

Honeywell

HH490

Area-Imaging Scanner



User Guide

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Customer Support

Technical Assistance

To search our knowledge base for a solution or to log in to the Technical Support portal and report a problem, go to

www.honeywellaidc.com/working-with-us/contact-technical-support.

For our latest contact information, see www.honeywellaidc.com/locations.

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Limited Warranty

For warranty information, go to www.honeywellaidc.com and click Resources > Product Warranty.

GET STARTED

About This Manual

This User Guide provides installation and programming instructions for the HH490 corded area-imaging scanner. Product specifications, dimensions, warranty, and customer support information are also included.

Honeywell barcode scanners are factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the barcodes in this guide.

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

Unpack Your Device

After you open the shipping carton containing the product, 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.

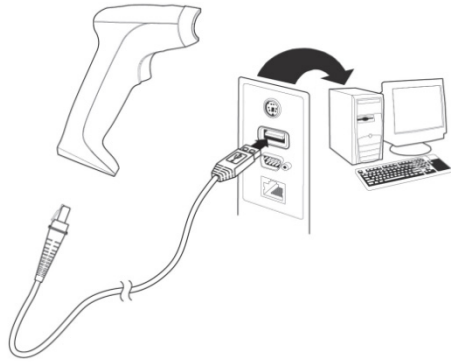
Connect the Device

Connect with USB

A scanner can be connected to the USB port of a computer.

1. Connect the appropriate interface cable to the device first, then to the computer.

HH490 Scanner USB Connection:

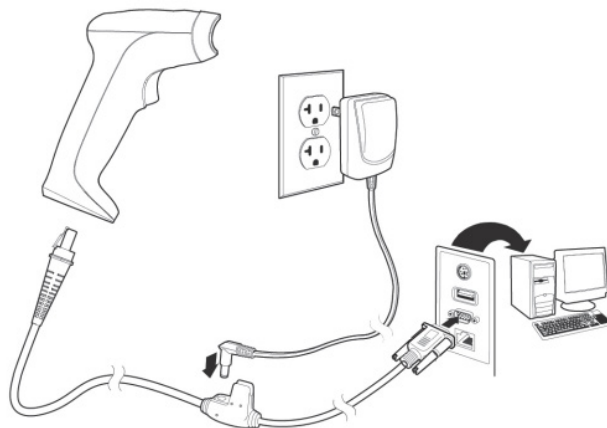


Connect with RS232 Serial Port

1. Turn off power to the terminal/computer.
2. Connect the appropriate interface cable to the scanner.

Note: For the scanner to work properly, you must have the correct cable for your type of terminal/computer.

HH490 Scanner RS232 Serial Port Connection:



Note: The power supply must be ordered separately, if needed.

Reading Techniques

The HH490 scanners have a view finder that projects a bright red dot aiming beam that corresponds to the scanner's center of field of view. The aiming beam should be centered over the barcode for a good read.

Linear Barcodes



2D Matrix Symbol



Menu Barcode Security Settings

Honeywell scanners are programmed by scanning menu barcodes or by sending serial commands to the scanner. If you want to restrict the ability to scan menu codes, you can use the Menu Barcode Security settings. Contact the nearest technical support office (see [Technical Assistance](#) on page xvii) for further information.

Set 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 barcode below before scanning the menu commands for your custom defaults. If a menu command requires scanning numeric codes from the [Programming Chart](#), 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 barcode.



MNUCDP.
Set Custom Defaults



MNUCDS.
Save Custom Defaults

Note: 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 barcode, 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.

Reset the Custom Defaults

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



PROGRAM THE INTERFACE

Introduction

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

Program the Interface - Plug and Play

Plug and Play barcodes provide instant scanner set up for commonly used interfaces.

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

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



PAP232.

RS232 Interface

USB IBM SurePos

Scan one of the following “Plug and Play” codes to program the scanner 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.



PAPSPH.

USB IBM SurePos (USB
Handheld Scanner)
Interface



PAPSPT.

USB IBM SurePos (USB
Tabletop Scanner)
Interface

Each barcode 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 scanner for USB PC Keyboard or USB Macintosh Keyboard.



PAP124.

USB Keyboard (PC)



PAP125.

USB Keyboard (Mac)



TERMID134.

USB Japanese Keyboard (PC)

USB HID

Scan the following code to program the scanner for USB HID Barcode scanners.



USB Serial

If you are using a Microsoft® Windows® PC, you will need to download the latest driver from the Honeywell website (www.honeywellaidc.com) and go to Get Resources - Downloads - Software. The driver will use the next available COM Port number. Apple® Macintosh computers recognize the scanner as a USB CDC class device and automatically use a class driver.

After the driver is downloaded, scan the following code to program the scanner to emulate a regular RS232-based COM Port.



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

Note: If you scan the USB Serial barcode either with an older Honeywell serial driver, or no driver installed, you may no longer be able to scan barcodes. If this happens, either uninstall the older driver versions and install the latest driver or delete the specific device entry in Device Manager.

CTS/RTS Emulation



ACK/NAK Mode



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 barcode to communicate with ReM. To disable this capability, scan ReM Off. *Default = ReM On.*



Keyboard Country Layout

If your interface is USB Keyboard or Keyboard Wedge, your keyboard layout default is a US keyboard. To change this layout, scan the appropriate Keyboard Country barcode below. By default, national character replacements are used for the following characters: # \$ @ [\] ^ ' { | } ~. Refer to the ["ISO 2022/ISO 646 Character Replacements" on page A-207](#) to view the character replacements for each country.

Keyboard Countries



Keyboard Countries (Continued)



KBDCTY82.
Belarus



KBDCTY33.
Bosnia



KBDCTY59.
Brazil (MS)



KBDCTY53.
Bulgaria (Latin)



KBDCTY18.
Canada (French)



KBDCTY32.
Croatia



KBDCTY1.
Belgium



KBDCTY16.
Brazil



KBDCTY52.
Bulgaria (Cyrillic)



KBDCTY54.
Canada (French legacy)



KBDCTY55.
Canada (Multilingual)



KBDCTY15.
Czech

Keyboard Countries (Continued)



KBDCTY40.
Czech (Programmers)



KBDCTY38.
Czech (QWERTZ)



KBDCTY11.
Dutch (Netherlands)



KBDCTY83.
Faroese



KBDCTY3.
France



KBDCTY4.
Germany



KBDCTY39.
Czech (QWERTY)



KBDCTY8.
Denmark



KBDCTY41.
Estonia



KBDCTY2.
Finland



KBDCTY84.
Gaelic



KBDCTY17.
Greek

Keyboard Countries (Continued)



KBDCTY64.
Greek (220 Latin)



KBDCTY65.
Greek (319 Latin)



KBDCTY63.
Greek (Latin)



KBDCTY60.
Greek (Polytonic)



KBDCTY50.
Hungarian (101 key)



KBDCTY75.
Iceland



KBDCTY61.
Greek (220)



KBDCTY62.
Greek (319)



KBDCTY66.
Greek (MS)



KBDCTY12.
Hebrew



KBDCTY19.
Hungary



KBDCTY73.
Irish

Keyboard Countries (Continued)



KBDCTY56.
Italian (142)



KBDCTY28.
Japan ASCII



KBDCTY79.
Kyrgyz (Cyrillic)



KBDCTY42.
Latvia



KBDCTY44.
Lithuania



KBDCTY34.
Macedonia



KBDCTY5.
Italy



KBDCTY78.
Kazakh



KBDCTY14.
Latin America



KBDCTY43.
Latvia (QWERTY)



KBDCTY45.
Lithuania (IBM)



KBDCTY74.
Malta

Keyboard Countries (Continued)



KBDCTY86.
Mongolian (Cyrillic)



KBDCTY20.
Poland



KBDCTY58.
Polish (Programmers)



KBDCTY25.
Romania



KBDCTY67.
Russian (MS)



KBDCTY21.
SCS



KBDCTY9.
Norway



KBDCTY57.
Polish (214)



KBDCTY13.
Portugal



KBDCTY26.
Russia



KBDCTY68.
Russian (Typewriter)



KBDCTY37.
Serbia (Cyrillic)

Keyboard Countries (Continued)



KBDCTY36.
Serbia (Latin)



KBDCTY49.
Slovakia (QWERTY)



KBDCTY31.
Slovenia



KBDCTY51.
Spanish variation



KBDCTY29.
Switzerland (French)



KBDCTY85.
Tatar



KBDCTY22.
Slovakia



KBDCTY48.
Slovakia (QWERTZ)



KBDCTY10.
Spain



KBDCTY23.
Sweden



KBDCTY6.
Switzerland (German)



KBDCTY27.
Turkey F

Keyboard Countries (Continued)



KBDCTY24.
Turkey Q



KBDCTY7.
United Kingdom



KBDCTY88.
United States (Dvorak left)



KBDCTY30.
United States (International)



KBDCTY76.
Ukrainian



KBDCTY87.
United States (Dvorak)



KBDCTY89.
United States (Dvorak right)



KBDCTY77.
Uzbek (Cyrillic)

Keyboard Wedge Modifiers

ALT Mode

If your barcode contains special characters from the extended ASCII chart, for example, an e with an accent grave (è), you will use ALT Mode. (See [Extended ASCII Characters](#) on page207 .)

Note: Scan the ALT mode barcode after scanning the appropriate Keyboard Country code.

If your keystrokes require the ALT key and 3 or 4 characters, scan the 3 Characters or 4 Characters barcode. The data is then output with the special character(s) for values 00-255. *Default = Off.*



KBDALTO.
* Off



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).



Keyboard Conversion

Alphabetic keyboard characters can be forced to be all upper case or all lowercase. So if you have the following barcode: “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 31). 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 207. Only codes 00 through 1F are converted (the first column of the chart). *Default = Off.*

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



Keyboard Modifiers

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

Control + X (Control + ASCII) Mode On: The scanner 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. Refer to [ASCII Conversion Chart \(Code Page 1252\)](#), page 207 for CTRL+ X Values.

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

Support ALT 3 Digit HEX Mode: The scanner sends key combinations for ASCII control characters for values 00-1F transmitted as the ALT key and 3 digits.

Default = Control + X Mode Off.



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



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



RS232 Modifiers

RS232 Baud Rate

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



232WRD6.
7 Data, 1 Stop, Parity Odd



232WRD1.
7 Data, 2 Stop, Parity None



232WRD5.
8 Data, 1 Stop, Parity Even



232WRD8.
8 Data, 1 Stop, Parity Odd



232WRD0.
7 Data, 1 Stop, Parity None



232WRD4.
7 Data, 2 Stop, Parity Even



232WRD7.
7 Data, 2 Stop, Parity Odd



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



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 barcode below, then scanning digits from the [Programming Chart](#), beginning on page 313, then scanning Save. The range is 0 to 300 seconds. *Default = 0 seconds (no time-out - always on).*



RS232 Handshake

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

Flow Control, No Timeout: The scanner 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 scanner 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 scanner asserts RTS when it has data to send and waits for a delay (see [RS232 Timeout](#) on page 37) 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.*



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 barcode below, then setting the timeout (from 1-5100 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 313, then scanning Save.



XON/XOFF

Standard ASCII control characters can be used to tell the scanner 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 scanner, 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 scanner 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 scanner looks for more barcodes. If NAK is received, the last set of barcode data is retransmitted and the scanner waits for ACK/NAK again. Turn on the ACK/NAK protocol by scanning the ACK/NAK On barcode below. To turn off the protocol, scan ACK/NAK Off. *Default = ACK/NAK Off.*



232ACK1.
ACK/NAK On



232ACK0.
* ACK/NAK Off

INPUT/OUTPUT SETTINGS

Power Up Beeper

The scanner can be programmed to beep when it's powered up. If you are using a cordless system, the base can also be programmed to beep when it is powered up. Scan the Off barcode(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 scanner to beep upon a command sent from the host. If you scan the Beep on BEL On barcode below, the scanner 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

Trigger Click

To hear an audible click every time the scanner trigger is pressed, scan the Trigger Click On barcode below. Scan the Trigger Click Off code if you don't wish to hear the click. (This feature has no effect on serial or automatic triggering.) *Default = Trigger Click Off.*



BEPTRG0.
*Trigger Click Off



BEPTRG1.
Trigger Click 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.*



BEPBEP0.
Beeper - Good Read Off



BEPBEP1.
* Beeper - Good Read On

Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the scanner emits on a good read.



BEPLVL1.
Low



BEPLVL2.
Medium



BEPLVL3.
* High



BEPLVL0.
Off

Beeper Pitch – Good Read

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



BEPFQ11600.
Low (1600 Hz)



BEPFQ12700.
* Medium (2700 Hz)



BEPFQ14200.
High (4200 Hz)

Beeper Pitch – Error

The beeper pitch codes modify the pitch (frequency) of the sound the scanner 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 scanner 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 barcode below and then scan a digit (1-9) barcode from the [Programming Chart](#), beginning on page 211, then Save. *Default = 1.*



BEPRPT.
Number of Good Read Beeps/LED Flashes

Number of Beeps – Error

The number of beeps and LED flashes emitted by the scanner 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 barcode below and then scan a digit (1-9) barcode from the [Programming Chart](#), beginning on page 211, then Save. *Default = 1.*



BEPERR.
Number of Error Beeps/LED Flashes

Good Read Delay

This sets the minimum amount of time before the scanner can read another barcode. *Default = 0 ms (No Delay).*



User-Specified Good Read Delay

If you want to set your own length for the good read delay, scan the barcode below, then set the delay (from 0 - 30,000 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211, then Save.



Trigger Modes

Manual Trigger

When in manual trigger mode, the scanner scans until a barcode is read, or until the trigger is released. 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. *Default = Manual Trigger-Normal.*



Serial Trigger

You can activate the scanner either by pressing the trigger or using a serial trigger command (see [Trigger Commands](#) on page 184). You must be in a serial interface mode in order to use serial triggering. Refer to [RS232 Serial Port](#) (page 7) or [USB Serial](#) (page 9) for further information. When in serial mode, the scanner scans until a barcode has been read or until the deactivate command is sent. The scanner can also be set to turn itself off after a specified time has elapsed (see [Read Time- Out](#), which follows).

