters, and create and print programming bar codes. Using EZConfig for Scanning, you can even save/open the programming parameters for a scan engine. This saved file can be e-mailed or, if required, you can create a single bar code that contains all the customized programming parameters and mail or fax that bar code to any location. Users in other locations can scan the bar code to load in the customized programming.

To communicate with a scan engine, EZConfig for Scanning requires that the PC have at least one available serial communication port, or a serial port emulation using a physical USB port. If you are using the serial port and RS232 cable, an external power supply is required. When using a USB serial port emulation, only a USB cable is required.

EZConfig for Scanning Operations

The EZConfig for Scanning software performs the following operations:

Scan Data

Scan Data allows you to scan bar codes and display the bar code data in a window. Scan Data lets you send serial commands to the scan engine and receive a scan engine response that can be seen in the Scan Data window. The data displayed in the Scan Data window can either be saved in a file or printed.

Configure

Configure displays the programming and configuration data of the scan engine. The scan engine's programming and configuration data is grouped into different categories. Each category is displayed as a tree item under the "Configure" tree node in the application explorer. When one of these tree nodes is clicked, the right-hand side is loaded with the parameters' form belonging to that particular category. The "Configure" tree option has all the programming and configuration parameters specified for a scan engine. You can set or modify these parameters as required. You can later write the modified settings to the scan engine, or save them to a dcf file.

Imaging

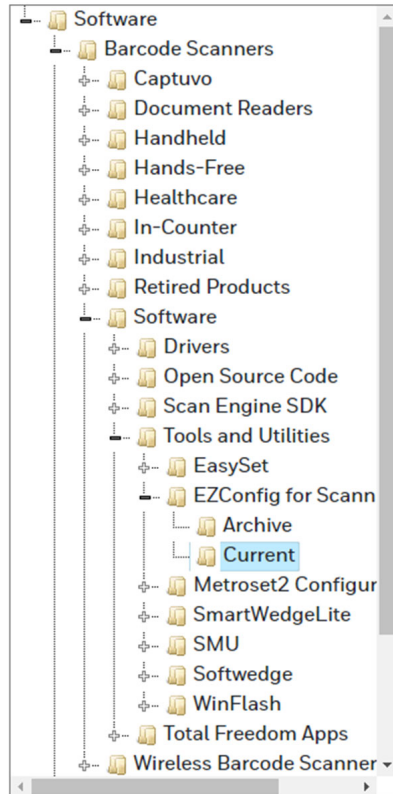
Imaging provides all the image-related functions that a 2D scan engine can perform. You can capture an image using the current settings, and the image will be displayed in an image window. Images captured from the scan engine can be saved to files in different image formats. You can modify the image settings and save the image settings to an INI file, which can be loaded later to capture new images. Imaging also lets you preview the images continuously captured by the scan engine.

Install the EZConfig for Scanning Tool

To download and install EZConfig:

1. Access the Honeywell Technical Support Downloads Portal at <https://hsmftp.honeywell.com/>.
2. Register (if you haven't already), then login.

3. Browse to **Software/Barcode Scanners/Software/Tools and Utilities/EZConfig for Scanning > Current** and download the tool.



4. Double click on the Setup.exe file. Follow the screen prompts to install the EZConfig for Scanning Tool.
5. Open EZConfig to configure your scanner.

Resetting the Factory Defaults



Caution: This selection erases all your settings and resets the scan engine to the original factory defaults. It also disables all plugins.

If you aren't sure what programming options are in your scan engine, or you've changed some options and want to restore the scan engine to factory default settings, first scan the Remove Custom Defaults bar code, then scan Activate Defaults. This resets the scan engine to the factory default settings.



DEFOVR.

Remove Custom Defaults



DEFAULT.

Activate Defaults

The [Menu Commands](#), beginning on page 181 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

SERIAL PROGRAMMING COMMANDS

The serial programming commands can be used in place of the programming bar codes. Both the serial commands and the programming bar codes will program the scan engine. For complete descriptions and examples of each serial programming command, refer to the corresponding programming bar code in this manual.

The device must be set to an RS232 interface (see [page 7](#)). The following commands can be sent via a PC COM port using terminal emulation software.

Conventions

The following conventions are used for menu and query command descriptions:

<i>parameter</i>	A label representing the actual value you should send as part of a command.
[<i>option</i>]	An optional part of a command.
{Data}	Alternatives in a command.
bold	Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.

Menu Command Syntax

Menu commands have the following syntax (spaces have been used for clarity only):

Prefix Tag SubTag {Data} [, SubTag {Data}] [, Tag SubTag {Data}] [...] Storage

Prefix	Three ASCII characters: SYN M CR (ASCII 22,77,13).
Tag	A 3 character case-insensitive field that identifies the desired menu command group. For example, all RS-232 configuration settings are identified with a Tag of 232 .
SubTag	A 3 character case-insensitive field that identifies the desired menu command within the tag group. For example, the SubTag for the RS-232 baud rate is BAD .
Data	The new value for a menu setting, identified by the Tag and SubTag.
Storage	A single character that specifies the storage table to which the command is applied: ! (exclamation point) => performs the command's operation on the device's volatile menu configuration table. . (period) => performs the command's operation on the device's non-volatile menu configuration table. Use the non-volatile table only for semi-permanent changes you want saved through a power cycle.

Note: IMPORTANT: *The scan engine's flash has a limited number of write cycles. When sending commands frequently Honeywell recommends using the volatile (! exclamation point) memory as often as possible.*

Serial Command Example

Set the RS232 baud rate to 115,200: **SYN M CR 232BAD9**. or **\x16M\x0D232BAD9**.

Prefix	Tag	SubTag	Data	Storage
SYN M CR	232	BAD	9	.

Query Commands

Several special characters can be used to query the device about its settings.

^	What is the default value for the setting(s).
?	What is the device's current value for the setting(s).
*	What is the range of possible values for the setting(s). (The device's response uses a dash (-) to indicate a continuous range of values. A pipe () separates items in a list of non-continuous values.)

:Name: Field Usage (Optional)

This command returns the query information from the scan engine.

Tag Field Usage

When a query is used in place of a Tag field, the query applies to the *entire* set of commands available for the particular storage table indicated by the Storage field of the command. In this case, the SubTag and Data fields should not be used because they are ignored by the device.

SubTag Field Usage

When a query is used in place of a SubTag field, the query applies only to the subset of commands available that match the Tag field. In this case, the Data field should not be used because it is ignored by the device.

Data Field Usage

When a query is used in place of the Data field, the query applies only to the specific command identified by the Tag and SubTag fields.

Concatenation of Multiple Commands

Multiple commands can be issued within one Prefix/Storage sequence. Only the Tag, SubTag, and Data fields must be repeated for each command in the sequence. If additional commands are to be applied to the same Tag, then the new command sequence is separated with a comma (,) and only the SubTag and Data fields of the additional command are issued. If the additional command requires a different Tag field, the command is separated from previous commands by a semicolon (;).

Responses

The device responds to serial commands with one of three responses:

ACK	Indicates a good command which has been processed.
ENQ	Indicates an invalid Tag or SubTag command.
NAK	Indicates the command was good, but the Data field entry was out of the allowable range for this Tag and SubTag combination, e.g., an entry for a minimum message length of 100 when the field will only accept 2 characters.

When responding, the device echoes back the command sequence with the status character inserted directly before each of the punctuation marks (the period, exclamation point, comma, or semicolon) in the command.

Examples of Query Commands

In the following examples, a bracketed notation [] depicts a non-displayable response.

Example: What is the range of possible values for Codabar Coding Enable?

Enter: **cbrena*.**
Response: **CBRENA0-1[ACK]**

This response indicates that Codabar Coding Enable (CBRENA) has a range of values from 0 to 1 (off and on).

Example: What is the default value for Codabar Coding Enable?

Enter: **cbrena^.**
Response: **CBRENA1[ACK]**

This response indicates that the default setting for Codabar Coding Enable (CBRENA) is 1, or on.

Example: What is the device's current setting for Codabar Coding Enable?

Enter: **cbrena?.**
Response: **CBRENA1[ACK]**

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on.

Example: What are the device's settings for all Codabar selections?

Enter: **cbrena?.**
Response: **CBRENA1[ACK],**
 SSX0[ACK],
 CK20[ACK],
 CCT1[ACK],
 MIN2[ACK],
 MAX60[ACK],
 DFT[ACK].

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on

- The Start/Stop Character (SSX) is set to 0, or Don't Transmit
- The Check Character (CK2) is set to 0, or Not Required
- Concatenation (CCT) is set to 1, or Enabled
- The Minimum Message Length (MIN) is set to 2 characters
- The Maximum Message Length (MAX) is set to 60 characters
- Default setting (DFT) has no value.

Setting the Custom Defaults

You can set the custom defaults by sending serial commands. Use the following concatenated command format to store custom defaults in your product:

MNUCDF;DEFOVR;<CMD1>;<CMD2>; ... <CMDX>;MNUCDS@

Set Custom Defaults	Remove Custom Default List	Menu Command List	Save Custom Defaults (@ = save to custom default table)
MNUCDF	DEFOVR	<CMD1>;<CMD2>; ... <CMDX>	MNUCDS@

The custom defaults are not applied immediately, to activate send the Activate Defaults command or read the **DEFAULT** bar code below.

Resetting the Custom Defaults

If you want the custom default settings restored to your scan engine, scan the Activate Custom Defaults bar code below. This resets the scan engine to the custom default settings. If there are no custom defaults, it will reset the scan engine to the factory default settings. Any settings that have not been specified through the custom defaults will be defaulted to the factory default settings.



DEFAULT.

Activate Custom Defaults

The charts on the following pages list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Note: To remove custom defaults, see [Resetting the Factory Defaults](#) on page 176.

Menu Commands

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Product Default Settings			
Setting Custom Defaults	Set Custom Defaults	MNUCDF	4
	Save Custom Defaults	MNUCDS	4
Resetting the Custom Defaults	Activate Custom Defaults	DEFAULT	5
Resetting the Factory Defaults	Remove Custom Defaults	DEFOVR	176
Programming the Interface			

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
RS232 Interface	RS232 Serial Port	TERMID0;232BAD9;23 2WRD2	7
Plug and Play Codes: USB	USB Keyboard (PC)	PAP124	8
	USB Keyboard (Mac)	PAP125	8
	USB HID	TERMID131	9
	USB Serial	TERMID130	9
	CTS/RTS Emulation On	USBCTS1	9
	CTS/RTS Emulation Off*	USBCTS0	9
	ACK/NAK Mode On	USBACK1	9
	ACK/NAK Mode Off*	USBACK0	9
Remote MasterMind for USB	*ReM Off	REMIFC0	10
	ReM On	REMIFC1	10
Program Keyboard Country	*U.S.A.	KBDCTY0	10
	Albania	KBDCTY35	10
	Azeri (Cyrillic)	KBDCTY81	10
	Azeri (Latin)	KBDCTY80	10
	Belarus	KBDCTY82	10
	Belgium	KBDCTY1	11
	Bosnia	KBDCTY33	11
	Brazil	KBDCTY16	11
	Brazil (MS)	KBDCTY59	11
	Bulgaria (Cyrillic)	KBDCTY52	11
	Bulgaria (Latin)	KBDCTY53	11
	Canada (French legacy)	KBDCTY54	11
	Canada (French)	KBDCTY18	11
	Canada (Multilingual)	KBDCTY55	11
	Croatia	KBDCTY32	11
	Czech	KBDCTY15	11
	Czech (Programmers)	KBDCTY40	11
	Czech (QWERTY)	KBDCTY39	12
	Czech (QWERTZ)	KBDCTY38	12
	Denmark	KBDCTY8	12
	Dutch (Netherlands)	KBDCTY11	12
	Estonia	KBDCTY41	12
	Faeroese	KBDCTY83	12
	Finland	KBDCTY2	12
	France	KBDCTY3	12

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	Gaelic	KBDCTY84	12
	Germany	KBDCTY4	12
	Greek	KBDCTY17	12
	Greek (220 Latin)	KBDCTY64	12
	Greek (220)	KBDCTY61	13
	Greek (319 Latin)	KBDCTY65	13
	Greek (319)	KBDCTY62	13
	Greek (Latin)	KBDCTY63	13
	Greek (MS)	KBDCTY66	13
	Greek (Polytonic)	KBDCTY60	13
	Hebrew	KBDCTY12	13
	Hungarian (101 key)	KBDCTY50	13
	Hungary	KBDCTY19	13
	Iceland	KBDCTY75	13
	Irish	KBDCTY73	13
	Italian (142)	KBDCTY56	13
	Italy	KBDCTY5	14
	Japan ASCII	KBDCTY28	14
	Kazakh	KBDCTY78	14
	Kyrgyz (Cyrillic)	KBDCTY79	14
	Latin America	KBDCTY14	14
	Latvia	KBDCTY42	14
	Latvia (QWERTY)	KBDCTY43	14
	Lithuania	KBDCTY44	14
	Lithuania (IBM)	KBDCTY45	14
	Macedonia	KBDCTY34	14
	Malta	KBDCTY74	14
	Mongolian (Cyrillic)	KBDCTY86	14
	Norway	KBDCTY9	15
	Poland	KBDCTY20	15
	Polish (214)	KBDCTY57	15
	Polish (Programmers)	KBDCTY58	15
	Portugal	KBDCTY13	15
	Romania	KBDCTY25	15
	Russia	KBDCTY26	15
	Russian (MS)	KBDCTY67	15
	Russian (Typewriter)	KBDCTY68	15

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	SCS	KBDCTY21	15
	Serbia (Cyrillic)	KBDCTY37	15
	Serbia (Latin)	KBDCTY36	15
	Slovakia	KBDCTY22	16
	Slovakia (QWERTY)	KBDCTY49	16
	Slovakia (QWERTZ)	KBDCTY48	16
	Slovenia	KBDCTY31	16
	Spain	KBDCTY10	16
	Spanish variation	KBDCTY51	16
	Sweden	KBDCTY23	16
	Switzerland (French)	KBDCTY29	16
	Switzerland (German)	KBDCTY6	16
	Tatar	KBDCTY85	16
	Turkey F	KBDCTY27	16
	Turkey Q	KBDCTY24	16
	Ukrainian	KBDCTY76	17
	United Kingdom	KBDCTY7	17
	United States (Dvorak right)	KBDCTY89	17
	United States (Dvorak left)	KBDCTY88	17
	United States (Dvorak)	KBDCTY87	17
	United States (International)	KBDCTY30	17
	Uzbek (Cyrillic)	KBDCTY77	17
Keyboard Conversion	*Keyboard Conversion Off	KBDCNV0	18
	Convert all Characters to Upper Case	KBDCNV1	18
	Convert all Characters to Lower Case	KBDCNV1	19
Keyboard Style	*Regular	KBDSTY0	17
	Caps Lock	KBDSTY1	17
	Shift Lock	KBDSTY2	18
	Automatic Caps Lock	KBDSTY6	18
	Emulate External Keyboard	KBDSTY5	18
Control Character Output	*Control Character Output Off	KBDNPE0	19
	*Control Character Output On	KBDNPE1	19
Keyboard Modifiers	*Control + X Off	KBDCAS0	20
	DOS Mode Control + X	KBDCAS1	20
	Windows Mode Control + X	KBDCAS2	20
	Windows Mode Prefix/Suffix Off	KBDCAS3	20

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	DOS Mode Control +X Mode On with Windows Mode Prefix/Suffix	KBDCAS4	20
	*Turbo Mode Off	KBDTMD0	20
	Turbo Mode On	KBDTMD1	20
	*Numeric Keypad Off	KBDNPS0	20
	Numeric Keypad On	KBDNPS1	20
	*Auto Direct Connect Off	KBDADC0	21
	Auto Direct Connect On	KBDADC1	21
Baud Rate	300 BPS	232BAD0	21
	600 BPS	232BAD1	21
	1200 BPS	232BAD2	21
	2400 BPS	232BAD3	21
	4800 BPS	232BAD4	21
	9600 BPS	232BAD5	21
	19200 BPS	232BAD6	22
	38400 BPS	232BAD7	22
	57600 BPS	232BAD8	22
	*115200 BPS	232BAD9	22
Word Length: Data Bits, Stop Bits, and Parity	7 Data, 1 Stop, Parity Even	232WRD3	22
	7 Data, 1 Stop, Parity None	232WRD0	22
	7 Data, 1 Stop, Parity Odd	232WRD6	22
	7 Data, 2 Stop, Parity Even	232WRD4	22
	7 Data, 2 Stop, Parity None	232WRD1	22
	7 Data, 2 Stop, Parity Odd	232WRD7	23
	8 Data, 1 Stop, Parity Even	232WRD5	23
	*8 Data, 1 Stop, Parity None	232WRD2	23
	8 Data, 1 Stop, Parity Odd	232WRD8	23
	8 Data, 1 Stop, Parity Mark		23
RS232 Receiver Time-out	Range 0 - 300 seconds	232LPT###	23

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
RS232 Handshaking	*RTS/CTS Off	232CTS0	24
	Flow Control, No Timeout	232CTS1	24
	Two-Direction Flow Control	232CTS2	24
	Flow Control with Timeout	232CTS3	24
	RS232 Timeout	232DEL####	24
	*XON/XOFF Off	232XON0	25
	XON/XOFF On	232XON1	24
	*ACK/NAK Off	232ACK0	25
	ACK/NAK On	232ACK1	25
Input/Output Selections			
Power Up Beeper	Power Up Beeper Off - Scanner	BEPPWRO	27
	*Power Up Beeper On - Scanner	BEPPWR1	27
Beep on BEL Character	Beep on BEL On	BELBEP1	27
	*Beep on BEL Off	BELBEP0	27
Beeper - Good Read	Off	BEPBEP0	28
	*On	BEPBEP1	28
Beeper Volume - Good Read	Off	BEPLVL0	28
	Low	BEPLVL1	28
	Medium	BEPLVL2	28
	*High	BEPLVL3	28
Beeper Pitch - Good Read (Frequency)	Low (1600) (min 400Hz)	BEPFQ11600	28
	*Medium 2700)	BEPFQ12700	29
	High (4200) (max 9000Hz)	BEPFQ14200	29
Beeper Pitch - Error (Frequency)	*Razz (250) (min 200Hz)	BEPFQ2800	29
	Medium (3250)	BEPFQ23250	29
	High (4200) (max 9000Hz)	BEPFQ24200	29
Beeper Duration - Good Read	*Normal Beep	BEPBIP0	29
	Short Beep	BEPBIP1	29
LED - Good Read	Off	BEPLED0	30
	*On	BEPLED1	30
Number of Beeps - Error	*1	BEPERR3	30
	Range 1 - 9	BEPERR#	30
Number of Beeps - Good Read	*1	BEPRPT1	30
	Range 1 - 9	BEPRPT#	30
Good Read Delay	*No Delay	DLYGRD0	31
	Short Delay (500 ms)	DLYGRD500	31
	Medium Delay (1000 ms)	DLYGRD1000	31
	Long Delay (1500 ms)	DLYGRD1500	31