Read Time-Out

Use this selection to set a time-out (in milliseconds) of the scanner's trigger when using serial commands to trigger the scanner. Once the scanner has timed out, you can activate the scanner either by pressing the trigger or using a serial trigger command. After scanning the Read Time-Out barcode, set the time-out duration (from 0-300,000 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211, then Save. *Default = 30,000 ms.*



Presentation Mode

Presentation Mode uses ambient light and scanner illumination to detect barcodes. When in Presentation Mode, the LEDs remain dim until a barcode is presented to the scanner, 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 barcode to program your scanner for Presentation Mode.



Presentation LED Behavior after Decode

When a scanner is in presentation mode, the LED aimer dims 30 seconds after a barcode is decoded. If you wish to dim the LED aimer immediately after a barcode is decoded, scan the LEDs Off barcode, below. *Default = LEDs On.*



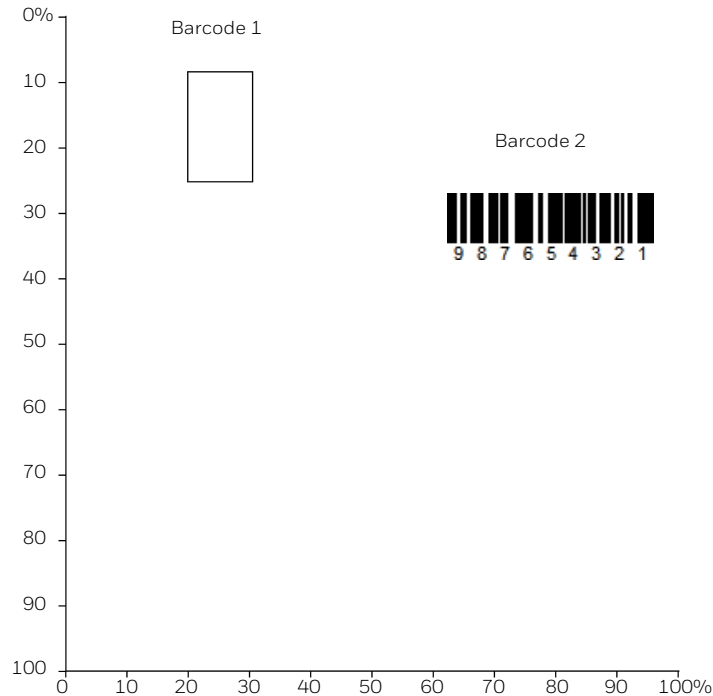
Presentation Centering

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 barcodes 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 48).

If a barcode 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 barcodes.

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 Barcode 1 passes through the centering window, it will be read. Barcode 2 does not pass through the centering window, so it will not be read.



Note: A barcode 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 barcodes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window from the [Programming Chart](#), beginning on page 211, then 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



Poor Quality Codes

Poor Quality 1D Codes

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



Poor Quality PDF Codes

This setting improves the scanner's ability to read damaged or badly printed PDF codes by combining information from multiple images. It is useful when a complete barcode cannot be seen in one image. This setting does not affect 1D barcode reading. *Default = Poor Quality PDF Reading Off.*



Low Resolution PDF Codes

This setting improves the scanner's ability to read low resolution PDF codes. When Low Resolution PDF Codes On is scanned, poor quality PDF code reading is improved, but the scanner's snappiness is decreased, making it less aggressive when reading good quality barcodes. This setting does not affect 1D barcode reading. *Default = Low Resolution PDF Codes Off.*



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 barcodes, but the barcode data is not transmitted until the trigger is pressed. When CodeGate is Off, barcode data is transmitted when it is decoded. *Default = CodeGate Off Out-of- Stand.*



Streaming Presentation™ Mode

When in Streaming Presentation mode, 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 50), a lower priority symbol must be centered on the aiming pattern to be read in Streaming Presentation Mode.

Hands Free Time-Out

The Scan Stand and Presentation Modes are referred to as “hands free” modes. If the scanner’s trigger is pulled when using a hands free mode, the scanner changes to manual trigger mode. You can set the time the scanner should remain in manual trigger mode by setting the Hands Free Time-Out. Once the time-out value is reached, (if there have been no further trigger pulls) the scanner reverts to the original hands free mode.

Scan the Hands Free Time-Out barcode, then scan the time-out duration (from 0- 300,000 milliseconds) from the [Programming Chart](#), beginning on page 211, then Save. *Default = 5,000 ms.*



Reread Delay

This sets the time period before the scanner can read the *same* barcode a second time. Setting a reread delay protects against accidental rereads of the same barcode. Longer delays are effective in minimizing accidental rereads. Use shorter delays in applications where repetitive barcode scanning is required. Reread Delay only works when in a [Presentation Mode](#) (see page 37). *Default = Medium.*



User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the barcode below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211, then Save.



2D Reread Delay

Sometimes 2D barcodes can take longer to read than other barcodes. If you wish to set a separate Reread Delay for 2D barcodes, 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 barcodes. *Default = 2D Reread Delay Off.*



Character Activation

You may use a character sent from the host to trigger the scanner to begin scanning. When the activation character is received, the scanner continues scanning until either the [Character Activation Timeout](#) (page 46) is reached, the deactivation character is received (see [Deactivation Character](#) on page 46), or a barcode is transmitted. Scan the On barcode to use character activation, then use [Activation Character](#) (page 45) to select the character you will send from the host to start scanning. *Default = Off.*



HSTCEN0.
* Off



HSTCEN1.
On

Activation Character

This sets the character used to trigger scanning when using Character Activation Mode. On the [ASCII Conversion Chart \(Code Page 1252\)](#), page 207, find the hex value that represents the character you want to use to trigger scanning. Scan the following barcode, then use the [Programming Chart](#) to read the alphanumeric combination that represents that ASCII character. Scan Save to finish. *Default = 12 [DC2].*



HSTACH.
Activation Character

End Character Activation After Good Read

After a barcode is successfully detected and read from the scanner, 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.



HSTCGD0.
Do Not End Character Activation
After Good Read



HSTCGD1.
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 barcodes when using Character Activation Mode. Set the length (in milliseconds) for a timeout by scanning the following barcode, then setting the timeout (from 1-300,000 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211239, then Save. *Default = 30,000 ms.*



HSTCDT.
Character Activation Timeout

Character Deactivation

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



HSTDEN0.
* Off



HSTDEN1.
On

Deactivation Character

This sets the character used to terminate scanning when using Character Deactivation Mode. On the [ASCII Conversion Chart \(Code Page 1252\)](#), page 207, find the hex value that represents the character you want to use to terminate scanning. Scan the following barcode, then use the [Programming Chart](#), beginning on page 211239 to read the alphanumeric combination that represents that ASCII character. Scan Save to finish. *Default = 14 [DC4].*



HSTDCH.
Deactivation Character

Illumination Lights

If you want the illumination lights on while reading a barcode, scan the Lights On barcode, below. However, if you want to turn just the lights off, scan the Lights Off barcode. *Default = Lights On.*

Note: This setting does not affect the aimer light. The aiming light can be set using [Aimer Mode](#) (page 47).



SCNLED1.
* Lights On



SCNLED0.
Lights Off

Aimer Delay

The aimer delay allows a delay time for the operator to aim the scanner before the picture is taken. Use these codes to set the time between when the trigger is pulled and when the picture is taken. During the delay time, the aiming light will appear, but the LEDs won't turn on until the delay time is over. *Default = Off.*



SCNDLY1.
1 millisecond



SCNDLY250.
250 milliseconds



SCNDLY500.
500 milliseconds



SCNDLY0.
* Off (no)

User-Specified Aimer Delay

If you want to set your own length for the duration of the delay, scan the barcode below, then set the time-out by scanning digits (0 - 4,000 ms) from the [Programming Chart](#), beginning on page 211, then Save.



SCNDLY.
Delay Duration

Aimer Mode

This feature allows you to turn the aimer on and off. *Default = On*



SCNAIM0.
Off



SCNAIM3.
* On

Centering

Use Centering to narrow the scanner's field of view to make sure that when the scanner is hand-held, it reads only those barcodes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read. (Centering can be used in conjunction with [Aimer Delay](#), page 47, for the most error-free operation in applications where multiple codes are spaced closely together. Using the Aimer Delay and Centering features, the scanner can emulate the operation of older systems, such as linear laser barcode scanners.)

Note: To adjust centering when the scanner is in a stand, see [Presentation Centering](#) (page 38).

Single Code Centering

Scan Single Code Centering to target the barcode closest to the center of the image. Singling out a barcode in this manner increases scanning accuracy when there are multiple barcodes close together.

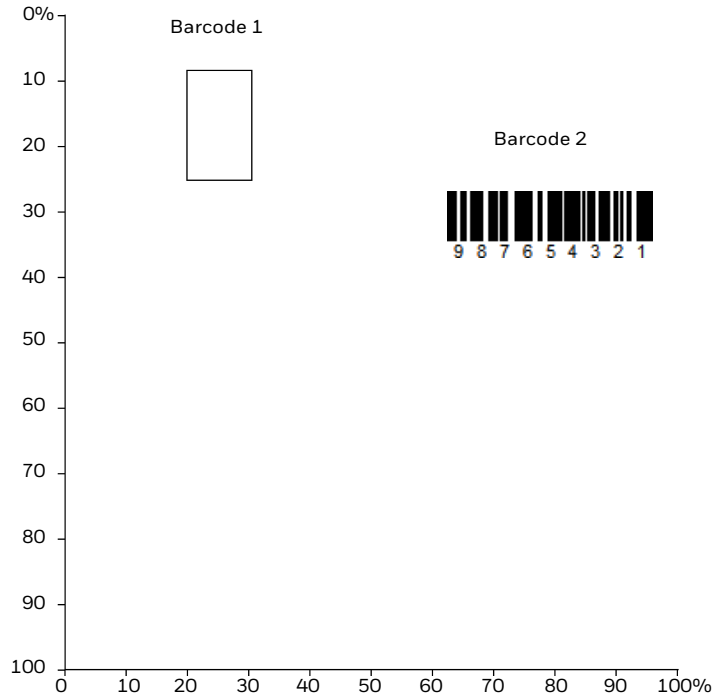


Single Code Centering

Custom Centering

Use the following settings to customize your centering window. If a barcode is not touched by a predefined window, it will not be decoded or output by the scanner. If centering is turned on by scanning Centering On, the scanner only reads codes that pass through the centering window you specify using the Top of Centering Window, Bottom of Centering Window, Left, and Right of Centering Window barcodes.

Example: 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 Barcode 1 passes through the centering window, it will be read. Barcode 2 does not pass through the centering window, so it will not be read.



Note: A barcode 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 barcodes 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 from the [Programming Chart](#), beginning on page 239, then Save. *Default Centering = 40% for Top and Left, 60% for Bottom and Right.*



Preferred Symbology

The scanner can be programmed to specify one symbology as a higher priority over other symbologies in situations where both barcode 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 driver license. Since some licenses have a Code 39 symbol as well as the PDF417 symbol, you can use Preferred Symbology to specify that the PDF417 symbol be read instead of the Code 39.

Preferred Symbology 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 Symbology Time-out](#) on page 52) 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 barcode in its view (low priority or unspecified). If there is no barcode 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 barcode below to enable or disable Preferred Symbology. *Default = Preferred Symbology Off.*



High Priority Symbology

To specify the high priority symbology, scan the High Priority Symbology barcode below. On the [Symbology Charts](#) on page 200, 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](#), beginning on page 211, then Save. *Default = None.*



Low Priority Symbology

To specify the low priority symbology, scan the Low Priority Symbology barcode below. On the [Symbology Charts](#) on page 200, 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](#), beginning on page 211.

If you want to set additional low priority symbologies, scan FF, then scan the 2 digit hex value from the [Programming Chart](#), beginning on page 211, for the next symbology. You can program up to 5 low priority symbologies. Scan Save to save your selection. *Default = None.*



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 scanner will search for a high priority barcode after a low priority barcode has been encountered. Scan the barcode below, then set the delay (from 1-3,000 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211, then Save. *Default = 500 ms.*



Preferred Symbology Default

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



Output Sequence Overview

Output Sequence Editor

This programming selection allows you to program the scanner to output data (when scanning more than one symbol) in whatever order your application requires, regardless of the order in which the barcodes are scanned. You can define up to 15 barcodes in an output sequence.

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 from the [Programming Chart](#), beginning on page 211. You must hold the trigger while reading each barcode in the sequence.

To Add an Output Sequence

An output sequence is created using a string of serial commands that is sent to the scanner. This string is most easily sent to the scanner using the EZConfig software tool (see [EZConfig for Scanning Introduction](#) on page 159). You can also accomplish this by scanning alphanumeric barcodes (see the [Programming Chart](#), beginning on page 211).

1. If you are using barcodes to create your output sequence, scan [Enter Output Sequence](#) on page 45.
2. Code I.D.
On the [Symbology Charts](#) on page 200, find the symbology to which you want to apply the output sequence format. Make a note of the hex value for that symbology. If you are using barcodes to create your output sequence, scan the 2 digit hex value from the [Programming Chart](#), beginning on page 211.
3. Length
Specify what length (up to 9999 characters) of data output will be acceptable for this symbology. Make a note of the length. If you are using barcodes to create your output sequence, scan the 4 digit data length [Programming Chart](#), beginning on page 211. (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 203, find the hex value that represents the character(s) you want to match. Make a note of the

hex value for the character(s). If you are using barcodes to create your output sequence, use the [Programming Chart](#), beginning on page 211 to read the alphanumeric combination that represents the ASCII characters. (99 is the universal number, indicating all characters.)

5. End Output Sequence Editor

Use FF to terminate this string or to begin another output sequence. If you are using barcodes, scan F F. Scan Save to save your entries.