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
User-Specified Good Read Delay	Range 0 - 30,000 ms	DLYGRD#####	31
Beeper Signal Inversion	PWM Active Low (Idle High)	BEPINV0	28
	*PWM Active High (Idle Low)	BEPINV1	28
	CD Active Low (Idle high)	BEPINV2	28
	DC Active High (Idle low)	BEPINV3	28
Mobile Phone Read Mode	Streaming Presentation - Mobile Phone	PAPSPC	32
Presentation Mode	Presentation Mode	PAPTPR	32
Presentation Mode - Full Depth of Field	Presentation Mode - Full Depth of Field	PAPTPE	33
Streaming Presentation	Streaming Presentation Mode - Normal	PAPSPN	33
	Streaming Presentation Mode - Enhanced	PAPSPE	33
LED Illumination - Presentation Mode	Off	PWRLDC0	33
	Low	PWRLDC100	33
	*High	PWRLDC150	33
Idle Illumination - Presentation Mode	Off	PWRIDL0	34
	Low	PWRIDL7	34
	Medium	PWRIDL15	34
	*High	PWRIDL50	34
Presentation LED Behavior After Decode	*LEDs On	TRGPCK1	35
	LEDs Off	TRGPCK0	35
Presentation Centering Window	Presentation Centering On	PDCWIN1	35
	*Presentation Centering Off	PDCWIN0	35
	Left of Presentation Centering Window (*40%)	PDCLFT###	37
	Right of Presentation Centering Window (*60%)	PDCRGT###	37
	Top of Presentation Centering Window (*40%)	PDCTOP###	37
	Bottom of Presentation Centering Window (*60%)	PDCBOT###	37
CodeGate	*CodeGate Off Out-of-Stand	AOSCGD0.	37
	CodeGate On Out-of-Stand	AOSCGD1.	37
Character Activation Mode	*Off	HSTCEN0	38
	On	HSTCEN1	38
Activation Character (Range 0-255)	*12 [DC2]	HSTACH###	38
End Character Activation After Good Read	*Do Not End Character Activation After Good Read	HSTCGD0	38
	End Character Activation After Good Read	HSTCGD1	38

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Character Activation Timeout (Range 1 - 300,000)	*30,000 ms	HSTCDT#####	38
Character Deactivation Mode	*Off	HSTDEN0	39
	On	HSTDEN1	39
Deactivation Character (Range 0-255)	*14 [DC4]	HSTDCH###	39
Poor Quality Codes	Poor Quality 1D Reading On	DECLDI1	40
	*Poor Quality 1D Reading Off	DECLDI0	40
	Poor Quality PDF Reading On	PDFXPR1	40
	*Poor Quality PDF Reading Off	PDFXPR0	40
Decoding Security	Very High Reading Tolerance	DECSEC0	40
	High Reading Tolerance	DECSEC1	40
	*Medium Reading Tolerance	DECSEC2	40
	Low Reading Tolerance	DECSEC3	40
Decode Time-Out	0-2500 ms	DECTMX####	41
Reread Delay	Short (500 ms)	DLYRRD500	41
	*Medium (750 ms)	DLYRRD750	41
	Long (1000 ms)	DLYRRD1000	42
	Extra Long (2000 ms)	DLYRRD2000	42
User-Specified Reread Delay	Range 0 - 30,000 ms	DLYRRD#####	42
2D Reread Delay	*2D Reread Delay Off	DLY2RR0	42
	Short (1000ms)	DLY2RR1000	42
	Medium (2000ms)	DLY2RR2000	42
	Long (3000ms)	DLY2RR3000	42
	Extra Long (4000ms)	DLY2RR4000	42
Illumination Lights	*Lights On	SCNLED1	43
	Lights Off	SCNLED0	43
	Lights On - Mobile Phone Reading	SCNLED3	43
Centering Window	Centering On	DECWIN1	44
	*Centering Off	DECWIN0	44
	Top of Centering Window (*40%)	DECTOP###	44
	Bottom of Centering Window (*60%)	DECBOT###	44
Preferred Symbology	On	PRFENA1	45
	*Off	PRFENA0	45
	High Priority Symbology	PRFCOD##	45
	Low Priority Symbology	PRFBLK##	46
	Preferred Symbology Time-out (*500) Range 100-3000	PRFPTO####	46
	Preferred Symbology Default	PRFDFT	46

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Output Sequence Editor	Enter Sequence	SEQBLK	49
	Default Sequence	SEQDFT	49
Partial Sequence	Transmit Partial Sequence	SEQTTS1	49
	*Discard Partial Sequence	SEQTTS0	49
Require Output Sequence	Required	SEQ_EN2	50
	On/Not Required	SEQ_EN1	50
	*Off	SEQ_EN0	50
Multiple Symbols	On	SHOTGN1	50
	*Off	SHOTGN0	50
No Read	On	SHWNRD1	51
	*Off	SHWNRD0	51
Video Reverse	Video Reverse Only	VIDLDP1	51
	Video Reverse and Standard Bar Codes	VIDLDP2	51
	*Video Reverse Off	VIDLDP0	51
Working Orientation	*Upright	ROTATN0	52
	Vertical, Bottom to Top (Rotate CCW 90°)	ROTATN1	52
	Upside Down	ROTATN2	52
	Vertical, Top to Bottom (Rotate CW 90°)	ROTATN3	52
Prefix/Suffix Selections			
Add CR Suffix to All Symbolologies		VSUFCR	55
Prefix	Add Prefix	PREBK2##	55
	Clear One Prefix	PRECL2	55
	Clear All Prefixes	PRECA2	55
Suffix	Add Suffix	SUFBK2##	56
	Clear One Suffix	SUFCL2	56
	Clear All Suffixes	SUFCA2	56
Function Code Transmit	*Enable	RMVFNC0	56
	Disable	RMVFNC1	56
Intercharacter Delay	Range 0 - 1000 (5ms increments)	DLYCHR##	57
User Specified Intercharacter Delay	Delay Length 0 - 1000 (5ms increments)	DLYCRX##	57
	Character to Trigger Delay	DLY_XX##	57
Interfunction Delay	Range 0 - 1000 (5ms increments)	DLYFNC##	58
Intermessage Delay	Range 0 - 1000 (5ms increments)	DLYMSG##	58

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Data Formatter Selections			
Data Format Editor	*Default Data Format (None)	DFMDF3	60
	Enter Data Format	DFMBK3##	61
	Clear One Data Format	DFMCL3	61
	Clear All Data Formats	DFMCA3	61
Data Formatter	Data Formatter Off	DFM_EN0	75
	*Data Formatter On, Not Required, Keep Prefix/Suffix	DFM_EN1	75
	Data Format Required, Keep Prefix/Suffix	DFM_EN2	76
	Data Formatter On, Not Required, Drop Prefix/Suffix	DFM_EN3	75
	Data Format Required, Drop Prefix/Suffix	DFM_EN4	76
Data Format Non-Match Error Tone	*Data Format Non-Match Error Tone On	DFMDEC0	76
	Data Format Non-Match Error Tone Off	DFMDEC1	76
Primary/Alternate Data Formats	Primary Data Format	ALTFNM0	76
	Data Format 1	ALTFNM1	76
	Data Format 2	ALTFNM2	77
	Data Format 3	ALTFNM3	77
Single Scan Data Format Change	Single Scan-Primary Data Format	VSAF_0	77
	Single Scan-Data Format 1	VSAF_1	77
	Single Scan-Data Format 2	VSAF_2	77
	Single Scan-Data Format 3	VSAF_3	77
Symbologies			
All Symbologies	All Symbologies Off	ALLENA0	80
	All Symbologies On	ALLENA1	80
Codabar	Default All Codabar Settings	CBRDFT	81
	Off	CBRENA0	81
	*On	CBRENA1	81
Codabar Start/Stop Char.	*Don't Transmit	CBRSSX0	81
	Transmit	CBRSSX1	81
Codabar Check Char.	*No Check Character	CBRCK20	82
	Validate Modulo 16, But Don't Transmit	CBRCK21	82
	Validate Modulo 16, and Transmit	CBRCK22	82

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Codabar Concatenation	*Off	CBRCCT0	82
	On	CBRCCT1	82
	Require	CBRCCT2	82
Codabar Message Length	Minimum (2 - 60) *4	CBRMIN##	83
	Maximum (2 - 60) *60	CBRMAX##	83
Code 39	Default All Code 39 Settings	C39DFT	83
	Off	C39ENAO	83
	*On	C39ENA1	83
Code 39 Start/Stop Char.	*Don't Transmit	C39SSX0	83
	Transmit	C39SSX1	83
Code 39 Check Char.	*No Check Char.	C39CK20	84
	Validate, But Don't Transmit	C39CK21	84
	Validate, and Transmit	C39CK22	84
Code 39 Message Length	Minimum (0 - 48) *0	C39MIN##	84
	Maximum (0 - 48) *48	C39MAX##	84
Code 39 Redundancy	Range (0-10) *0	C39VOT##	85
Code 39 Append	*Off	C39APP0	85
	On	C39APP1	85
Code 32 Pharmaceutical (PARAF)	*Off	C39B320	85
	On	C39B321	85
Code 39 Full ASCII	*Off	C39ASC0	86
	On	C39ASC1	86
Code 39 Code Page	Code 39 Code Page	C39DCP	86
Code 39 Unconventional Inter-Character Gaps	*Off	C39UIC0	87
	On	C39UIC1	87
Trioptic Code	*Off	TRIENAO	87
	On	TRIENA1	87
Trioptic Redundancy	Range (0-10) *0	TRIVOT##	87
Interleaved 2 of 5	Default All Interleaved 2 of 5 Settings	I25DFT	88
	Off	I25ENAO	88
	*On	I25ENA1	88
Interleaved 2 of 5 Check Digit	*No Check Char.	I25CK20	88
	Validate, But Don't Transmit	I25CK21	88
	Validate, and Transmit	I25CK22	89

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Interleaved 2 of 5 Message Length	Minimum (2 - 80) *4	I25MIN##	89
	Maximum (2 - 80) *80	I25MAX##	89
FEBRABAN Decode	*Off	I25PAY0	89
	On	I25PAY1	89
NEC 2 of 5	Default All NEC 2 of 5 Settings	N25DFT	89
	Off	N25ENA0	90
	*On	N25ENA1	90
NEC 2 of 5 Check Digit	*No Check Char.	N25CK20	90
	Validate, But Don't Transmit	N25CK21	90
	Validate, and Transmit	N25CK22	90
NEC 2 of 5 Message Length	Minimum (2 - 80) *4	N25MIN##	90
	Maximum (2 - 80) *80	N25MAX##	90
NEC 2 of 5 Redundancy	Range (0-10) *0	N25VOT##	91
Code 93	Default All Code 93 Settings	C93DFT	91
	Off	C93ENA0	91
	*On	C93ENA1	91
Code 93 Message Length	Minimum (0 - 80) *0	C93MIN##	92
	Maximum (0 - 80) *80	C93MAX##	92
Code 93 Redundancy	Range (0-10) *0	C93VOT##	92
Code 93 Append	On	C93APP1	92
	*Off	C93APP0	92
Code 93 Code Page	Code 93 Code Page	C93DCP	93
Straight 2 of 5 Industrial	Default All Straight 2 of 5 Industrial Settings	R25DFT	93
	*Off	R25ENA0	93
	On	R25ENA1	93
Straight 2 of 5 Industrial Message Length	Minimum (1 - 48) *4	R25MIN##	93
	Maximum (1 - 48) *48	R25MAX##	93
Straight 2 of 5 Industrial Redundancy	Range (0-10) *0	R25VOT##	94
Straight 2 of 5 IATA	Default All Straight 2 of 5 IATA Settings	A25DFT	94
	*Off	A25ENA0	94
	On	A25ENA1	94
Straight 2 of 5 IATA Message Length	Minimum (1 - 48) *4	A25MIN##	94
	Maximum (1 - 48) *48	A25MAX##	94
Straight 2 of 5 IATA Redundancy	Range (0-10) *0	A25VOT##	95

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Matrix 2 of 5	Default All Matrix 2 of 5 Settings	X25DFT	95
	*Off	X25ENA0	95
	On	X25ENA1	95
Matrix 2 of 5 Message Length	Minimum (1 - 80) *4	X25MIN##	96
	Maximum (1 - 80) *80	X25MAX##	96
Matrix 2 of 5 Redundancy	Range (0-10) *0	X25VOT##	96
Code 11	Default All Code 11 Settings	C11DFT	96
	*Off	C11ENA0	96
	On	C11ENA1	96
Code 11 Check Digits Required	1 Check Digit	C11CK20	97
	*2 Check Digits	C11CK21	97
Code 11 Message Length	Minimum (1 - 80) *4	C11MIN##	97
	Maximum (1 - 80) *80	C11MAX##	97
Code 11 Redundancy	Range (0-10) *0	C11VOT##	97
Code 128	Default All Code 128 Settings	128DFT	98
	Off	128ENA0	98
	*On	128ENA1	98
ISBT Concatenation	*Off	ISBENA0	98
	On	ISBENA1	98
ISBT 128 Concatenation Mode	None	ISBCCT0	98
	*Required	ISBCCT1	98
	Optional	ISBCCT2	99
ISBT 128 Strict Concatenation	*On	ISBSTR1	99
	Off	ISBSTRO	99
ISBT 128 Concatenation Alignment	On	ISBALI1	99
	*Off	ISBALI0	99
ISBT 128 Alternate ID	On	ISBALT1	100
	*Off	ISBALTO	100
Code 128 Message Length	Minimum (0 - 80) *0	128MIN##	100
	Maximum (0 - 90) *80	128MAX##	100
Code 128 Append	*On	128APP1	100
	Off	128APP0	100
Code 128 Code Page	Code 128 Code Page (*2)	128DCP##	101
Code 128 Redundancy	Range (0-10) *0	128VOT##	101

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
GS1-128	Default All GS1-128 Settings	GS1DFT	101
	*On	GS1ENA1	102
	Off	GS1ENA0	102
GS1-128 Message Length	Minimum (1 - 80) *1	GS1MIN	102
	Maximum (0 - 80) *80	GS1MAX	102
GS1-128 Redundancy	Range (0-10) *0	GS1VOT##	102
Telepen	Default All Telepen Settings	TELDFT	102
	*Off	TELENA0	103
	On	TELENA1	103
Telepen Output	*AIM Telepen Output	TELOLD0	103
	Original Telepen Output	TELOLD1	103
Telepen Message Length	Minimum (1 - 60) *1	TELMIN##	103
	Maximum (1 - 60) *60	TELMAX##	103
Telepen Redundancy	Range (0-10) *0	TELVOT##	103
UPC-A	Default All UPC-A Settings	UPADFT	104
	Off	UPBENA0	104
	*On	UPBENA1	104
UPC-A Check Digit	Off	UPACKX0	104
	*On	UPACKX1	104
UPC-A Number System	Off	UPANSX0	105
	*On	UPANSX1	105
UPC-A Redundancy	Range (0-10) *0	UPAVOT##	105
UPC-A 2 Digit Addenda	*Off	UPAAD20	105
	On	UPAAD21	105
UPC-A 5 Digit Addenda	*Off	UPAAD50	106
	On	UPAAD51	105
UPC-A Addenda Required	*Not Required	UPAARQ0	106
	Required	UPAARQ1	106
Addenda Timeout	Range (0-65535) *100	DLYADD####	106
UPC-A Addenda Separator	Off	UPAADS0	106
	*On	UPAADS1	106
UPC-A/EAN-13 with Extended Coupon Code	*Off	CPNENA0	107
	Allow Concatenation	CPNENA1	107
	Require Concatenation	CPNENA2	107
Coupon GS1 DataBar Output	GS1 Output Off	CPNGS10	107
	GS1 Output On	CPNGS11	107

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
UPC-E0	Default All UPC-E Settings	UPEDFT	108
	Off	UPEEN00	108
	*On	UPEEN01	108
UPC-E0 Expand	*Off	UPEEXP0	108
	On	UPEEXP1	108
UPC-E0 Redundancy	Range (0-10) *0	UPEVOT##	108
UPC-E0 Addenda Required	Required	UPEARQ1	109
	*Not Required	UPEARQ0	109
UPC-E0 Addenda Separator	*On	UPEADS1	109
	Off	UPEADS0	109
UPC-E0 Check Digit	Off	UPECKX0	109
	*On	UPECKX1	109
UPC-E0 Leading Zero	Off	UPENSX0	110
	*On	UPENSX1	110
UPC-E0 Addenda	2 Digit Addenda On	UPEAD21	110
	*2 Digit Addenda Off	UPEAD20	110
	5 Digit Addenda On	UPEAD51	110
	*5 Digit Addenda Off	UPEAD50	110
UPC-E1	*Off	UPEEN10	111
	On	UPEEN11	111
EAN/JAN-13	Default All EAN/JAN Settings	E13DFT	111
	Off	E13ENA0	111
	*On	E13ENA1	111
Convert UPC-A to EAN-13	UPC-A Converted to EAN-13	UPAENA0	111
	Do not Convert UPC-A	UPAENA1	111
EAN/JAN-13 Check Digit	Off	E13CKX0	112
	*On	E13CKX1	112
EAN/JAN-13 Redundancy	Range (0-10) *0	E13VOT##	112
EAN/JAN-13 2 Digit Addenda	2 Digit Addenda On	E13AD21	112
	*2 Digit Addenda Off	E13AD20	112
	5 Digit Addenda On	E13AD51	112
	*5 Digit Addenda Off	E13AD50	113
EAN/JAN-13 Addenda Required	*Not Required	E13ARQ0	113
	Required	E13ARQ1	113
EAN/JAN-13 Beginning with 290 Addenda Required	*Don't Require 5 Digit Addenda	ARQ2900	113
	Require 5 Digit Addenda	ARQ2901	113

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
EAN/JAN-13 Beginning with 378/379 Addenda Required	*Don't Require Addenda	ARQ3780	114
	Require 2 Digit Addenda	ARQ3781	114
	Require 5 Digit Addenda	ARQ3782	114
	Require 2 or 5 Digit Addenda	ARQ3783	114
EAN/JAN-13 Beginning with 414/419 Addenda Required	*Don't Require Addenda	ARQ4140	114
	Require 2 Digit Addenda	ARQ4141	114
	Require 5 Digit Addenda	ARQ4142	114
	Require 2 or 5 Digit Addenda	ARQ4143	114
EAN/JAN-13 Beginning with 434/439 Addenda Required	*Don't Require Addenda	ARQ4340	115
	Require 2 Digit Addenda	ARQ4341	115
	Require 5 Digit Addenda	ARQ4342	115
	Require 2 or 5 Digit Addenda	ARQ4343	115
EAN/JAN-13 Beginning with 491 Addenda Required	*Don't Require Addenda	ARQ4910	116
	Require 2 Digit Addenda	ARQ4911	116
	Require 5 Digit Addenda	ARQ4912	116
	Require 2 or 5 Digit Addenda	ARQ4913	116
EAN/JAN-13 Beginning with 977 Addenda Required	*Don't Require 2 Digit Addenda	ARQ9770	116
	Require 2 Digit Addenda	ARQ9771	116
EAN/JAN-13 Beginning with 978 Addenda Required	*Don't Require 5 Digit Addenda	ARQ9780	117
	Require 5 Digit Addenda	ARQ9781	117
EAN/JAN-13 Beginning with 979 Addenda Required	*Don't Require 5 Digit Addenda	ARQ9790	117
	Require 5 Digit Addenda	ARQ9791	117
EAN/JAN-13 Addenda Separator	Off	E13ADS0	118
	*On	E13ADS1	118
ISBN Translate	*Off	E13ISB0	118
	On	E13ISB1	118
EAN/JAN-8	Default All EAN/JAN 8 Settings	EA8DFT	119
	Off	EA8ENAO	119
	*On	EA8ENA1	119
EAN/JAN-8 Check Digit	Off	EA8CKX0	119
	*On	EA8CKX1	119
EAN/JAN-8 Redundancy	Range (0-10) *0	EA8VOT##	119
EAN/JAN-8 Addenda	*2 Digit Addenda Off	EA8AD20	120
	2 Digit Addenda On	EA8AD21	120
	5 Digit Addenda On	EA8AD51	120
	*5 Digit Addenda Off	EA8AD50	120