Other Programming Selections

If you are creating an output sequence using barcodes, scan Discard ([page 215](#)) to exit without saving any output sequence changes.

Output Sequence Editor Commands

SEQBLK	Sequence editor start command.
SEQPRE	Add prefix to complete output sequences.
SEQSUF	Add suffix to complete output sequences.
SEQSEP	Add separators to complete output sequences.
SEQTTS1	Transmit partial sequence.
SEQSAT	Define satisfactory subsets of full output sequence.
SEQTIM	Timeout for sequence members when using SEQSAT.
SEQIPR	Add prefix to partial output sequences.
SEQISU	Add suffix to partial output sequences.
SEQISE	Add separators to partial output sequences.
TRGSTO	Timeout for partial output sequences.
FF	Termination string.

Examples outlining how to use these commands are shown below.

Output Sequence Example 1 - Three Symbologies



In this example, you are scanning PDF417, Code 128, and Code 39 barcodes, but you want the scanner to output Code 39 first, Code 128 second, and PDF417 third.

Set up the sequence editor with the following command line:

SEQBLK	sequence editor start command
62	code identifier for Code 39
9999	code length that must match for Code 39, 9999 = all lengths
43	start character match for Code 39, 43h = "C"
FF	termination string for first code
6A	code identifier for Code 128
9999	code length that must match for Code 128, 9999 = all lengths
54	start character match for Code 128, 54h = "T"
FF	termination string for first code
72	code identifier for PDF417
9999	code length that must match for PDF417, 9999 = all lengths
4D	start character match for PDF417, 4Dh = "M"
FF	termination string for third code

The whole command line would look like this:

```
SEQBLK62999943FF6A999954FF7299994DFF
```

The data is output as:

```
CODE39SMPLTSTMSGCODE128MSGPDF417
```

See the next example to further refine this output.

Output Sequence Example 2 - Three Symbologies with <> Separators

In this example, you are scanning the same three barcodes, but you want <> brackets and a carriage return and line feed to separate your output.



The sequence editor would use the same command line as shown in [Output Sequence Example 1 - Three Symbologies](#) (page 43):

SEQBLK	sequence editor start command
62	code identifier for Code 39
9999	code length that must match for Code 39, 9999 = all lengths
43	start character match for Code 39, 43h = "C"
FF	termination string for first code
6A	code identifier for Code 128
9999	code length that must match for Code 128, 9999 = all lengths
54	start character match for Code 128, 54h = "T"
FF	termination string for first code
72	code identifier for PDF417
9999	code length that must match for PDF417, 9999 = all lengths
4D	start character match for PDF417, 4Dh = "M"
FF	termination string for third code

But you would add your <> separators for each sequence:

SEQSEP99	separator for each sequence, 99 = all symbologies
3C	left bracket (<)
3E	right bracket (>)

And add the carriage return and line feed as a suffix:

SEQSUF99	separator for suffixes, 99 = all symbologies
----------	--

OD carriage return

OA line feed

The whole command line would look like this:

```
SEQBLK62999943FF6A999954FF7299994DFF;SEQSEP993C3E;SEQSUF9  
90DOA
```

The data is output as:

```
CODE39SMPL<>TSTMSGCODE128<>MSGPDF417[ CR][ LF]
```

Enter Output Sequence

If you are using barcodes to create your output sequence, scan Enter Output Sequence to begin scanning your string.



Partial Sequence

If an output sequence operation is terminated before all your output sequence criteria are met, the barcode data acquired to that point is a “partial sequence.” You can define how partial sequences are output using the same types of command strings you used to create output sequences.

Partial Sequence Example - Three Symbologies with <> Separators, but with a Damaged Code

In this example, you are scanning PDF417, Code 128, and Code 39 barcodes, and you want the scanner to output Code 39 first, Code 128 second, and PDF417 third, in brackets, as shown below, but the Code 39 barcode has been damaged and cannot be output.



You would use the same command line as shown in [Output Sequence Example 2 - Three Symbologies with <> Separators](#) (page 45):

SEQBLK	sequence editor start command
62	code identifier for Code 39
9999	code length that must match for Code 39, 9999 = all lengths
43	start character match for Code 39, 43h = "C"
FF	termination string for first code
6A	code identifier for Code 128
9999	code length that must match for Code 128, 9999 = all lengths
54	start character match for Code 128, 54h = "T"
FF	termination string for first code
72	code identifier for PDF417
9999	code length that must match for PDF417, 9999 = all lengths
4D	start character match for PDF417, 4Dh = "M"
FF	termination string for third code
SEQSEP99	separator for each sequence, 99 = all symbologies
3C	left bracket (<)
3E	right bracket (>)
SEQSUF99	separator for suffixes, 99 = all symbologies
0D	carriage return
0A	line feed

And you would add >PARTIAL< as the prefix to note the partial sequence:

SEQTTS1	transmit partial sequence
SEQISU99	add partial sequence suffix, 99 = all symbologies
3E	right bracket (>)
50	P
41	A
52	R

54	T
49	I
41	A
4C	L
3C	left bracket (<)

The whole command line would look like this:

```
SEQBLK62999943FF6A999954FF7299994DFF;SEQSEP993C3E;SEQSUF99
OD0A;SEQTTS1;SEQISU993E5041525449414C3C
```

The data is output as:

```
TSTMSGCODE128MSGPDF417>PARTIAL<
```

Discard Partial Output Sequence

If you want to discard partial sequences when the output sequence operation is terminated before completion, scan Discard Partial Sequence.



SEQTTS0.

* Discard Partial Sequence

Output Sequence Timeouts

You can set a timeout for every code in the output sequence defined by the SEQBLK command. The scanner applies the shortest timeout corresponding to any of the codes that have been read during the current trigger session. When the timeout expires, the scanner sends all codes that it has been read in the order they appear in the sequence defined by SEQBLK.

To specify the timeout, use the SEQTIM command followed by a list of timeouts in milliseconds. Each timeout is specified as a 4-decimal digit terminated by FF. The timeout value 9999 is special and indicates that the timeout for that code is “infinite”.

The number of timeouts specified should correspond to the number of codes in the sequence defined by SEQBLK. You can specify one additional timeout, which will apply to codes not matching any member of the sequence. This can be useful if Require Output Sequence is On/Not Required. If you do not specify an additional timeout for codes not in the defined sequence, the last timeout specified by SEQTIM will apply.

Output Sequence Timeout Example

For example, if SEQBLK defines a 4-code sequence, you can specify timeouts of 5, 6, 7, and 8 seconds for codes 1-4 respectively using the command `SEQTIM5000FF6000FF7000FF8000FF`. Codes that are not part of the defined sequence would have an implied timeout of 8 seconds in this case (the final timeout in the list). To explicitly specify a timeout for such codes, you can include one more timeout at the end of the list. For example, to include a timeout of 1 second for non-sequence codes, use the command `SEQTIM5000FF6000FF7000FF8000FF1000FF`.

Satisfactory Subset of Full Sequence

You can define one or more subsets of barcodes from the complete sequence specified by SEQBLK. When you scan all the codes from one of these subsets, the scanner will transmit all the codes it has read in the sequence. The scanner sends the codes in the order defined by SEQBLK.

Note: To use the satisfactory subset feature, you must supply a timeout for each code in the sequence using SEQTIM.

Satisfactory Subset of Full Sequence Timeout Example

To specify a subset, list its members using the SEQSAT command and terminate each subset with FF. The members of each subset are specified as single hex digits corresponding to their index within the full sequence, 1 being the first. For example, to specify two subsets, the first consisting of the first and second code in the sequence and the second subset consisting of the second and third code, use the command `SEQSAT12FF23FF`.

To define a subset with an odd number of codes, insert a 0 before the final code index. For example, to define a 3-code subset consisting of the first, second, and third codes, use the command `SEQSAT1203FF`.

Default Output Sequence

Default Sequence programs the scanner to all universal values. Be certain you want to delete or clear all formats before you read the Default Sequence symbol.



Require Output Sequence

When an output sequence is Required, all output data must conform to an edited sequence or the scanner will not transmit the output data to the host device. When it's On/Not Required, the scanner will attempt to get the output data to conform to an edited sequence but, if it cannot, the scanner transmits all output data to the host device as is, or formatted according to the partial sequence output format (see [Partial Sequence](#) on page 46).

When the output sequence is Off, the barcode data is output to the host as the scanner decodes it. *Default = Off.*

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



Good Read Tone - Output Sequences

The scanner may be programmed to either beep or click in response to a good read of each barcode in an output sequence, or to emit a beep or error tone for a partial sequence. *Default = Good Read Click - Each Code in Sequence and Error Tone - Partial Sequence Output.*



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 and or vibrating (if turned on) for each read. The scanner attempts to find and decode new symbols as long as the trigger is pulled. The maximum number of barcodes read is 21. When this programming selection is turned Off, the scanner will only read the symbol closest to the aiming beam. *Default = Off.*



SHOTGN1.

On



SHOTGN0.

* Off

No Read

With No Read turned On, the scanner notifies you if a code cannot be read. If using an EZConfig-Scanning Tool Scan Data Window (see page [159](#)), an “NR” appears when a code cannot be read. If No Read is turned Off, the “NR” will not appear. *Default = Off.*



SHWNRD1.

On



SHWNRD0.

* Off

If you want a different notation than “NR,” for example, “Error,” or “Bad Code,” you can edit the output message with NRDSTR menu command, such as: NRDSTRError or NRDSTRBad Code

Video Reverse

Video Reverse is used to allow the scanner to read barcodes that are inverted. The Video Reverse Off barcode below is an example of this type of barcode. Scan Video Reverse Only to read *only* inverted barcodes. Scan Video Reverse and Standard Barcodes to read both types of codes.

Note: After scanning Video Reverse Only, menu barcodes cannot be read. You must scan Video Reverse Off or Video Reverse and Standard Barcodes in order to read menu barcodes.

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



VIDREV1.

Video Reverse Only



VIDREV2.

Video Reverse and Standard
Barcodes



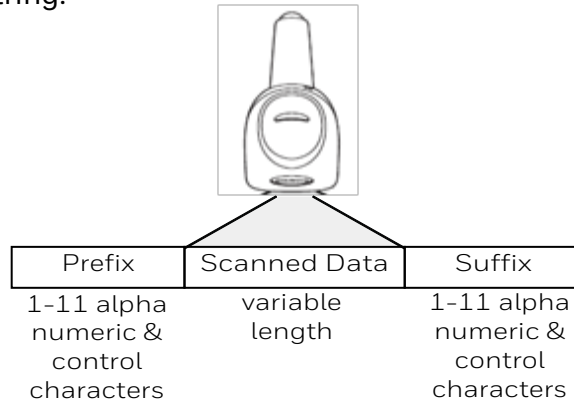
VIDREV0.

* Video Reverse Off

Prefix/Suffix Overview

When a barcode is scanned, additional information is sent to the host computer along with the barcode data. This group of barcode 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 203, 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.

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 Charts](#) (beginning on page 200) 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](#), beginning on page 211 , or scan 9, 9 for all symbologies.

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

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

To add the serial number, scan 5, C, 8, 8.

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

Note: When adding a backslash (\), you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.

- Step 4. Repeat Steps 2 and 3 for every prefix or suffix character.
 - Step 5. Scan Save to exit and save, or scan Discard to exit without saving.
- Repeat the steps above 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](#), beginning on page 211 to apply this suffix to all symbologies.
- Step 3. Scan 0, 9 from the [Programming Chart](#), beginning on page 211. This corresponds with the hex value for a horizontal tab, shown in the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 203.
- Step 4. Scan Save, or scan Discard to exit without saving.

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 200) 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](#), beginning on page 211 or scan 9, 9 for all symbologies.

Your change is automatically saved.

Add a Carriage Return Suffix to All Symbologies

Scan the following barcode 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.



Add CR Suffix All Symbologies

Prefix Selections



Add Prefix



Clear All Prefixes



Clear One Prefix

Suffix Selections



Function Code Transmit

By default, all ASCII control characters are transmitted with barcode data. These non-printable characters are translated into predefined key strokes, or CTRL+X functions (see [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 203). If these key strokes interfere with your host's software application, scan Disable to keep these ASCII control characters from being transmitted. *Default = Enable.*



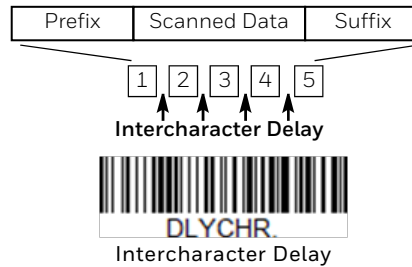
Note: You can also use a custom data format (see [Data Format](#) beginning on page 59) to translate these characters into a more meaningful output.

Intercharacter, Interfunction, and Intermesssage 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 barcode below, then scan the number of 5ms delays from the [Programming Chart](#), beginning on page 211, then Save.



To remove this delay, scan the Intercharacter Delay barcode, then set the number of delays to 0. Scan the Save barcode from the [Programming Chart](#), beginning on page 211.

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 barcode below, then scan the number of 5ms delays from the [Programming Chart](#), beginning on page 211, then Save.

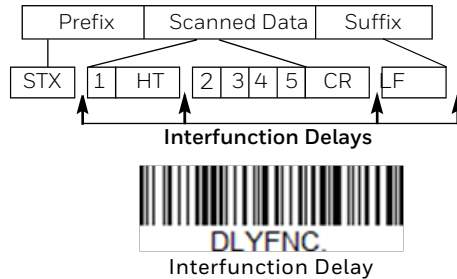
Next, scan the Character to Trigger Delay barcode, then the 2-digit hex value for a printable character to trigger the delay (see [Lower ASCII Reference Table](#), page 205.)



To remove this delay, scan the Delay Length barcode, and set the number of delays to 0. Scan the Save barcode from the [Programming Chart](#), beginning on page 211.