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
EAN/JAN-8 Addenda Required	*Not Required	EA8ARQ0	120
	Required	EA8ARQ1	120
EAN/JAN-8 Addenda Separator	Off	EA8ADS0	120
	*On	EA8ADS1	120
MSI	Default All MSI Settings	MSIDFT	121
	*Off	MSIENA0	121
	On	MSIENA1	121
MSI Check Character	*Validate Type 10, but Don't Transmit	MSICHK0	121
	Validate Type 10 and Transmit	MSICHK1	121
	Validate 2 Type 10 Chars, but Don't Transmit	MSICHK2	121
	Validate 2 Type 10 Chars and Transmit	MSICHK3	121
	Validate Type 10 then Type 11 Char, but Don't Transmit	MSICHK4	122
	Validate Type 10 then Type 11 Char and Transmit	MSICHK5	122
	Disable MSI Check Characters	MSICHK6	122
MSI Message Length	Minimum (4 - 48) *4	MSIMIN##	122
	Maximum (4 - 48) *48	MSIMAX##	122
MSI Redundancy	Range (0-10) *0	MSIVOT##	122
GS1 DataBar Omnidirectional	Default All GS1 DataBar Omnidirectional Settings	RSSDFT	123
	Off	RSEENA0	123
	*On	RSEENA1	123
GS1 DataBar Omnidirectional	Range (0-10) *0	RSSVOT##	123
GS1 DataBar Limited	Default All GS1 DataBar Limited Settings	RSLDFT	123
	Off	RSELENA0	124
	*On	RSELENA1	124
GS1 DataBar Limited Redundancy	Range (0-10) *0	RSLVOT##	124
GS1 DataBar Expanded	Default All GS1 DataBar Expanded Settings	RSEDFT	124
	Off	RSEENA0	124
	*On	RSEENA1	124
GS1 DataBar Expanded Msg. Length	Minimum (4 - 74) *4	RSEMIN##	125
	Maximum (4 - 74) *74	RSEMAX##	125
GS1 DataBar Expanded Redundancy	Range (0-10) *0	RSEVOT##	125

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Codablock A	Default All Codablock A Settings	CBADFT	126
	*Off	CBAENAO	126
	On	CBAENA1	126
Codablock A Msg. Length	Minimum (1 - 600) *1	CBAMIN####	126
	Maximum (1 - 600) *600	CBAMAX####	126
Codablock F	Default All Codablock F Settings	CBFDFT	126
	*Off	CBFENAO	127
	On	CBFENA1	127
Codablock F Msg. Length	Minimum (1 - 2048) *1	CBFMIN####	127
	Maximum (1 - 2048) *2048	CBFMAX####	127
Label Code	On	LBLENA1	126
	* Off	LBLENA0	126
PDF417	Default All PDF417 Settings	PDFDFT	128
	*On	PDFENA1	128
	Off	PDFENAO	128
PDF417 Msg. Length	Minimum (1-2750) *1	PDFMIN	128
	Maximum (1-2750) *2750	PDFMAX	128
PDF417 Code Page	PDF417 Code Page	PDFDCP##	128
MacroPDF417	*On	PDFMAC1	129
	Off	PDFMAC0	129
MicroPDF417	Default All Micro PDF417 Settings	MPDDFT	129
	On	MPDENA1	129
	*Off	MPDENA0	129
MicroPDF417 Msg. Length	Minimum (1-366) *1	MPDMIN	129
	Maximum (1-366) *366	MPDMAX	129
MicroPDF417 Code Page	MicroPDF417 Code Page (*30)	MPDDCP##	130
GS1 Composite Codes	On	COMENA1	130
	*Off	COMENAO	130
UPC/EAN Version	On	COMUPC1	131
	*Off	COMUPC0	131
GS1 Composite Codes Msg. Length	Minimum (1-2435) *1	COMMIN	131
	Maximum (1-2435) *2435	COMMAX	131
GS1 Composite Code Code Page	GS1 Composite Code Code Page	COMDCP##	131

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
GS1 Emulation	GS1-128 Emulation	EANEMU1	132
	GS1 DataBar Emulation	EANEMU2	132
	GS1 Code Expansion Off	EANEMU3	132
	EAN8 to EAN13 Conversion	EANEMU4	132
	*GS1 Emulation Off	EANEMU0	132
TCIF Linked Code 39	On	T39ENA1	133
	*Off	T39ENA0	133
QR Code	Default All QR Code Settings	QRCDFT	133
	*On	QRCENA1	133
	Off	QRCENA0	133
QR Code Msg. Length	Minimum (1-7089) *1	QRCMIN	133
	Maximum (1-7089) *7089	QRCMAX	133
QR Code Append	*On	QRCAPP1	134
	Off	QRCAPP0	134
QR Code Page	QR Code Page (*3)	QRCDCP##	134
QR Code No Quiet Zone	On	QRCNQZ1	134
	Off	QRCNQZ1	134
DotCode	Default All DotCode Settings	DOTDFT	135
	On	DOTENA1	135
	*Off	DOTENA0	135
Poor Quality DotCodes	Poor Quality DotCodes On	DOTEXS1	135
	*Poor Quality DotCodes Off	DOTEXS0	135
DotCode Message Length	Minimum (1-2400) *1	DOTMIN####	136
	Maximum (1-2400) *2400	DOTMAX####	136
Digimarc Barcode	Decoder Attempts (0-10) *3	DIGSTR##	136
	Off	DIGENA0	136
	On	DIGIENA1	136
	Uses ID Decoder then Both Decoders	DIGIENA2	136
	*Uses Digimarc Decoder then Both Decoders	DIGIENA3	136
	Uses ID Decoder then Alternates Decoders	DIGIENA4	136
	Uses Digimarc Decoder then Alternates Decoders	DIGIENA5	136
Data Matrix	Default All Data Matrix Settings	IDMDFT	137
	*On	IDMENA1	137
	Off	IDMENA0	137

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Low Contrast Data Matrix Enhancements	*Low Contrast Data Matrix Enhancements On	DPMENA1	138
	Low Contrast Data Matrix Enhancements Off	DPMENA0	138
	Reflective Low Contrast Data Matrix Enhancements On	DPMENA2	138
Data Matrix Small Reflective Barcodes	On	DPMRSZ1	138
	*Off	DPMRSZ0	138
Data Matrix Msg. Length	Minimum (1-3116) *1	IDMMIN	138
	Maximum (1-3116) *3116	IDMMAX	138
Data Matrix Code Page	Data Matrix Code Page (*51)	IDMDCP##	139
Grid Matrix	Default All Grid Matrix Settings	GMXDFT	139
	On	GMXENA1	139
	*Off	GMXENA0	140
Grid Matrix Message Length	Minimum (1-2751) *1	GMXMIN####	140
	Maximum (1-2751) *2751	GMXMAX####	140
MaxiCode	Default All MaxiCode Settings	MAXDFT	140
	*On	MAXENA1	140
	Off	MAXENA0	140
MaxiCode Message Format	Primary Message Only	MAXFMT0	141
	Primary Required, Secondary if Available	MAXFMT1	141
	Both Primary and Secondary Required	MAXFMT2	141
MaxiCode Msg. Length	Minimum (1-150) *1	MAXMIN	141
	Maximum (1-150) *150	MAXMAX	141
Aztec Code	Default All Aztec Code Settings	AZTDFT	141
	*On	AZTENA1	141
	Off	AZTENA0	141
Aztec Code Msg. Length	Minimum (1-3832) *1	AZTMIN	142
	Maximum (1-3832) *3832	AZTMAX	142
Aztec Append	*On	AZTAPP1	142
	Off	AZTAPP0	142
Aztec Code Page	Aztec Code Page (*51)	AZTDCP##	142
Chinese Sensible (Han Xin) Code	Default All Han Xin Code Settings	HX_DFT	143
	On	HX_ENA1	143
	*Off	HX_ENA0	143
Chinese Sensible (Han Xin) Code Msg. Length	Minimum (1-7833) *1	HX_MIN	143
	Maximum (1-7833) *7833	HX_MAX	143
Postal Codes - 2D			

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
2D Postal Codes	*Off	POSTAL0	144
Single 2D Postal Codes	Australian Post On	POSTAL1	144
	British Post On	POSTAL7	144
	Canadian Post On	POSTAL30	144
	Intelligent Mail Bar Code On	POSTAL10	144
	Japanese Post On	POSTAL3	144
	KIX Post On	POSTAL4	144
	Planet Code On	POSTAL5	144
	Postal-4i On	POSTAL9	144
	Postnet On	POSTAL6	145
	Postnet with B and B' Fields On	POSTAL11	145
	InfoMail On	POSTAL2	145
Combination 2D Postal Codes	InfoMail and British Post On	POSTAL8	145
	Intelligent Mail Bar Code and Postnet with B and B' Fields On	POSTAL20	145
	Postnet and Postal-4i On	POSTAL14	145
	Postnet and Intelligent Mail Bar Code On	POSTAL16	145
	Postal-4i and Intelligent Mail Bar Code On	POSTAL17	145
	Postal-4i and Postnet with B and B' Fields On	POSTAL19	145
	Planet and Postnet On	POSTAL12	146
	Planet and Postnet with B and B' Fields On	POSTAL18	146
	Planet and Postal-4i On	POSTAL13	146
	Planet and Intelligent Mail Bar Code On	POSTAL15	146
	Planet, Postnet, and Postal-4i On	POSTAL21	146
	Planet, Postnet, and Intelligent Mail Bar Code On	POSTAL22	146
	Planet, Postal-4i, and Intelligent Mail Bar Code On	POSTAL23	146
	Postnet, Postal-4i, and Intelligent Mail Bar Code On	POSTAL24	146
	Planet, Postal-4i, and Postnet with B and B' Fields On	POSTAL25	146
	Planet, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL26	146
	Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL27	147