Interfunction Delay

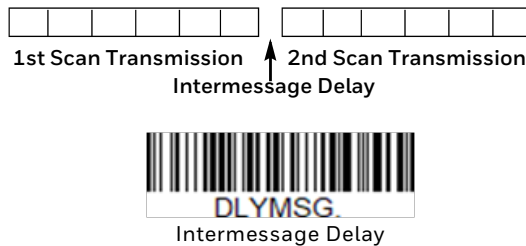
An interfunction delay of up to 5000 milliseconds (in 5ms increments) may be placed between the transmission of each control character in the message string. Scan the Interfunction Delay barcode below, then scan the number of 5ms delays, and the Save barcode from the [Programming Chart](#), beginning on page 211.



To remove this delay, scan the Interfunction Delay barcode, then set the number of delays to 0. Scan the Save barcode from the [Programming Chart](#), beginning on page 211.

Intermessage Delay

An intermessage delay of up to 5000 milliseconds (in 5ms increments) may be placed between each scan transmission. Scan the Intermesage Delay barcode below, then scan the number of 5ms delays, and the Save barcode from the [Programming Chart](#), beginning on page 211.



To remove this delay, scan the Intermesage Delay barcode, then set the number of delays to 0. Scan the Save barcode from the [Programming Chart](#), beginning on page 211.

Data Format Editor Introduction

You may use the Data Format Editor to change the scanner's output. For example, you can use the Data Format Editor to insert characters at certain points in barcode 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 barcode, it is output automatically. However, when you create a format, you must use a "send" command (see [Send Commands](#) on page 63) within the format program to output data.

Multiple formats may be programmed into the scanner. 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 barcode is read that fails the first data format, the next data format, if there is one, will be used on the barcode 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.



Show Data Format

Scan the barcode below to show current data format settings.



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 from the [Programming Chart](#), beginning on page 211. 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 78 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 barcodes from the [Programming Chart](#), beginning on page 211, to program the scanner 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 200, 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](#), beginning on page 211.

If you wish to create a data format for all symbologies, with the exception of some specific symbologies, refer to B8 ([page 76](#)).

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](#), beginning on page 211. 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](#), beginning on page 211. 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 200), and the barcode 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**
Exit and save your data format changes.
- **Discard**
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	000

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

Send all characters

- F1 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 203 for decimal, hex and character codes.

Send a number of characters

- F2 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 203 for decimal, hex and character codes.

F2 Example: Send a number of characters



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

F2 is the "Send a number of characters" command

10 is the number of characters to send

0D is the hex value for a CR

The data is output as: 1234567890

F2 and F1 Example: Split characters into 2 lines

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

Command string: F2100DF10D

F2 is the "Send a number of characters" command

10 is the number of characters to send for the first line

0D is the hex value for a CR

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

1234567890

ABCDEFGHIJ

<CR>

Send all characters up to a particular character

- F3 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 203 for decimal, hex and character codes.

F3 Example: Send all characters up to a particular character



Using the barcode above, send all characters up to but not including “D,” followed by a carriage return.

Command string: F3440D

F3 is the “Send all characters up to a particular character” command

44 is the hex value for a ‘D’

0D is the hex value for a CR

The data is output as:

1234567890ABC

<CR>

Send all characters up to a string

- B9 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 203 for decimal, hex and character codes.

B9 Example: Send all characters up to a defined string



Using the barcode above, send all characters up to but not including "AB."

Command string: B900024142

B9 is the "Send all characters up to a string" command

0002 is the length of the string (2 characters)

41 is the hex value for A

42 is the hex value for B

The data is output as: 1234567890

Send all but the last characters

- E9 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.

Insert a character multiple times

- F4 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 203 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 barcode above, followed by 2 tabs.

Command string: E908F40902

E9 is the "Send all but the last characters" command

08 is the number of characters at the end to ignore

F4 is the “Insert a character multiple times” commandx

09 is the hex value for a horizontal tab

02 is the number of times the tab character is sent

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

Insert a string

- BA Send “ss” string of “nn” length in the output message, leaving the cursor in the current position. *Syntax = BAnnnns...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 203 for decimal, hex and character codes.

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



Using the barcode 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 is the “Send all characters up to a string” command

0002 is the length of the string (2 characters)

41 is the hex value for A

42 is the hex value for B

BA is the “Insert a string” command

0002 is the length of the string to be added (2 characters)

2A is the hex value for an asterisk (*)

2A is the hex value for an asterisk (*)

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

1234567890**ABCDEFGHIJ

<CR>

Insert symbology name

- B3 Insert the name of the barcode's symbology in the output message, without moving the cursor. Only symbologies with a Honeywell ID are included (see [Symbology Charts](#) on page 200). Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 203 for decimal, hex and character codes.

Insert barcode length

- B4 Insert the barcode's length in the output message, without moving the cursor. The length is expressed as a numeric string and does not include leading zeros.

B3 and B4 Example: Insert the symbology name and length



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

Command string: B3F42001B4F42001F10D

B3 is the "Insert symbology name" command

F4 is the "Insert a character multiple times" command

20 is the hex value for a space

01 is the number of times the space character is sent

B4 is the "Insert barcode length" command

F4 is the "Insert a character multiple times" command

20 is the hex value for a space

01 is the number of times the space character is sent

F1 is the "Send all characters" command

0D is the hex value for a CR

The data is output as:

Code128 20 1234567890ABCDEFGHIJ

<CR>

Insert key strokes

- B5 Insert a key stroke or combination of key strokes. Key strokes are dependent on your keyboard (see Keyboard Key References on page 309). Any key can be inserted, including arrows and functions. *Syntax = 5CB5xxssnn* 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 239.

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

For example, B501021F inserts an “A” on a 104 key, U.S. style keyboard. B5 = the command, 01 = number of key press events (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 keystroke to B5xxssnnssnnssnn. An example that would insert "abc" is as follows: B503001F00320030F833.

Note: Key modifiers can be added together when needed. The sum is converted to hexadecimal.

Example: Control Left+Shift Left = 17, converted to hexadecimal = 11.

Move Commands

Move the cursor forward a number of characters

- F5 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 barcode data from the barcode above. End with a carriage return.

Command string: F503F10D

F5 is the “Move the cursor forward a number of characters” command

03 is the number of characters to move the cursor

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

4567890ABCDEFGHIJ

<CR>

Move the cursor backward a number of characters

F6 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.

Move the cursor to the beginning

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

FE and F7 Example: Manipulate barcodes that begin with a 1



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

Command string: FE31F7F2060D

FE is the “Compare characters” command

31 is the hex value for 1

F7 is the “Move the cursor to the beginning” command

F2 is the “Send a number of characters” command

06 is the number of characters to send

0D is the hex value for a CR

The data is output as:

123456

<CR>

Move the cursor to the end

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

Search Commands

Search forward for a character

F8 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 203 for decimal, hex and character codes.

F8 Example: Send barcode data that starts after a particular character



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

Command string: F844F10D

F8 is the “Search forward for a character” command

44 is the hex value for “D”

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

DEFGHIJ

<CR>

Search backward for a character

- F9 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 203 for decimal, hex and character codes.

Search forward for a string

- B0 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 characters string “Test.”
Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 203 for decimal, hex and character codes.

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



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

Command string: B00003464748F10D

B0 is the “Search forward for a string” command

0003 is the string length (3 characters)

46 is the hex value for “F”

47 is the hex value for “G”

48 is the hex value for “H”

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

FGHIJ

<CR>

Search backward for a string

- B1 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 characters string “Test.”
Refer to the [ASCII Conversion Chart \(Code Page 1252\)](#), beginning on page 203 for decimal, hex and character codes.

Search forward for a non-matching character

- E6 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 203 for decimal, hex and character codes.

E6 Example: Remove zeros at the beginning of barcode data



This example shows a barcode that has been zero filled. You may want to ignore the zeros 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 barcode above:

Command string: E630F10D

E6 is the “Search forward for a non-matching character” command

30 is the hex value for 0

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

37692

<CR>

Search backward for a non-matching character

- E7 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 203 for decimal, hex and character codes.

Miscellaneous Commands

Suppress characters

- FB 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 = FBnnxxyy .zz* where nn is a count of the number of suppressed characters in the list, and xxyy .. zz is the list of characters to be suppressed.

FB Example: Remove spaces in barcode data



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

Command string: FB0120F10D

FB is the “Suppress characters” command

01 is the number of character types to be suppressed

20 is the hex value for a space

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

34567890

<CR>

Stop suppressing characters

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

Replace characters

- E4 Replaces up to 15 characters in the output message, without moving the cursor. Replacement continues until the E5 command is encountered. *Syntax* = *E4nnxx₁xx₂yy₁yy₂...zz₁zz₂* where nn is the total count of the number of characters in the list (characters to be replaced plus replacement characters); xx_i defines characters to be replaced and xx₂ defines replacement characters, continuing through zz_i and zz₂.

E4 Example: Replace zeros with CRs in barcode data



If the barcode 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 zeros in the barcode above with carriage returns.

Command string: E402300DF10D

E4 is the “Replace characters” command

02 is the total count of characters to be replaced, plus the replacement characters (0 is replaced by CR, so total characters = 2)

30 is the hex value for 0

0D is the hex value for a CR (the character that will replace the 0)

F1 is the “Send all characters” command

0D is the hex value for a CR

The data is output as:

1234

5678

ABC

<CR>

Stop replacing characters

- E5 Terminates character replacement. *Syntax* = *E5*.

Compare characters

- FE 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 203 for decimal, hex and character codes.

Compare string

- B2 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 203 for decimal, hex and character codes.

Check for a number

- EC 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 barcode begins with a number

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

Command string: ECF10D

EC is the “Check for a number” command

F1 is the “Send all characters” command

0D is the hex value for a CR



If this barcode is read, `AB1234` the next data format, if there is one, will be used on the data. If there is no other format, the format fails and the raw data is output as AB1234.



If this barcode is read: `1234AB` the data is output as:

1234AB
<CR>

Check for non-numeric character

ED 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 barcode begins with a letter

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

Command string: EDF10D

ED is the “Check for a non-numeric character” command

F1 is the “Send all characters” command

OD is the hex value for a CR



If this barcode is read, 1234AB 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 barcode is read: AB1234 the data is output as:

AB1234
<CR>

Insert a delay

EF 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.

Discard Data

B8 Discards types of data. For example, you may want to discard Code 128 barcodes 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 barcodes 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 78](#)) in order for the B8 command to work.

If Data Format is On, but Not Required ([page 77](#)), barcode data that meets the B8

format is scanned and output as usual.

Because the data format needs to be On and Required ([page 78](#)) for the B8 command, you must input data formats for all barcodes you wish to discard as well as all barcodes you wish to output.

Other data format settings impact the B8 command. If Data Format Non-Match Error Tone is On ([page 90](#)), the scanner 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 barcode 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 barcode is not transmitted. If you wish to process this type of barcode 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 barcode 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 Formatter On, Not Required, Keep Prefix/Suffix



Data Format Required, Keep Prefix/Suffix



Data Formatter On, Not Required, Drop Prefix/Suffix



Data Format Required, Drop Prefix/Suffix

Data Format Non-Match Error Tone

When a barcode is encountered that doesn't match your required data format, the scanner normally generates an error tone. However, you may want to continue scanning barcodes without hearing the error tone. If you scan the Data Format Non-Match Error Tone Off barcode, 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 barcode is found, scan the Data Format Non-Match Error Tone On barcode. *Default = Data Format Non-Match Error Tone On.*



* Data Format Non-Match Error Tone On



Data Format Non-Match Error Tone Off

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 barcodes below.



Primary Data Format



Data Format 2



Data Format 1



Data Format 3

Single Scan Data Format Change

You can also switch between data formats for a single scan. The next barcode 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 barcode below. The next barcode that is scanned uses Data Format 1, then reverts back to Data Format 3.



Single Scan-Primary Data Format



Single Scan-Data Format 1



Single Scan-Data Format 2



Single Scan-Data Format 3

SYMBOLOLOGIES

This programming section contains the following menu selections. Refer to [Chapter 11](#) 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
- GS1 Composite Codes
- GS1 DataBar Expanded
- GS1 DataBar Limited
- GS1 DataBar Omnidirectional
- GS1 Emulation
- GS1-128
- Interleaved 2 of 5
- Korea Post
- Label Code
- 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

For best scanner performance, you should only enable the symbologies that you need. Scan All Symbologies Off to disable all symbologies, then enable the symbologies you need by scanning the On barcode for each symbology.



Message Length Description

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

Example: Decode only those barcodes with a count of 9-20 characters.
Min. length = 09
Max. length = 20

Example: Decode only those barcodes with a count of 15 characters.
Min. length = 15
Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the barcodes included in the explanation of the symbology, then scan the digit value of the message length and Save barcodes from the [Programming Chart](#), beginning on page 211. The minimum and maximum lengths and the defaults are included with the respective symbologies.

Codabar

<Default All Codabar Settings>



Codabar On/Off



* On



Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the barcode. 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 barcodes with Modulo 16 check characters. *Default = No Check Character.*

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

When Check Character is set to Validate and Transmit, the scanner will only read Codabar barcodes 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 barcodes 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 barcodes below to change the message length. Refer to [Message Length Description](#) (page 81) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.

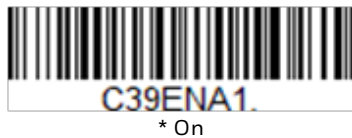


Code 39

< Default All Code 39 Settings >



Code 39 On/Off



If you are reading Code 39 barcodes, Codablock A should remain disabled. If you are enabling Codablock A (see [Codablock A](#) on page 121), you should disable Code 39.

Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the barcode. 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 barcode data with or without a check character.

When Check Character is set to Validate, but Don't Transmit, the unit only reads Code 39 barcodes 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 barcodes printed with a check character and will transmit this character at the end of the scanned data. *Default= No Check Character.*



* No Check Character



Validate, but Don't Transmit



Validate and Transmit

Code 39 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Code 39 Append

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



On



* 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 135) must be turned off while scanning Code 32 Pharmaceutical codes.



Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the barcode 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.*

Full ASCII Table									
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	II	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.



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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the [Programming Chart](#), beginning on page 211. The data characters should then appear properly.



Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >



Interleaved 2 of 5 On/Off



Check Digit

No Check Digit indicates that the scanner reads and transmits barcode 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 barcodes 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 barcodes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default= No Check Digit.*



* No Check Digit



Validate, but Don't Transmit



Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 6, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

NEC 2 of 5

< Default All NEC 2 of 5 Settings >



NEC 2 of 5 On/Off



On



* Off

Check Digit

No Check Digit indicates that the scanner reads and transmits barcode 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 barcodes 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 barcodes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default*= No Check Digit.



* No Check Digit



Validate, but Don't Transmit



Validate and Transmit

NEC 2 of 5 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length

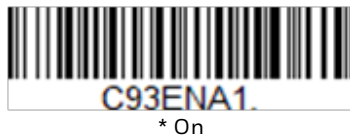


Code 93

< Default All Code 93 Settings >



Code 93 On/Off



Code 93 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description \(page 82\)](#) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



Code 93 Append

This function allows the scanner to append the data from several Code 93 barcodes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 93 barcodes 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 barcodes are read,

deleting the first space from each. The scanner transmits the appended data when it reads a Code 93 barcode that starts with a character other than a space. *Default = 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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the [Programming Chart](#), beginning on page 211. The data characters should then appear properly.



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

<Default All Straight 2 of 5 Industrial Settings>



Straight 2 of 5 Industrial On/Off



Straight 2 of 5 Industrial Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

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

<Default All Straight 2 of 5 IATA Settings>



Straight 2 of 5 IATA On/Off



On



* Off

Straight 2 of 5 IATA Redundancy

If you are encountering errors when reading Straight 2 of 5 IATA barcodes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a barcode 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 barcode. To adjust the redundancy, scan the Straight 2 of 5 IATA Redundancy barcode below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#), beginning on page 211. Then scan the Save barcode. *Default = 0.*



Straight 2 of 5 IATA Redundancy

Straight 2 of 5 IATA Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>



Matrix 2 of 5 On/Off



*On



Off

Matrix 2 of 5 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 11

<Default All Code 11 Settings>



Code 11 On/Off



*On



Off

Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 barcodes.

Default= Two Check Digits.



One Check Digit



* Two Check Digits

Code 11 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 128

<Default All Code 128 Settings>



Code 128 On/Off



* On



Off

If you are reading Code 128 barcodes, Codablock F should remain disabled. If you are enabling Codablock F (see [Codablock F](#) on page 136), you should disable Code 122.

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 barcodes on a blood product label. Use the barcodes below to turn concatenation on or off. *Default = Off.*



Code 128 Redundancy

If you are encountering errors when reading Code 128 barcodes, you may want to adjust the redundancy count. Redundancy adjusts the number of times a barcode 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 barcode. To adjust the redundancy, scan the Code 128 Redundancy barcode below, then scan a redundancy count between 0 and 10 on the [Programming Chart](#), beginning on page 211. Then scan the Save barcode. *Default = 0.*



Code 128 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) 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 barcodes together before transmitting them to the host computer. When the scanner encounters a Code 128 barcode with the append trigger character(s), it buffers Code 128 barcodes until it reads a Code 128 barcode that does not have the append trigger. The data is then transmitted in the order in which the barcodes 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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the [Programming Chart](#), beginning on page 211. The data characters should then appear properly.



GS1-128

<Default All GS1-128 Settings>



GS1-128 On/Off



GS1-128 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 1, Maximum Default = 80.



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.*



* AIM Telepen Output



Original Telepen Output

Telepen Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.



Minimum Message Length



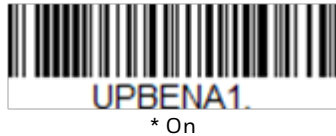
Maximum Message Length

UPC-A

<Default All UPC-A Settings>



UPC-A On/Off



Note: To convert UPC-A barcodes to EAN-13, see [Convert UPC-A to EAN-13](#) on page 108.

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.*



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 can be programmed so it is not transmitted (Off). *Default = On.*



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.



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

UPC-A Addenda Required

When Required is scanned, the scanner will only read UPC-A barcodes that have addenda. You must then turn on a 2 or 5 digit addenda listed on [page 101](#).

Default= Not Required.



Required



* 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](#). Set the length (in milliseconds) for this timeout by scanning the barcode below, then setting the timeout (from 0-120 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211 of this manual, then Save. *Default = 120.*

Note: The Addenda Timeout setting is applied to all addenda and coupon code searches.



UPC-A Addenda Separator

When this feature is On, there is a space between the data from the barcode 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 barcodes.

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.*



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/EAN-13 with Extended Coupon Code](#). Set the length (in milliseconds) for this timeout by scanning the barcode below, then setting the timeout (from 0-120 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211 of this manual, then Save. *Default = 120.*

Note: The Addenda Timeout setting is applied to all addenda and coupon code searches.



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. barcodes 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 106). *Default= On.*



UPC-E0 Expand

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



UPC-E0 Addenda Required

When Required is scanned, the scanner will only read UPC-E barcodes that have addenda. *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-E0 Addenda Required](#). Set the length (in milliseconds) for this timeout by scanning the barcode below, then setting the timeout (from 0-120 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211 of this manual, then Save. *Default = 120.*

Note: The Addenda Timeout setting is applied to all addenda and coupon code searches.



UPC-E0 Addenda Separator

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



UPC-E0 Check Digit

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = 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. barcodes lead with the 0 number system. For these codes, use [UPC-E0](#) (page 103). If you need to read codes that lead with the 1 number system, use the UPC-E1 On selection. *Default = Off.*



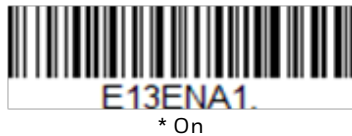


EAN/JAN-13

<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 barcodes are converted to 13 digits 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 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 barcodes that have addenda. *Default= Not Required.*



EAN-13 Beginning with 290 Addenda Required

This setting programs the scanner to require a 5 digits addenda only on EAN-13 barcodes that begin with “290.” The following settings can be programmed:

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

Note: If you are using [EAN-13 Beginning with 290 Addenda Required](#) (page 109), 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 barcodes 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



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 barcodes that begin with a “378” or “379.” The following settings can be programmed:

Require Addenda: All EAN-13 barcodes 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 barcode with the addenda is then transmitted as a single, concatenated barcode. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 barcode 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 barcodes 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 5 Digit Addenda



Require 2 Digit Addenda



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 barcodes that begin with a "414" or "419." The following settings can be programmed:

Require Addenda: All EAN-13 barcodes 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 barcode with the addenda is then transmitted as a single, concatenated barcode. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 barcode 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 barcodes 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 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 barcodes that begin with a “434” or “439.” The following settings can be programmed:

Require Addenda: All EAN-13 barcodes 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 barcode with the addenda is then transmitted as a single, concatenated barcode. If the required addenda is not found within the [Addenda Timeout](#) period, the EAN-13 barcode 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 barcodes 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 barcodes that begin with “977.” The following settings can be programmed:

Require 2 Digit Addenda: All EAN-13 barcodes that begin with “977” must have a 2 digit addendum. The EAN-13 barcode with the 2 digit addendum is then transmitted as a single, concatenated barcode. If a 2 digit addendum is not found within the [Addenda Timeout](#) period, the EAN-13 barcode 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 barcodes are transmitted, depending on the setting you are using for [EAN/JAN-13 Addenda Required](#).

Default = Don't Require 2 Digit Addenda.



* Don't Require 2 Digit Addenda



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 barcodes that begin with “978.” The following settings can be programmed:

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



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 barcodes that begin with “979.” The following settings can be programmed:

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



Require 5 Digit Addenda

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 [EAN/JAN-13 Addenda Required](#). Set the length (in milliseconds) for this timeout by scanning the barcode below, then setting the timeout (from 0-120 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211 of this manual, then Save. *Default = 120.*

Note: The Addenda Timeout setting is applied to all addenda and coupon code searches.



Addenda Timeout

EAN/JAN-13 Addenda Separator

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



On



*Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to [UPC-A/ EAN-13 with Extended Coupon Code \(page 116\)](#).

ISBN Translate

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



On



* Off

EAN/JAN-8

<Default All EAN/JAN-8 Settings>



EAN/JAN-8 On/Off



* On



EAN/JAN-8 Check Digit

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



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.*



EAN/JAN-8 Addenda Required

When Required is scanned, the scanner will only read EAN/JAN-8 barcodes that have addenda. *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 [EAN/JAN-8 Addenda Required](#). Set the length (in milliseconds) for this timeout by scanning the barcode below, then setting the timeout (from 0-120 milliseconds) by scanning digits from the [Programming Chart](#), beginning on page 211 of this manual, then Save. *Default = 120.*

Note: The Addenda Timeout setting is applied to all addenda and coupon code searches.



EAN/JAN-8 Addenda Separator

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



MSI

<Default All MSI Settings>



MSI On/Off



On



* Off

MSI Check Character

Different types of check characters are used with MSI barcodes. You can program the scanner to read MSI barcodes 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 barcodes 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 barcodes printed with the specified type check character(s), but will not transmit the check character(s) with the scanned data.



* Validate Type 10, but Don't Transmit



Validate Type 10 and Transmit



Validate 2 Type 10 Characters, but Don't Transmit



Validate 2 Type 10 Characters and Transmit



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



Disable MSI Check Characters



Validate Type 11 then Type 10 Character and Transmit

MSI Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

GS1 DataBar Omnidirectional

< Default All GS1 DataBar Omnidirectional Settings >



GS1 DataBar Omnidirectional On/Off



* On



Off

GS1 DataBar Limited

< Default All GS1 DataBar Limited Settings >



GS1 DataBar Limited On/Off



* On



Off

GS1 DataBar Expanded

< Default All GS1 DataBar Expanded Settings >



GS1 DataBar Expanded On/Off



* On



Off

GS1 DataBar Expanded Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.



Minimum Message Length



Maximum Message Length

Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes ([page 87](#)), Trioptic Code must be off.

Trioptic Code is used for labeling magnetic storage media.



On



* Off

Codablock A

<Default All Codablock A Settings>



Codablock A On/Off



On



* Off

If you are reading Code 39 barcodes, Codablock A should remain disabled. If you are enabling Codablock A, you should disable Code 39 (see [Code 39](#) on page 85).

Codablock A Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) 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



On



* Off

If you are reading Code 128 barcodes, Codablock F should remain disabled. If you are enabling Codablock F, you should disable Code 128 (see [Code 128](#) on page 96).

Codablock F Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.



Minimum Message Length



Maximum Message Length

Label Code

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



On



*Off

PDF417

< Default All PDF417 Settings >



PDF417 On/Off



* On



Off

PDF417 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.



Minimum Message Length



Maximum Message Length

MacroPDF417

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



On



*Off

MicroPDF417

< Default All MicroPDF417 Settings >



MicroPDF417 On/Off



On



* Off

MicroPDF417 Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.



Minimum Message Length



Maximum Message Length

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.*



On



* Off

UPC/EAN Version

Scan the UPC/EAN Version On barcode 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.*



UPC/EAN Version On



* 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 104) for further information.

GS1 Composite Code Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.



Minimum Message Length



Maximum Message Length

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 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 200).

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 200).

If GS1 Code Expansion Off is scanned, retail code expansion is disabled, and UPC-E expansion is controlled by the [UPC-E0 Expand](#) (page 118) setting. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see [Symbology Charts](#) on page 200).

If EAN8 to EAN13 Conversion is scanned, all EAN8 barcodes are converted to EAN13 format.

Default= GS1 Emulation Off.



GS1-128 Emulation



GS1 DataBar Emulation



GS1 Code Expansion Off



EAN8 to EAN13 Conversion



* 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 barcode 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.*



On



* Off

QR Code

< Default All QR Code Settings >



QR Code On/Off

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



* On



Off

QR Code Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-7089. Minimum Default = 1, Maximum Default = 7089.



Minimum Message Length



Maximum Message Length

QR Code Append

This function allows the scanner to append the data from several QR Code barcodes together before transmitting them to the host computer. When the scanner encounters an QR Code barcode with the append trigger character(s), it buffers the number of QR Code barcodes determined by information encoded in those barcodes. Once the proper number of codes is reached, the data is output in the order specified in the barcodes. There are 3 ways to scan appended QR Code:

One Scan: Pull the trigger one time and all appended QR Codes in the same image are decoded.

Swipe: Pull and hold down the trigger and scan all appended QR Codes while keeping the trigger pressed. The scanner emits short beeps for each partial QR Code that is scanned and buffered. One long beep is emitted after the last QR Code is scanned and the data is complete. Not compatible with Presentation mode.

Point and Shoot: Pull the trigger one time for each image. The scanner emits a short beep for each partial QR Code that is scanned and buffered. One long beep is emitted after the last QR Code is scanned and the data is complete. Not compatible with Presentation mode.

Default = One Scan.



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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the [Programming Chart](#), beginning on page 211. The data characters should then appear properly.



DotCode

< Default All DotCode Settings >



DotCode On/Off



On



* Off

Poor Quality DotCodes

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



Poor Quality DotCodes On



* Poor Quality DotCodes Off

DotCode Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-2400. Minimum Default = 1, Maximum Default = 2400.



Minimum Message Length



Maximum Message Length

Digimarc Barcode™

Digimarc Decoder Attempts

Set the number of attempts by scanning the barcode below, then setting the number of attempts (0-10) by scanning digits from the [Programming Chart](#) beginning on page 211 of this manual, the Save. *Minimum to Maximum attempts = 0-10. Default = 5.*



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 ID decoder will read every fifth frame.

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

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

Default = Uses Digimarc Decoder then Both Decoders.