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	Planet, Postal-4i, Intelligent Mail Bar Code, and Postnet On	POSTAL28	147
	Planet, Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL29	147
Planet Code Check Digit	Transmit	PLNCKX1	147
	*Don't Transmit	PLNCKX0	147
Postnet Check Digit	Transmit	NETCKX1	147
	*Don't Transmit	NETCKX0	147
Australian Post Interpretation	Bar Output	AUSINT0	148
	Numeric N Table	AUSINT1	148
	Alphanumeric C Table	AUSINT2	148
	Combination N and C Tables	AUSINT3	148
Postal Codes - Linear			
China Post (Hong Kong 2 of 5)	Default All China Post (Hong Kong 2 of 5) Settings	CPCDFT	148
	*Off	CPCENAO	149
	On	CPCENA1	149
China Post (Hong Kong 2 of 5) Msg. Length	Minimum (2 - 80) *4	CPCMIN##	149
	Maximum (2 - 80) *80	CPCMAX##	149
China Post Redundancy	Range (0-10) *0	CPCVOT##	149
Korea Post	Default All Korea Post Settings	KPCDFT	149
	*Off	KPCENAO	150
	On	KPCENA1	150
Korea Post Msg. Length	Minimum (2 - 80) *4	KPCMIN##	150
	Maximum (2 - 80) *48	KPCMAX##	150
Korea Post Check Digit	Transmit Check Digit	KPCCHK1	150
	*Don't Transmit Check Digit	KPCCHK0	150
Imaging Default Commands			
Image Snap	Default all Imaging Commands	IMGDFT	151
	Imaging Style - Decoding	SNPSTY0	152
	*Imaging Style - Photo	SNPSTY1	152
	Imaging Style - Manual	SNPSTY2	152
	Beeper On	SNPBEP1	152
	*Beeper Off	SNPBEP0	152
	*Wait for Trigger Off	SNPTRG0	153
	Wait for Trigger On	SNPTRG1	153
	*LED State - Off	SNPLED0	153
	LED State - On	SNPLED1	153

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	Exposure 1-26 000 microseconds	SNPEXP	153
	*Gain - None	SNPGAN1	154
	Gain - Medium	SNPGAN2	154
	Gain - Heavy	SNPGAN4	154
	Gain - Maximum	SNPGAN8	154
	Target White Value (0-255) *125	SNPWHT###	154
	Delta for Acceptance (0-255) *25	SNPDEL###	154
	Update Tries (0-10) *6	SNPTRY##	155
	Target Set Point Percentage (1-99) *50	SNPPCT##	155
Image Ship	*Infinity Filter - Off	IMGINFO	156
	Infinity Filter - On	IMGINF1	156
	*Compensation Off	IMGCOR0	156
	Compensation On	IMGCOR1	156
	*Pixel Depth - 8 bits/pixel (grayscale)	IMGBPP8	156
	Pixel Depth - 1 bit/pixel (B&W)	IMGBPP1	156
	*Don't Sharpen Edges	IMGEDG0	157
	Sharpen Edges (0-23)	IMGEDG##	157
	*File Format - JPEG	IMGFMT6	157
	File Format - KIM	IMGFMT0	157
	File Format - TIFF binary	IMGFMT1	157
	File Format - TIFF binary group 4, compressed	IMGFMT2	157
	File Format - TIFF grayscale	IMGFMT3	157
	File Format - Uncompressed binary	IMGFMT4	157
	File Format - Uncompressed grayscale	IMGFMT5	157
	File Format - BMP	IMGFMT8	157
	*Histogram Stretch Off	IMGHIS0	158
	Histogram Stretch On	IMGHIS1	158
	*Noise Reduction Off	IMGFSP0	159
	Noise Reduction On	IMGFSP1	159
	Invert Image around X axis	IMGNVX1	158
	Invert Image around Y axis	IMGNVY1	158
	Rotate Image none	IMGROTO	159
	Rotate Image 90° right	IMGROT1	159
	Rotate Image 180° right	IMGROT2	159
	Rotate Image 90° left	IMGROT3	159
	JPEG Image Quality (0-100) *50	IMGJQF###	160

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	*Gamma Correction Off	IMGGAMO	160
	Gamma Correction On (0-1000)	IMGGAM###	160
	Image Crop - Left (0-639) *0	IMGWNL###	161
	Image Crop - Right (0-639) *all columns	IMGWNR###	161
	Image Crop - Top (0-479) *0	IMGWNT###	161
	Image Crop - Bottom (0-479) *all rows	IMGWNB###	161
	Image Crop - Margin (1-238) *0	IMGMAR###	161
	Protocol - None (raw)	IMGXFR0	161
	Protocol - None (default USB)	IMGXFR2	161
	Protocol - Hmodem Compressed	IMGXFR3	161
	Protocol - Hmodem	IMGXFR4	161
	Ship Every Pixel	IMGSUB1	162
	Ship Every 2nd Pixel	IMGSUB2	162
	Ship Every 3rd Pixel	IMGSUB3	162
	*Document Image Filter Off	IMGUSH0	162
	Document Image Filter On (0-255)	IMGUSH###	162
	*Don't Ship Histogram	IMGHST0	163
	Ship Histogram	IMGHST1	163
Image Size Compatibility	Force VGA Resolution	IMGVGA1	164
	*Native Resolution	IMGVGA0	164
Intelligent Signature Capture	Optimize On	DECBND1	164
	*Optimize Off	DECBND0	164
Utilities			
Add Code I.D. Prefix to All Symbologies (Temporary)		PRECA2,BK2995C80!	171
Show Software Revision		REVINF	171
Show Data Format		DFMBK3?	171
Test Menu	On	TSTMNU1	172
	*Off	TSTMNU0	172
Application Plug-Ins (Apps)	*Decoding Apps On	PLGDCE1	173
	Decoding Apps Off	PLGDCE0	173
	*Formatting Apps On	PLGFOE1	173
	Formatting Apps Off	PLGFOE0	173
	List Apps	PLGINF	173
Resetting the Factory Defaults	Remove Custom Defaults	DEFOVR	176
	Activate Defaults	DEFALT	176

HF52X Product Specifications

Mechanical	
Dimensions	41.7 mm x 41.7 mm x 32.5 mm
Weight	58 g
Host Interface	USB, RS-232
Electrical	
Input Voltage	4.5-5.5 VDC
Standby Current	0.7W (140mA @ 5VDC°)
Operating Current (typical)	2.1W (420mA @ 5VDC)
Light Source	White LED
Environmental	
Operating Temperature *	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Humidity	5% to 95% relative humidity, non-condensing
Drop	Can withstand 2 falls onto cement floor from height of 1.5m.
Light Levels	0 to 100 000 lux
IP Rating	IP40
Image	
Image size	640 x 480 pixels
Scan Performance	
Skew Angle	±65°
Pitch Angle	±55°
Symbol Contrast	25%
Motion Tolerance	100 cm/s (39 in/s)

Full Depth of Field

Full depth of field measurements used the following parameters:

- Distances are measured from front center of the housing
- 25°C (77°F), 200 lux (in the dark)
- Photographic codes
- Serial Trigger Mode

Note: Full depth of field is measured with the scanner in Serial Trigger Mode (the scanner is triggered by sending a software command). This configuration gives the longest reading distances. However, this is not the default configuration. The default trigger mode is [Presentation Mode](#) which gives best performance for snappiness and motion tolerance. When in Presentation Mode the depth of field measurements are less than the measurements below.

Typical Performance

Symbology	Depth of Field
10 mil Code 39	2 - 102 mm (0.08 - 4.02 in)
13 mil UPC-A	15 - 110 mm (0.59 - 4.33 in)
20 mil Code 39	18 - 150 mm (0.71 - 5.90 in)
20 mil QR Code	12 - 90 mm (0.47 - 3.54 in)

Field of View

Model	FOV
HF52X	80° x 64° ±2°

MAINTENANCE AND TROUBLESHOOTING

Repairs

Repairs and/or upgrades are not to be performed on this product. These services are to be performed only by an authorized service center. See ["Product Service and Repair" on page xix](#) for further information.

Inspecting Cords and Connectors

Inspect the scan engine's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with scan engine operation. Contact your Honeywell distributor for information about cable replacement.

Troubleshooting

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

Is the power on? Is the red or green aiming illumination line on?

If the aiming line doesn't appear, check that:

- The cable is connected properly.
- The host system power is on (if external power isn't used).

Is the scan engine having trouble reading your symbols?

If the scan engine isn't reading symbols well, check that the symbols:

- Aren't smeared, rough, scratched, or exhibiting voids.
- Aren't coated with frost or water droplets on the surface.

- Are enabled in the scan engine or in the decoder to which the scan engine connects.

Is the bar code displayed but not entered?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (the Enter/Return key or the Tab key, for example).

You need to program a suffix. Programming a suffix enables the scan engine to output the bar code data plus the key you need (such as “CR”) to enter the data into your application. Refer to “Prefix/Suffix Overview” on page 4-53 for further information.

Does the scan engine read the bar code incorrectly?

If the scan engine reads a bar code, but the data is not displayed correctly on the host screen:

- The scan engine may not be programmed for the appropriate terminal interface. For example, you scan “12345” and the host displays “@es%.”

Reprogram the scan engine with the correct Plug and Play or Terminal selection bar code. See [Chapter 2](#) and [Chapter 3](#).

The scan engine may not be programmed to output your bar code data properly. For example, you scan “12345” and the host displays “A12345B.”

Reprogram the scan engine with the proper symbology selections. See [Chapter 6](#).

The scan engine won’t read your bar code at all.

1. Scan the sample bar codes in the back of this manual. If the scan engine reads the sample bar codes, check that your bar code is readable. Verify that your bar code symbology is enabled (see [Chapter 6](#)).
2. If the scan engine still can’t read the sample bar codes, scan "[All Symbologies](#)" on page 6-80.

If you aren’t sure what programming options have been set in the scan engine, or if you want the factory default settings restored, scan [Resetting the Factory Defaults](#) on page 176.

REFERENCE CHARTS

Symbology Charts

Note: “m” represents the AIM modifier character. Refer to *International Technical Specification, Symbology Identifiers*, for AIM modifier character details.

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

Refer to [Data Editing](#) beginning on page 53 and [Data Formatting](#) beginning on page 59 for information about using Code ID and AIM ID.

Linear Symbologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (m)	ID	Hex
All Symbologies				99
Codabar	JFm	0-1	a	61
Code 11	JH3		h	68
Code 128	JCm	0, 1, 2, 4	j	6A
Code 32 Pharmaceutical (PARAF)	JX0		<	3C
Code 39 (supports Full ASCII mode)	JAm	0, 1, 3, 4, 5, 7	b	62
TCIF Linked Code 39 (TLC39)	JL2		T	54
Code 93 and 93i	JGm	0-9, A-Z, a-m	i	69
EAN	JEm	0, 1, 3, 4	d	64
EAN-13 (including Bookland EAN)	JX0		d	64
EAN-13 with Add-On	JE3		d	64
EAN-13 with Extended Coupon Code	JE3		d	64
EAN-8	JE4		D	44
EAN-8 with Add-On	JE3		D	44

	AIM		Honeywell	
Symbology	ID	Possible modifiers (m)	ID	Hex
GS1				
GS1 DataBar	jem	0	y	79
GS1 DataBar Limited	jem		{	7B
GS1 DataBar Expanded	jem		}	7D
GS1-128	IC1		l	49
2 of 5				
China Post (Hong Kong 2 of 5)	IX0		Q	51
Interleaved 2 of 5	Ilm	0, 1, 3	e	65
Matrix 2 of 5	IX0		m	6D
NEC 2 of 5	IX0		Y	59
Straight 2 of 5 IATA	IRm	0, 1, 3	f	66
Straight 2 of 5 Industrial	ISO		f	66
MSI	IMm	0, 1	g	67
Telepen	IBm		t	74
UPC		0, 1, 2, 3, 8, 9, A, B, C		
UPC-A	IE0		c	63
UPC-A with Add-On	IE3		c	63
UPC-A with Extended Coupon Code	IE3		c	63
UPC-E	IE0		E	45
UPC-E with Add-On	IE3		E	45
UPC-E1	IX0		E	45

Add Honeywell Code ID				5C80
Add AIM Code ID				5C81
Add Backslash				5C5C
Batch mode quantity			5	35

2D Symbolologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (m)	ID	Hex
All Symbolologies				99
Aztec Code	]zm	0-9, A-C	z	7A
Chinese Sensible Code (Han Xin Code)	]X0		H	48
Codablock A	]O6	0, 1, 4, 5, 6	V	56
Codablock F	]Om	0, 1, 4, 5, 6	q	71
Code 49	]Tm	0, 1, 2, 4	l	6C
Data Matrix	]dm	0-6	w	77
GS1	]em	0-3	y	79
GS1 Composite	]em	0-3	y	79
GS1 DataBar Omnidirectional	]em		y	79
MaxiCode	]Um	0-3	x	78
PDF417	]Lm	0-2	r	72
MicroPDF417	]Lm	0-5	R	52
QR Code	]Qm	0-6	s	73
Micro QR Code	]Qm		s	73

Postal Symbolologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (m)	ID	Hex
All Symbolologies				99
Australian Post	]X0		A	41
British Post	]X0		B	42
Canadian Post	]X0		C	43
China Post	]X0		Q	51
InfoMail	]X0		,	2c
Intelligent Mail Bar Code	]X0		M	4D
Japanese Post	]X0		J	4A
KIX (Netherlands) Post	]X0		K	4B
Korea Post	]X0		?	3F
Planet Code	]X0		L	4C
Postal-4i	]X0		N	4E
Postnet	]X0		P	50

ASCII Conversion Chart (Code Page 1252)

In keyboard applications, ASCII Control Characters can be represented in 3 different ways, as shown below. The CTRL+X function is OS and application dependent. The following table lists some commonly used Microsoft functionality. This table applies to U.S. style keyboards. Certain characters may differ depending on your Country Code/PC regional settings.

Non-printable ASCII control characters			Keyboard Control + ASCII (CTRL+X) Mode		
			Control + X Mode Off (KBDCAS0)	Windows Mode Control + X Mode On (KBDCAS2)	
DEC	HEX	Char		CTRL + X	CTRL + X function
0	00	NUL	Reserved	CTRL+ @	
1	01	SOH	NP Enter	CTRL+ A	Select all
2	02	STX	Caps Lock	CTRL+ B	Bold
3	03	ETX	ALT Make	CTRL+ C	Copy
4	04	EOT	ALT Break	CTRL+ D	Bookmark
5	05	ENQ	CTRL Make	CTRL+ E	Center
6	06	ACK	CTRL Break	CTRL+ F	Find
7	07	BEL	Enter / Ret	CTRL+ G	
8	08	BS	(Apple Make)	CTRL+ H	History
9	09	HT	Tab	CTRL+ I	Italic
10	0A	LF	(Apple Break)	CTRL+ J	Justify
11	0B	VT	Tab	CTRL+ K	hyperlink
12	0C	FF	Delete	CTRL+ L	list, left align
13	0D	CR	Enter / Ret	CTRL+ M	
14	0E	SO	Insert	CTRL+ N	New
15	0F	SI	ESC	CTRL+ O	Open
16	10	DLE	F11	CTRL+ P	Print
17	11	DC1	Home	CTRL+ Q	Quit
18	12	DC2	PrtScn	CTRL+ R	
19	13	DC3	Backspace	CTRL+ S	Save
20	14	DC4	Back Tab	CTRL+ T	
21	15	NAK	F12	CTRL+ U	
22	16	SYN	F1	CTRL+ V	Paste
23	17	ETB	F2	CTRL+ W	
24	18	CAN	F3	CTRL+ X	
25	19	EM	F4	CTRL+ Y	

Non-printable ASCII control characters			Keyboard Control + ASCII (CTRL+X) Mode		
DEC	HEX	Char	Control + X Mode Off (KBDCAS0)	Windows Mode Control + X Mode On (KBDCAS2)	
				CTRL + X	CTRL + X function
26	1A	SUB	F5	CTRL+ Z	
27	1B	ESC	F6	CTRL+ [	
28	1C	FS	F7	CTRL+ \	
29	1D	GS	F8	CTRL+]	
30	1E	RS	F9	CTRL+ ^	
31	1F	US	F10	CTRL+ -	
127	7F	?	NP Enter		

Lower ASCII Reference Table

Note: Windows Code page 1252 and lower ASCII use the same characters.

Printable Characters								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
32	20	<SPACE>	64	40	@	96	60	`
33	21	!	65	41	A	97	61	a
34	22	"	66	42	B	98	62	b
35	23	#	67	43	C	99	63	c
36	24	\$	68	44	D	100	64	d
37	25	%	69	45	E	101	65	e
38	26	&	70	46	F	102	66	f
39	27	'	71	47	G	103	67	g
40	28	(	72	48	H	104	68	h
41	29	)	73	49	I	105	69	i
42	2A	*	74	4A	J	106	6A	j
43	2B	+	75	4B	K	107	6B	k
44	2C	,	76	4C	L	108	6C	l
45?	2D	-	77	4D	M	109	6D	m
46	2E	.	78	4E	N	110	6E	n
47	2F	/	79	4F	O	111	6F	o
48	30	0	80	50	P	112	70	p
49	31	1	81	51	Q	113	71	q
50	32	2	82	52	R	114	72	r

Printable Characters (Continued)								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
51	33	3	83	53	S	115	73	s
52	34	4	84	54	T	116	74	t
53	35	5	85	55	U	117	75	u
54	36	6	86	56	V	118	76	v
55	37	7	87	57	W	119	77	w
56	38	8	88	58	X	120	78	x
57	39	9	89	59	Y	121	79	y
58	3A	:	90	5A	Z	122	7A	z
59	3B	;	91	5B	[	123	7B	{
60	3C	<	92	5C	\	124	7C	
61	3D	=	93	5D	]	125	7D	}
62	3E	>	94	5E	^	126	7E	~
63	3F	?	95	5F	_	127	7F	?