*Off



On



Uses ID Decoder then Both Decoders



Uses Digimarc Decoder then Both Decoders



Uses ID Decoder then Alternates Decoders



Uses Digimarc Decoder then Alternates Decoders

Data Matrix

< Default All Data Matrix Settings >



Data Matrix On/Off



* On



Off

Direct Part Marking Decoding

If you are having trouble reading Direct Part Marking (DPM) barcodes, scan Dotpeen DPM Decoding for Dotpeen codes or scan Reflective (Etched) DPM Decoding for reflective (etched) codes. *Default = Disable DPM Decoding.*



Dotpeen DPM Decoding



* Disable DPM Decoding



Reflective (Etched) DPM Decoding

Data Matrix Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-3116. Minimum Default = 1, Maximum Default = 3116.



Minimum Message Length



Maximum Message Length

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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the Programming Chart, beginning on page 211. The data characters should then appear properly.



Data Matrix Code Page

MaxiCode

< Default All MaxiCode Settings >



MaxiCode On/Off



On



* Off

MaxiCode Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) 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



*Off

Aztec Code Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-3832. Minimum Default = 1, Maximum Default = 3832.



Minimum Message Length



Maximum Message Length

Aztec Append

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



* On



Off

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 barcode 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 barcode below, select the code page with which the barcodes were created (see [ISO 2022/ISO 646 Character Replacements](#) on page 208), and scan the value and the Save barcode from the [Programming Chart](#), beginning on page 211. 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 barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 1-7833. Minimum Default = 1, Maximum Default = 7833.





Maximum Message Length

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.



* 2D Postal Codes Off

Single 2D Postal Codes:



Australian Post On



Canadian Post On



Japanese Post On



British Post On



Intelligent Mail Barcode On



KIX Post On



POSTAL5.

Planet Code On

Also see [Planet Code Check Digit](#), page 138.



POSTAL9.

Postal-4i On



POSTAL6.

Postnet On

Also see [Postnet Check Digit](#), page 139.



POSTAL11.

Postnet with B and B' Fields On



POSTAL2.

InfoMail On

Combination 2D Postal Codes:



POSTAL8.

InfoMail and British Post On



POSTAL20.

Intelligent Mail Barcode and Postnet with B and B' Fields On



POSTAL14.

Postnet and Postal-4i On



POSTAL16.

Postnet and Intelligent Mail Barcode On



POSTAL17.

Postal-4i and Intelligent Mail Barcode On



Planet Code and Postnet On



Planet Code and Postal-4i On



Planet Code, Postnet, and Postal-4i On



Planet Code, Postal-4i, and Intelligent Mail Barcode On



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



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



Planet Code and Postnet with B and B' Fields On



Planet Code and Intelligent Mail Barcode



Planet Code, Postnet, and Intelligent Mail Barcode On



Postnet, Postal-4i, and Intelligent Mail Barcode On



Planet Code, Intelligent Mail Barcode, and Postnet with B and B' Fields On



Postal-4i, Intelligent Mail Barcode, and Postnet with B and B' Fields On



Planet Code, Postal-4i, Intelligent Mail Barcode, and Postnet On



Planet Code, Postal-4i, Intelligent Mail Barcode, 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.*



Transmit Check Digit



* 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.*



Transmit Check Digit



* 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.



* Bar Output



Numeric N Table



Alphanumeric C Table



Combination C and 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 barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



Korea Post

<Default All Korea Post Settings>



Korea Post



Korea Post Message Length

Scan the barcodes below to change the message length. Refer to [Message Length Description](#) (page 82) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Korea Post Check Digit

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



Transmit Check Digit



* Don't Transmit Check Digit

IMAGING COMMANDS

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

Single-Use Basis

Imaging Commands with their modifiers send instructions to the scanner on a single-use basis, and take effect for a single image capture. Once that capture is complete, the scanner 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 scanner.

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), 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 145)

[Image Ship - IMGSHIP](#) (page 149)

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 scanner from the image/object. To achieve a high quality image, it is recommended that you position your scanner 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 trigger 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.

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 scanner, and has no auto-exposure.

B - Beeper

Causes a beep to sound after an image is snapped.

- OB No beep (*default*)
- 1B Sounds a beep when the image is captured

T - Wait for Trigger

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

- OT Takes image immediately (*default*)
- 1T Waits for a trigger press, then takes the image

L - LED State

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

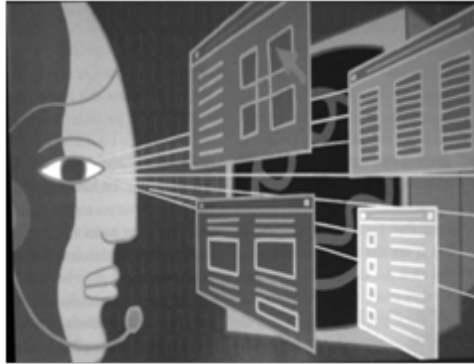
- OL LEDs off (*default*)
- 1L LEDs on

E - Exposure

Exposure is used in Manual Style only (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 = 7874*)

- nE* Range: 1 - 7874

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.

- 1G No gain (*default*)
- 2G Medium gain
- 4G Heavy gain
- 8G 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 scanner should take to reach the [D - Delta for Acceptance](#). Update Tries is only available when using Photo Style (1P). (Default = 6)

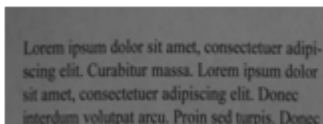
nU Range: 0 - 10

% - Target Set Point Percentage

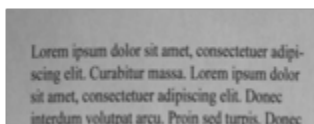
Sets the target point for the light and dark values in the captured image. A setting of 75% means 75% of the pixels are at or below the target white value, and 25% of the pixels are above the target white value. Altering this setting from the default is not recommended under normal circumstances. To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

n% Range: 1 - 99

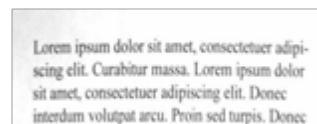
Example: Target Set Point
Percentage at 97%:



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 trigger 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.

IMGSHIP Modifiers

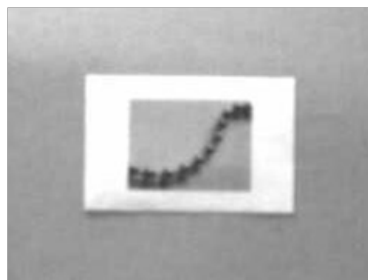
A - Infinity Filter

Enhances pictures taken from very long distances (greater than 10 feet or 3m). The Infinity Filter should not be used with [IMGSNP Modifiers](#) (page 145).

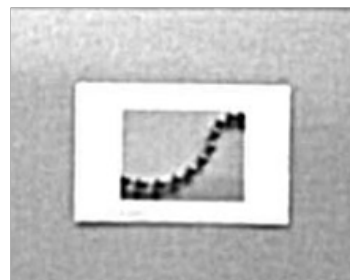
0A Infinity filter off (*default*)

1A Infinity filter on

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



Example: 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.

- OK 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 OK: 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.

- nL The left edge of the shipped image corresponds to column n of the image in memory. Range: 000 - 843. (*Default = 0*)
- nR The right edge of the shipped image corresponds to column $n - 1$ of the image in memory. Range: 000 - 843. (*Default = all columns*)
- nT The top edge of the shipped image corresponds to row n of the image in memory. Range: 000 - 639. (*Default = 0*)
- nB The bottom edge of the shipped image corresponds to row $n - 1$ of the image in memory. Range: 000 - 639. (*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.

nM 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.

0P 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.

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 154](#)), with the scanner 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 150](#)). 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 150) 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: Blur Image Off (0V):



Blur Image On (1V):



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*)

1W Ship histogram

Example: Image used for histogram:



Histogram of image:



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 200 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.



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

Show Software Revision

Scan the barcode below to output the current software revision, unit serial number, and other product information for both the scanner.



Show Boot Software Revision



Show App Software Revision

Test Menu

When you scan the Test Menu On code, then scan a programming code in this manual, the scanner 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 scanner operation.



Application Plug-Ins



* Plugin function off (default)



Enable EasyDL2.0



Enable EasyGS1



Enable EasyBCBP

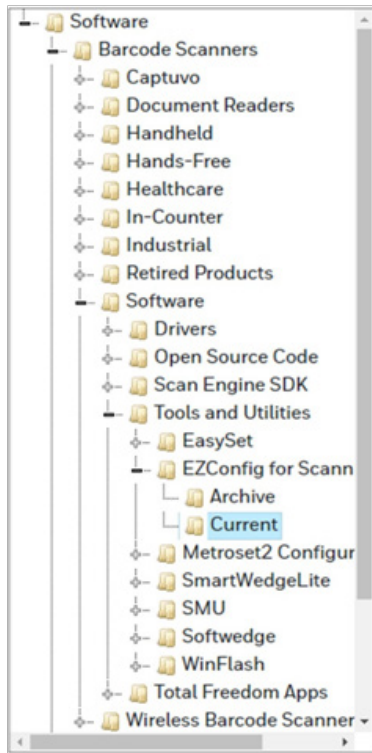
EZConfig for Scanning Introduction

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

Configure with EZConfig for Scanning

Use the EZConfig for Scanning tool to configure your scanner online:

1. Access the Honeywell Technical Support Downloads Portal at <https://hsmftp.honeywell.com>.
2. Go to Software > Barcode Scanners > Software > Tools and Utilities > EZConfig for Scanning > Current.



3. Download the Setup version of EZConfig for Scanning.
4. Open EZConfig to configure your scanner.

Reset the Factory Defaults



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

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



Remove Custom Defaults



Activate Defaults

Note: The [Menu Commands](#), beginning on page 167, 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 barcodes will program the scanner. For complete descriptions and examples of each serial programming command, refer to the corresponding programming barcode 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 win- dows that appear on the screen.

Menu Command Syntax

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

Prefix [*:Name:*] *Tag SubTag {Data}* [, *SubTag {Data}*][; *Tag SubTag {Data}*][...]
Storage

Prefix	Three ASCII characters: SYN M CR (ASCII 22,77,13).
:Name:	This command is only used with cordless devices. It is used to specify whether you're communicating with the base or the scanner. To send information to the scanner (with the base

connected to host). This setting is changed by using the BT_NAM command, which accepts alphanumeric values. If the name is not known, a wild- card (*) can be used :*

Note: Since the base stores all work group settings and transfers to them to scanner once they are linked, changes are typically done to the base and not to the scanner.

Tag	A 3 character case-insensitive field that identifies the desired menu command group. For example, all RS232 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 RS232 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. An exclamation point (!) performs the command's operation on the device's volatile menu configuration table. A 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.

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 PAP sub command.

Note: When using the >, all other commands will return NAK.

? 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 scanner.

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: cbr?.

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;
and the Default setting (DFT) has no value.

Trigger Commands

You can activate and deactivate the scanner with serial trigger commands. First, the scanner must be put in Manual Trigger Mode by scanning a Manual Trigger Mode barcode ([page 27](#)), or by sending a serial menu command for triggering ([page 28](#)). Once the scanner is in serial trigger mode, the trigger is activated and deactivated by sending the following commands:

Activate: SYN T CR

Deactivate: SYN U CR

The scanner scans until a barcode has been read, until the deactivate command is sent, or until the serial time-out has been reached (see [Read Time-Out](#) on [page 28](#) for a description, and the serial command on [page 167](#)).

Reset the Custom Defaults

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



Activate Custom Defaults

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

Menu Commands

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
Product Default Settings			
Set Custom Defaults	Set Custom Defaults	MNUCDP	3
	Save Custom Defaults	MNUCDS	3
Reset the Custom Defaults	Activate Custom Defaults	DEFAULT	4
Program the Interface			
Plug and Play Codes: RS232	RS232 Serial Port	PAP232	5
Plug and Play Codes: IBM SurePos	USB IBM SurePos Handheld	PAPSPH	6
	USB IBM SurePos Tabletop	PAPSPT	6
Plug and Play Codes: USB	USB Keyboard (PC)	PAP124	6
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	Require 2 Digit Addenda	ARQ3781	111
	Require 5 Digit Addenda	ARQ3782	111
	Require 2 or 5 Digit Addenda	ARQ3783	111
EAN-13 Beginning with 414/419 Addenda Required	*Don't Require Addenda	ARQ4140	111
	Require 2 Digit Addenda	ARQ4141	111

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
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EAN-13 Beginning with 434/439 Addenda Required	*Don't Require Addenda	ARQ4340	112
	Require 2 Digit Addenda	ARQ4341	112
	Require 5 Digit Addenda	ARQ4342	112
	Require 2 or 5 Digit Addenda	ARQ4343	112
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EAN-13 Beginning with 979 Addenda Required	*Don't Require 5 Digit Addenda	ARQ9790	114
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Addenda Timeout	Range (0 - 120) *120	DLYADD#####	114
EAN/JAN-13 Addenda Separator	*Off	E13ADS0	115
	On	E13ADS1	115
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EAN/JAN-8 Addenda Separator	Off	EA8ADS0	117
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	*Off	MSIENAO	118
	On	MSIENA1	118
MSI Check Character	*Validate Type 10, but Don't Transmit	MSICHK0	118
	Validate Type 10 and Transmit	MSICHK1	118
	Validate 2 Type 10 Chars, but Don't Transmit	MSICHK2	118
	Validate 2 Type 10 Chars and Transmit	MSICHK3	118

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	Validate Type 11 then Type 10 Char, but Don't Transmit	MSICHK4	118
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	Off	RSENA0	119
	*On	RSENA1	119
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	Off	RSENA0	120
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GS1 DataBar Expanded	Default All GS1 DataBar Expanded Settings	RSEDFT	120
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GS1 DataBar Expanded Msg. Length	Minimum (4 - 74) *4	RSEMIN###	121
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Codablock A	Default All Codablock A Settings	CBADFT	121
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Codablock A Msg. Length	Minimum (1 - 600) *1	CBAMIN####	122
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Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
MacroPDF417	On	PDFMAC1	124
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MicroPDF417	Default All Micro PDF417 Settings	MPDDFT	124
	On	MPDENA1	124
	*Off	MPDENA0	124
MicroPDF417 Msg. Length	Minimum (1-366) *1	MPDMIN###	125
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	GS1 Code Expansion Off	EANEMU3	127
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	*GS1 Emulation Off	EANEMU0	127
TCIF Linked Code 39	On	T39ENA1	127
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QR Code	Default All QR Code Settings	QRCDFT	127
	*On	QRCENA1	128
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QR Code Msg. Length	Minimum (1-7089) *1	QRCMINS###	128
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	Point & Shoot	QRCAPP3	129
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DotCode	Default All DotCode Settings	DOTDFT	129
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	*Off	DOTENA0	130
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Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	On	DIGENA1	131
	Uses ID Decoder then Both Decoders	DIGENA2	132
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	Uses Digimarc Decoder then Alternates Decoders	DIGENA5	132
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	*On	IDMENA1	132
	Off	IDMENA0	132
Direct Part Marking (DPM) Decoding	Dotpeen DPM Decoding	DPMENA1	133
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Aztec Append	*On	AZTAPP1	135
	Off	AZTAPPO	135
Aztec Code Page	Aztec Code Page (*51)	AZTDCP##	136
Chinese Sensible (Han Xin) Code	Default All Han Xin Code Settings	HX_DFT	136
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	*Off	HX_ENA0	136
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Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
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Planet Code Check Digit	Transmit	PLNCKX1	140
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Korea Post Check Digit	Transmit Check Digit	KPCCHK1	143
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Image Snap	Default all Imaging Commands	IMGDFT	145 - 148
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	*Imaging Style - Photo	SNPSTY1	
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	Beeper On	SNPBEP1	
	*Beeper Off	SNPBEP0	
	*Wait for Trigger Off	SNPTRG0	
	Wait for Trigger On	SNPTRG1	
	*LED State - Off	SNPLED0	
	LED State - On	SNPLED1	
	Exposure (1-7874 microseconds) *7874	SNPEXP	
	Gain - None	SNPGAN1	
	*Gain - Medium	SNPGAN2	
	Gain - Heavy	SNPGAN4	

Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
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	Target White Value (0-255) *125	SNPWHT###	
	Delta for Acceptance (0-255) *25	SNPDEL###	
	Update Tries (0-10) *6	SNPTRY##	
	Target Set Point Percentage (1- 99) *50	SNPPCT##	
Image Ship	*Infinity Filter - Off	IMGINFO	
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	*Compensation Off	IMGCOR0	
	Compensation On	IMGCOR1	
	*Pixel Depth - 8 bits/pixel (grayscale)	IMGBPP8	
	Pixel Depth - 1 bit/pixel (B&W)	IMGBPP1	
	*Don't Sharpen Edges	IMGEDG0	149 - 157
	Sharpen Edges (0-23)	IMGEDG##	
	*File Format -JPEG	IMGFMT6	
	File Format - KIM	IMGFMT0	
	File Format - TIFF binary	IMGFMT1	
	File Format - TIFF binary group 4, compressed	IMGFMT2	
	File Format - TIFF grayscale	IMGFMT3	
	File Format - Uncompressed binary	IMGFMT4	
	File Format - Uncompressed grayscale	IMGFMT5	
	File Format - BMP	IMGFMT8	
	*Histogram Stretch Off	IMGHISO	
	Histogram Stretch On	IMGHIS1	
	*Noise Reduction Off	IMGFSP0	
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	Invert Image around X axis	IMGNVX1	
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	Rotate Image none	IMGROTO	149 - 157
	Rotate Image 90° right	IMGROT1	
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	*Gamma Correction Off	IMGGAM0	
	Gamma Correction On (0-1000)	IMGGAM###	
	Image Crop - Left (0-843) *0	IMGWNL###	
	Image Crop - Right (0-843) *843	IMGWNR###	
	Image Crop - Top (0-639) *0	IMGWNT###	
	Image Crop - Bottom (0-639) *639	IMGWNB###	

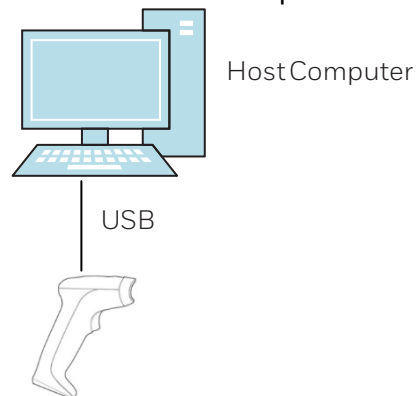
Selection	Setting * Indicates default	Serial Command # Indicates a numeric entry	Page
	Image Crop - Margin (1-238) *0	IMGMAR###	
	Protocol - None (raw)	IMGXFR0	
	Protocol - None (default USB)	IMGXFR2	
	Protocol - Hmodem Compressed (default RS232)	IMGXFR3	
	Protocol - Hmodem	IMGXFR4	
	*Ship Every Pixel	IMGSUB1	
	Ship Every 2nd Pixel	IMGSUB2	
	Ship Every 3rd Pixel	IMGSUB3	
	*Document Image Filter Off	IMGUSH0	
	Document Image Filter On (0 - 255)	IMGUSH###	
	*Don't Ship Histogram	IMGHST0	
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Utilities			
Add Code I.D. Prefix to All Symbologies (Temporary)		PRECA2,BK2995C80!	159
Show Software Revision	Boot version	REVINF	159
	App version	REV_WA?	159
Test Menu	On	TSTMNU1	160
	*Off	TSTMNU0	160
Application Plug-Ins (Apps)	*Plugin function off	PLGFEN0	160
	Enable EasyDL2.0	PLGFEN 1	160
	Enable EasyGS1	PLGFEN 2	160
	Enable EasyBCBP	PLGFEN 3	160
Reset the Factory Defaults	Remove Custom Defaults	DEFOVR	162
	Activate Defaults	DEFAULT	162

This section defines the security processes, both implemented and recommended by Honeywell, for using HH490 corded area-imaging scanner.

System Architecture

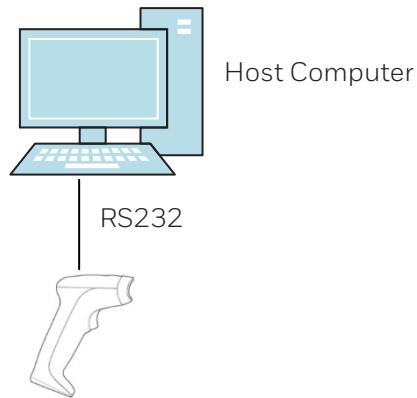
Connect with USB

HH490 scanner can be connected to the USB port of a computer.



Connect with RS232 Serial Port

HH490 scanner can be connected to the appropriate RS232 interface cable to a computer.



Security Checklist

The checklists cover some of the main threats that may exist on a barcode scanner and the steps that can be used to mitigate them.

Infection by Malicious Software Agents

This threat encompasses malicious software agents, for example viruses, spyware (Trojans), and worms. The intrusion of malicious software agents can result in:

- Performance degradation
- Loss of system availability, and
- The capture, modification or deletion of data

Mitigation Steps
Ensure virus protection is installed, signature files are up-to-date, and subscriptions are active on all machine hosting Honeywell products.
Allow only digitally signed software from trusted sources to run.
Use a firewall at the interface between other networks and Honeywell Solution components

Unauthorized External Access

This threat includes intrusion into the Honeywell system from the business network or other external networks including the Internet. Unauthorized external access can result in:

- Loss of system availability
- Capturing, modifying, or deleting data
- Reputation damage if the external access security breach becomes public knowledge

Mitigation Steps	
Implement file system encryption.	
Use HTTPS when using Web servers across untrusted networks.	
Use a two-factor authentication method such as Google Authenticator when the Honeywell device is connecting to Web applications.	
Secure wireless devices.	For information, see Secure Wireless Devices
Set the minimum level of privilege for all external accounts and enforce a strong password policy.	
Use the most recent version of the SDK that supports your application.	
Disable all unnecessary access ports, such as FTP.	
Use a VPN when the Linux system requires data to traverse an untrusted network.	
Use SSL for communication between native applications and specialty servers.	
Use intrusion detection on WLAN networks.	

Unauthorized Internal Access

This threat encompasses unauthorized access from people or systems with direct access to a Honeywell system component.

This threat is most difficult since attackers may have legitimate access to part of the systems and are simply trying to exceed their permitted access.

Unauthorized internal access can result in:

- Loss of system availability.
- The capture, modification, or deletion of data, and
- The theft or damage of system contents.

Mitigation Steps	
Implement strong password protection on Honeywell Solution components and include a password lifetime management policy, reuse policy, and strength of policy for passwords.	Go to http://www.honeywellaidc.com to download the user guide specific to your computer model.
Monitor system access	

Securing barcode scanner series

Honeywell recommendations for securing barcode scanner series:

- Enforce the most restrictive set of rights/privilege to access barcode scanner series and it's assets needed by users or processes for the performance or specific tasks. Specifically prohibit, remove, and/or restrict the use of unnecessary functions, ports, protocols, and/ or services. This would include access to scripts debuggers, etc. Log requests for access to assets.
- Use the proper setting of privilege.

- Ensure access is restricted to administrators for secure process channels, devices, and components related to barcode scanner series.
- Enforce proper configuration at installation of barcode scanner series and its components, including secure by default, baseline configurations for detection of unauthorized changes, and configuration of least functionality required and management of configuration changes. When possible, the configuration should be automatically traced and reported.

Security Updates and Service Packs

One of the common weaknesses of system management as reported by, Open Web Application Security Project (OWASP) is "not keeping software up to date". It is critical to keep the latest patches and software versions on your Honeywell device. This is especially true for software that has reported Common Vulnerabilities and Exposures (CVE). The MITRE Corporation and the National Institute of Standards and Technology (NIST) track CVEs and mark their level of criticalness. For example, when a critical vulnerability was found in the popular OpenSSL® cryptographic software in April of 2014, the TLS heartbeat read overrun (CVE-2014-0160) was tracked and marked by both organizations. A CVE such as the CVE-2014-0160 must be addressed as soon as possible.

Honeywell provides system updates for both security and feature-related purpose. If the third-party software has been installed, Honeywell recommends testing the update on a non-production system to ensure Honeywell software continues to operate correctly.

Caution: Before installing any critical updates or making any system changes, ALWAYS back up the system. This will provide a safe and efficient recovery path if the update fails.

Additional Resources

Security Resources	
The MITRE Corporation	http://www.mitre.org/ and http://cve.mitre.org/
National Institute of Standards and Technology (NIST)	http://www.nist.gov/
Open Web Application Security Project (OWASP)	http://www.owasp.org/
U.S. National Vulnerability Database (NVD)	https://nvd.nist.gov/

HH490 Scanner Product Specifications

Parameter	Specification
Mechanical	
Height	6.06 inches (154.0mm)
Length	4.92 inches (125.0mm)
Width	2.85inches (72.5mm)
Weight	
General Duty	4.58 oz. (130g)
Healthcare	4.76 oz. (135g)
Electrical	
Voltage Requirements	4.4 to 5.5 VDC at input connector
Current Draw	Standby <0.5W(100mA@5VDC) Operating <2.5W (500mA @ 5VDC)
Illumination LED:	White color (2000 ~ 2500k)
Aiming LED:	Red LED, 624nm (Peak Wavelength)
Environmental	
Temperature Ranges:	
Operating	32°F to 122°F (0°C to 50°C)
Storage	-40°F to 140°F (-40°C to 60°C)
Humidity	0 to 95% non-condensing

Parameter (Continued)	Specification
Mechanical Drop	Withstands 1.2m drops (2 times)
ESD Tolerance	Up to 15kV direct air Up to 8 kV indirect coupling plane
Sealant Rating	IP40
Image	
Image Size	1280 x 800 pixels
Scan Performance	
Skew Angle	+65°
Pitch Angle	+60°
Motion Tolerance	Up to 75 cm/s for 13 mil UPC at optimal focus
Symbol Contrast	25% or greater (Grade A)
Scan Angle	Horizontal: 48°; Vertical: 30°

Depth of Field Charts

Typical Performance

Symbology	Near Distance/mm	Far Distance/mm
5 mil Code 39	40	225
6.7mil PDF417	50	210
10mil Data Matrix	45	185
13mil UPC-A	35	430
20mil QR Code	20	355
Resolution (Code 39)	3mil	
Resolution (PDF 417)	4mi	
Resolution (QR)	6mil	
Resolution (DM)	5mil	

Guaranteed Performance

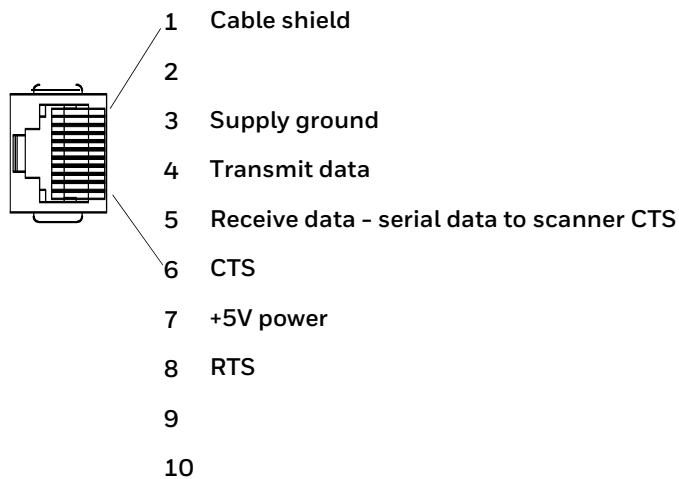
Symbology	Near Distance/mm	Far Distance/mm
5 mil Code 39	60	190
6.7mil PDF417	65	190
10mil Data Matrix	60	130
13mil UPC-A	40	345
20mil QR Code	30	290

Standard Connector Pinouts

Note: The following pin assignments are not compatible with some Honeywell legacy products. Use of a cable with improper pin assignments may lead to damage to the unit. Use of any cables not provided by the manufacturer may result in damage not covered by your warranty.