Extended ASCII Characters					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
128	80	€	Ç	up arrow ↑	0x48
129	81		ü	down arrow ↓	0x50
130	82	,	é	right arrow →	0x4B
131	83	f	â	left arrow ←	0x4D
132	84	„	ä	Insert	0x52
133	85	...	à	Delete	0x53
134	86	†	å	Home	0x47
135	87	‡	ç	End	0x4F
136	88	^	ê	Page Up	0x49
137	89	‰	ë	Page Down	0x51
138	8A	Š	è	Right ALT	0x38
139	8B	ƒ	ï	Right CTRL	0x1D
140	8C	Œ	î	Reserved	n/a
141	8D		ì	Reserved	n/a
142	8E	Ž	Ä	Numeric Keypad Enter	0x1C
143	8F		Å	Numeric Keypad /	0x35
144	90		É	F1	0x3B
145	91	‘	æ	F2	0x3C

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
146	92	'	Æ	F3	0x3D
147	93	“	ô	F4	0x3E
148	94	”	ö	F5	0x3F
149	95	•	ò	F6	0x40
150	96	—	û	F7	0x41
151	97	—	ù	F8	0x42
152	98	~	ÿ	F9	0x43
153	99	™	Ö	F10	0x44
154	9A	š	Ü	F11	0x57
155	9B	›	ø	F12	0x58
156	9C	œ	£	Numeric Keypad +	0x4E
157	9D		¥	Numeric Keypad -	0x4A
158	9E	ž	£	Numeric Keypad *	0x37
159	9F	Ÿ	f	Caps Lock	0x3A
160	A0		á	Num Lock	0x45
161	A1	¡	í	Left Alt	0x38
162	A2	¢	ó	Left Ctrl	0x1D
163	A3	£	ú	Left Shift	0x2A
164	A4	¤	ñ	Right Shift	0x36
165	A5	¥	Ñ	Print Screen	n/a
166	A6	¦	ª	Tab	0x0F
167	A7	§	º	Shift Tab	0x8F
168	A8	¨	¿	Enter	0x1C
169	A9	©	¬	Esc	0x01
170	AA	ª	¬	Alt Make	0x36
171	AB	«	½	Alt Break	0xB6
172	AC	¬	¼	Control Make	0x1D
173	AD		¡	Control Break	0x9D
174	AE	®	«	Alt Sequence with 1 Character	0x36
175	AF	—	»	Ctrl Sequence with 1 Character	0x1D
176	B0	°	␣		
177	B1	±	␣		
178	B2	²	␣		
179	B3	³			
180	B4	´	¡		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
181	B5	μ	≡		
182	B6	¶	≡		
183	B7	·	π		
184	B8	¸	ƒ		
185	B9	¹	≡		
186	BA	º			
187	BB	»	ƒ		
188	BC	¼	¼		
189	BD	½	½		
190	BE	¾	¾		
191	BF	¿	ƒ		
192	C0	À	À		
193	C1	Á	±		
194	C2	Â	ƒ		
195	C3	Ã	ƒ		
196	C4	Ä	—		
197	C5	Å	í		
198	C6	Æ	ƒ		
199	C7	Ç			
200	C8	È	À		
201	C9	É	ƒ		
202	CA	Ê	±		
203	CB	Ë	ƒ		
204	CC	Ì			
205	CD	Í	=		
206	CE	Î			
207	CF	Ï	±		
208	D0	Ð	±		
209	D1	Ñ	ƒ		
210	D2	Ò	π		
211	D3	Ó	À		
212	D4	Ô	À		
213	D5	Õ	ƒ		
214	D6	Ö	π		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
215	D7	×	‡		
216	D8	Ø	‡		
217	D9	Ù	Ɔ		
218	DA	Ú	Ɔ		
219	DB	Û	■		
220	DC	Ü	■		
221	DD	Ý	■		
222	DE	Þ	■		
223	DF	ß	■		
224	E0	à	α		
225	E1	á	β		
226	E2	â	Γ		
227	E3	ã	π		
228	E4	ä	Σ		
229	E5	å	σ		
230	E6	æ	μ		
231	E7	ç	τ		
232	E8	è	Φ		
233	E9	é	Θ		
234	EA	ê	Ω		
235	EB	ë	δ		
236	EC	ì	∞		
237	ED	í	φ		
238	EE	î	ε		
239	EF	ï	∩		
240	F0	ð	≡		
241	F1	ñ	±		
242	F2	ò	≥		
243	F3	ó	≤		
244	F4	ô	┌		
245	F5	õ	┐		
246	F6	ö	÷		
247	F7	÷	≈		
248	F8	ø	°		
249	F9	ù	·		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
250	FA	ú	·		
251	FB	û	√		
252	FC	ü	¨		
253	FD	ý	²		
254	FE	þ	■		
255	FF	ÿ			

ISO 2022/ISO 646 Character Replacements

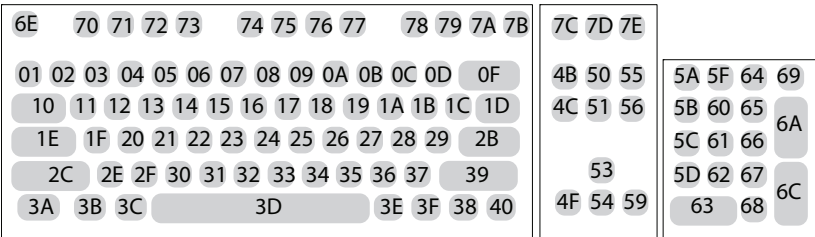
Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code page with which the bar codes were created. The data characters should then appear properly.

Code Page Selection Method/ Country	Standard	Keyboard Country	Honeywell Code Page Option
United States (standard ASCII)	ISO/IEC 646-IRV	?n/a	1
Automatic National Character Replacement	ISO/IEC 2022	?n/a	2 (default)
Binary Code page	?n/a	?n/a	3
Default “Automatic National Character replacement” will select the below Honeywell Code Page options for Code128, Code 39 and Code 93.			
United States	ISO/IEC 646-06	0	1
Canada	ISO /IEC 646-121	54	95
Canada	ISO /IEC 646-122	18	96
Japan	ISO/IEC 646-14	28	98
China	ISO/IEC 646-57	92	99
Great Britain (UK)	ISO /IEC 646-04	7	87
France	ISO /IEC 646-69	3	83
Germany	ISO/IEC646-21	4	84
Switzerland	ISO /IEC 646-CH	6	86
Sweden / Finland (extended Annex C)	ISO/IEC 646-11	2	82
Ireland	ISO /IEC 646-207	73	97
Denmark	ISO/IEC 646-08	8	88
Norway	ISO/IEC 646-60	9	94
Italy	ISO/IEC 646-15	5	85
Portugal	ISO/IEC 646-16	13	92

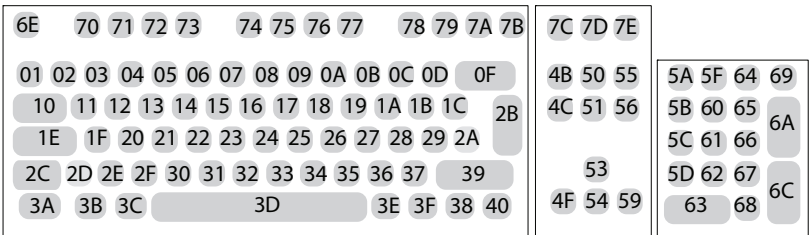
Code Page Selection Method/ Country	Standard	Keyboard Country	Honeywell Code Page Option
Spain	ISO/IEC 646-17	10	90
Spain	ISO/IEC 646-85	51	91

Dec			35	36	64	91	92	93	94	96	123	124	125	126
Hex			23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
US	0	1	#	\$	@	[	\	]	^	`	{		}	~
CA	54	95	#	\$	à	â	ç	ê	î	ô	é	ù	è	û
CA	18	96	#	\$	à	â	ç	ê	É	ô	é	ù	è	û
JP	28	98	#	\$	@	[	¥	]	^	`	{		}	-
CN	92	99	#	¥	@	[	\	]	^	`	{		}	-
GB	7	87	£	\$	@	[	\	]	^	`	{		}	~
FR	3	83	£	\$	à	°	ç	§	^	μ	é	ù	è	..
DE	4	84	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
CH	6	86	ù	\$	à	é	ç	ê	î	ô	ä	ö	ü	û
SE/FI	2	82	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
DK	8	88	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
NO	9	94	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	-
IE	73	97	£	\$	Ó	É	Í	Ú	Á	ó	é	í	ú	á
IT	5	85	£	\$	§	°	ç	é	^	ù	à	ò	è	ì
PT	13	92	#	\$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
ES	10	90	#	\$	§	í	Ñ	¿	^	`	°	ñ	ç	~
ES	51	91	#	\$	·	í	Ñ	Ç	¿	`	´	ñ	ç	..
COUNTRY	Country Keyboard	Honeywell CodePage	ISO / IEC 646 National Character Replacements											

Keyboard Key References



104 Key U.S. Style Keyboard



105 Key European Style

Sample Symbols

UPC-A



0 123456 7890

Interleaved 2 of 5



1234567890

EAN-13



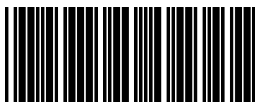
9 780330 290951

Code 128



Code 128

Code 39



BC321

Codabar



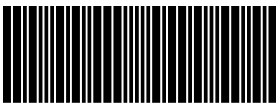
A13579B

Code 93



123456-9\$

Straight 2 of 5 Industrial



123456

Matrix 2 of 5



6543210

RSS-14



(01)00123456789012

Sample Symbols

PDF417



Car Registration

Code 49



1234567890

Postnet



Zip Code

Data Matrix



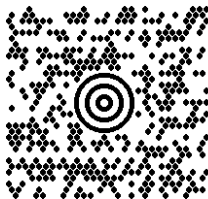
Test Symbol

QR Code



Numbers

MaxiCode



Test Message

Aztec



Package Label

Micro PDF417



Test Message

Programming Chart



K0K
0



K2K
2



K4K
4



K6K
6



K8K
8



K1K
1



K3K
3



K5K
5



K7K
7



K9K
9

Programming Chart



KAK
A



KCK
C



KEK
E



MNUSAV.
Save



RESET_
Reset



KBK
B



KDK
D



KFK
F



MNUABT.
Discard

Note: If you make an error while scanning the letters or digits (before scanning Save), scan Discard, scan the correct letters or digits, and Save again.

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