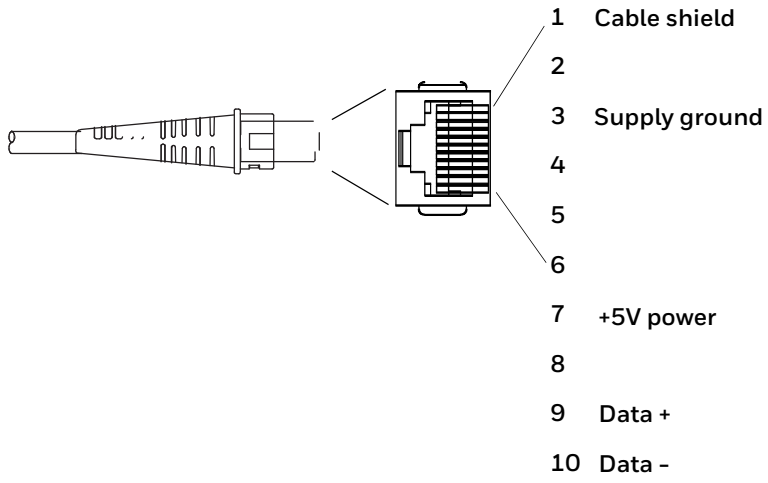
Serial Output

10 Pin RJ45 Modular Plug



USB

10 Pin Modular Plug



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 [Customer Support](#) on page xvii).

Maintenance

Your device provides reliable and efficient operation with a minimum of care. Although specific maintenance is not required, the following sections describe periodic checks to ensure dependable operation.

Clean the Scanner

The scanner or base's housing and scanner window may be cleaned with a soft cloth dampened with water or a mild detergent-water solution. If a mild detergent solution is used, wipe the scanner or base with a clean cloth dampened only with water to remove any detergent residue.

Note: Reading performance may degrade if the scanner's window is not clean. If the window is visibly dirty, or if the scanner isn't operating well, clean the window.



Caution: Do not submerge the scanner in water or cleaning solution. Do not use abrasive wipes or cloths on the scanner's window. Abrasive wipes may scratch the window. Never use solvents (e.g., acetone) on the housing or window. Solvents may damage the finish or the window.

Caution: Ensure all components are dry prior to mating the scanner with charging accessories or other peripheral devices. Mating wet components may cause damage not covered by the warranty.

About Disinfectant-ready Models

Some configurations of HH490 scanners are available with an external plastic housing that is designed to resist the effects of harsh chemicals. These scanners are equipped with disinfectant-ready housings (DRH) for the healthcare and general-purpose markets.

Please refer to the Honeywell Safety and Productivity Solutions website for specific details on how to clean HH490 scanners with disinfectant-ready housings.

Helpful information on the care of these specialty products can be found in the following articles:

- Learn to Clean Honeywell Healthcare Disinfectant-Ready Products
- Honeywell Instructions for Cleaning General Purpose Disinfectant-Ready Housing Devices

Inspect Cords and Connectors

Inspect the interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with scanner operation. Contact your distributor for information about cable replacement. Cable replacement instructions are on [page 198](#).

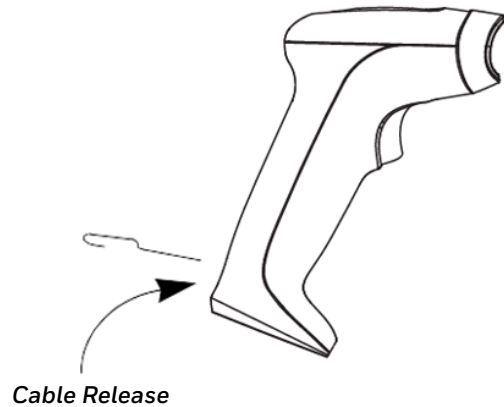
Replace Cables in Corded Scanners

The standard interface cable is attached to the scanner with an 10-pin modular connector. When properly seated, the connector is held in the scanner's handle by a flexible retention tab. The interface cable is designed to be field replaceable.

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

Replace an Interface Cable

1. Turn off the power to the host system.
2. Disconnect the scanner's cable from the terminal or computer.
3. Locate the small hole on the back of the scanner's handle. This is the cable release.
4. Straighten one end of a paper clip.
5. Insert the end of the paper clip into the small hole and press in. This depresses the retention tab, releasing the connector. Pull the connector out while maintaining pressure on the paper clip, then remove the paper clip.
6. Replace with the new cable. Insert the connector into the opening and press firmly. The connector is keyed to go in only one way and will click into place.



Troubleshoot a Corded Scanner

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

Is the power on? Is the aimer on?

If the aimer isn't illuminated, check that:

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

Is the scanner having trouble reading your symbols?

If the scanner 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 scanner or in the decoder to which the scanner connects.

Is the barcode displayed but not entered?

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

- You need to program a suffix. Programming a suffix enables the scanner to output the barcode data plus the key you need (such as "CR") to enter the data into your application. Refer to [Prefix/Suffix Overview](#) on page 53 for further information.

If you aren't sure what programming options have been set in the scanner, or if you want the factory default settings restored, refer to [Reset the Factory Defaults](#) on page 161.

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 Edit](#) beginning on page 53 and [Data Format](#) beginning on page 59 for information about using Code ID and AIM ID.

Linear Symbologies

	AIM		Honeywell	
Linear Symbology	ID	Possible modifiers (m)	ID	Hex
<i>All Symbologies</i>				99
Codabar	]F <i>m</i>	0-1	a	61
Code 11	]H3		h	68
Code 128	]C <i>m</i>	0, 1, 2, 4	j	6A
Code 32 Pharmaceutical (PARAF)	]X0		<	3C
Code 39 (supports Full ASCII mode)	]A <i>m</i>	0, 1, 3, 4, 5, 7	b	62
TCIF Linked Code 39 (TLC39)	]L2		T	54
Code 93 and 93i	]G <i>m</i>	0-9, A-Z, a-m	i	69
EAN	]E <i>m</i>	0, 1, 3, 4	d	64
EAN-13 (including Bookland EAN)	]E0		d	64
EAN-13 with Add-On	]E3		d	64
EAN-13 with Extended Coupon Code	]E3		d	64
EAN-8	]E4		D	44

	AIM		Honeywell	
Linear Symbology	ID	Possible modifiers (m)	ID	Hex
EAN-8 with Add-On	JE3		D	44
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)	JX0		Q	51
Interleaved 2 of 5	Jlm	0, 1, 3	e	65
Matrix 2 of 5	JX0		m	6D
NEC 2 of 5	JX0		Y	59
Straight 2 of 5 IATA	JRm	0, 1, 3	f	66
Straight 2 of 5 Industrial	JS0		f	66
MSI	JMm	0, 1	g	67
Telepen	JBm		t	74
UPC		0, 1, 2, 3, 8, 9, A, B, C		
UPC-A	JE0		c	63
UPC-A with Add-On	JE3		c	63
UPC-A with Extended Coupon Code	JE3		c	63
UPC-E	JE0		E	45
UPC-E with Add-On	JE3		E	45
UPC-E1	JX0		E	45

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

2D Symbologies

	AIM		Honeywell	
2D Symbology	ID	Possible modifiers (m)	ID	Hex
All Symbologies				99
Aztec Code	Jzm	0-9, A-C	z	7A

	AIM		Honeywell	
2D Symbology	ID	Possible modifiers (m)	ID	Hex
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
Dot Code	]J0		.	2E
GS1	]em	0-3	y	79
GS1 Composite	]em	0-3	y	79
GS1 DataBar Omnidirectional	]em	0-3	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 Symbologies

	AIM		Honeywell	
Postal Symbology	ID	Possible modifiers (m)	ID	Hex
All Symbologies				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 Barcode	]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 control characters			ASCII			Keyboard Control + ASCII (CTRL+X) Mode		
						Control + X Mode Off (KBDCASO)		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	<i>(Apple Make)</i>			CTRL+ H	History	
9	09	HT	Tab			CTRL+ I	Italic	
10	0A	LF	<i>(Apple Break)</i>			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	?	
26	1A	SUB	F5			CTRL+ Z	?	
27	1B	ESC	F6			CTRL+ [?	
28	1C	FS	F7			CTRL+ \	?	
29	1D	GS	F8 F9			CTRL+]	?	
30	1E	RS				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
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	<	ï	Right CTRL	0x1D

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
140	8C	OE	î	Reserved	n/a
141	8D		ï	Reserved	n/a
142	8E	Ž	À	Numeric Keypad Enter	0x1C
143	8F		Á	Numeric Keypad /	0x35
144	90		Ê	F1	0x3B
145	91	‘	æ	F2	0x3C
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	›	ƒ	F12	0x58
156	9C	oe	£	Numeric Keypad +	0x4E
157	9D		¥	Numeric Keypad -	0x4A
158	9E	ž	ƒ	Numeric Keypad *	0x37
159	9F	ÿ	f	Caps Lock	0x3A
160	A0		á	Num Lock	0x45
161	A1	ı	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	ı	ª	Tab	0x0F
167	A7	§	º	Shift Tab	0x8F
168	A8	¨	¿	Enter	0x1C
169	A9	©	ƒ	Esc	0x01
170	AA	ª	¬	Alt Make	0x36
171	AB	«	½	Alt Break	0xB6
172	AC	¬	¼	Control Make	0x1D
173	AD		ı	Control Break	0x9D
174	AE	®	«	Alt Sequence with 1 Character	0x36
175	AF	ˆ	»	Ctrl Sequence with 1 Character	0x1D
176	B0	°	█		
177	B1	±	█		
178	B2	²	█		
179	B3	³	|		
180	B4	´	|		
181	B5	µ	≡		
182	B6	¶	|		
183	B7	·	|		
184	B8	¸	≡		
185	B9	¹	|		
186	BA	º	||		
187	BB	»	|		
188	BC	¼	|		
189	BD	½	|		
190	BE	¾	|		
191	BF	¿	|		
192	C0	À	L		
193	C1	Á	L		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
194	C2	Â	T		
195	C3	Ã	|		
196	C4	Ä	-		
197	C5	Å	i		
198	C6	Æ	f		
199	C7	Ç	|f		
200	C8	È	L		
201	C9	É	Γ		
202	CA	Ê	Π		
203	CB	Ë	τ		
204	CC	Ì	|f		
205	CD	Í	=		
206	CE	Î	|f		
207	CF	Ï	±		
208	D0	Ð	Π		
209	D1	Ñ	τ		
210	D2	Ò	Π		
211	D3	Ó	Π		
212	D4	Ô	£		
213	D5	Õ	F		
214	D6	Ö	π		
215	D7	×	|f		
216	D8	Ø	±		
217	D9	Ù	J		
218	DA	Ú	Γ		
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	÷	=		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
248	F8	ø	°		
249	F9	ù	·		
250	FA	ú	·		
251	FB	û	√		
252	FC	ü	ⁿ		
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 barcode 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 barcodes 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
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	š	^	μ	é	ù	è	..
DE	4	84	#	\$	š	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	#	α	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	£	\$	š	°	ç	é	^	ù	à	ò	è	ì
PT	13	92	#	\$	š	Ã	Ç	Õ	^	`	ã	ç	õ	°
ES	10	90	#	\$	š	í	Ñ	ç	^	`	°	ñ	ç	~
ES	51	91	#	\$	.	í	Ñ	Ç	ç	`	.	ñ	ç	..
COUNTRY	Country Keyboard	Honeywell CodePage	ISO / IEC 646 National Character Replacements											

Keyboard Key References

6E	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E
01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0F										4B	50	55			
10 11 12 13 14 15 16 17 18 19 1A 1B 1C 1D										4C	51	56			
1E 1F 20 21 22 23 24 25 26 27 28 29 2B										5A 5F 64 69					
2C 2E 2F 30 31 32 33 34 35 36 37 39										5B 60 65 6A					
3A 3B 3C 3D 3E 3F 38 40										5C 61 66					
										5D 62 67 6C					
										63 68					
										53					
										4F 54 59					

104 Key U.S. Style Keyboard

6E	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E
01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0F										4B	50	55			
10 11 12 13 14 15 16 17 18 19 1A 1B 1C 2B										4C	51	56			
1E 1F 20 21 22 23 24 25 26 27 28 29 2A										5A 5F 64 69					
2C 2D 2E 2F 30 31 32 33 34 35 36 37 39										5B 60 65 6A					
3A 3B 3C 3D 3E 3F 38 40										5C 61 66					
										5D 62 67 6C					
										63 68					
										53					
										4F 54 59					

105 Key European Style Keyboard

SAMPLE SYMBOLS

UPC-A



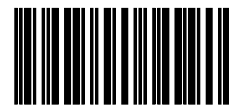
0 123456 7890

EAN-13



9 780330 290951

Interleaved 2 of 5



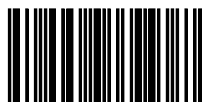
01234567890

Code 128



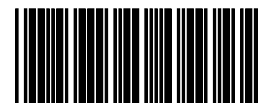
Code 128

Codabar



A13579B

Code 39



BC321

Code 93



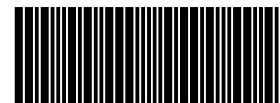
123456-9\$

Matrix 2 of 5



6543210

Straight 2 of 5
Industrial



123456

RSS-14



(01) 00123456789012

Code 49



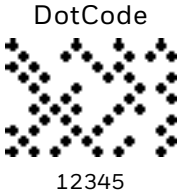
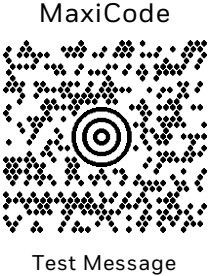
1234567890

PDF417



Car Registration

SAMPLE SYMBOLS (CONTINUED)



PROGRAMMING CHART



K0K
0



K2K
2



K4K
4



K6K
6



K8K
8



K1K
1



K3K
3



K5K
5



K7K
7



K9K
9

PROGRAMMING CHART (CONTINUED)



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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