Honeywell

8670

Wireless Ring Scanner

User's Guide

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Web Address: www.honeywellaidc.com

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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.hsmcontactsupport.com.

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

Product Service and Repair

Honeywell International Inc. provides service for all of its products through service centers throughout the world. To find your service center, go to www.honeywellaidc.com and select **Support**. Contact your service enter to obtain a Return Material Authorization number (RMA #) before you return the product.

To obtain warranty or non-warranty service, return your product to Honeywell (postage paid) with a copy of the dated purchase record.

Limited Warranty

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

Send Feedback

Your feedback is crucial to the continual improvement of our documentation. To provide feedback about this manual, contact the Honeywell Technical Communications department at ACSHSMTechnicalCommunications@honeywell.com.

1 Getting Started

About This Manual

This User's Guide provides installation and programming instructions for the 8670 Wireless ring scanner. Product specifications, dimensions, warranty, and customer support information are also included.

Honeywell bar code 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 bar codes in this guide.

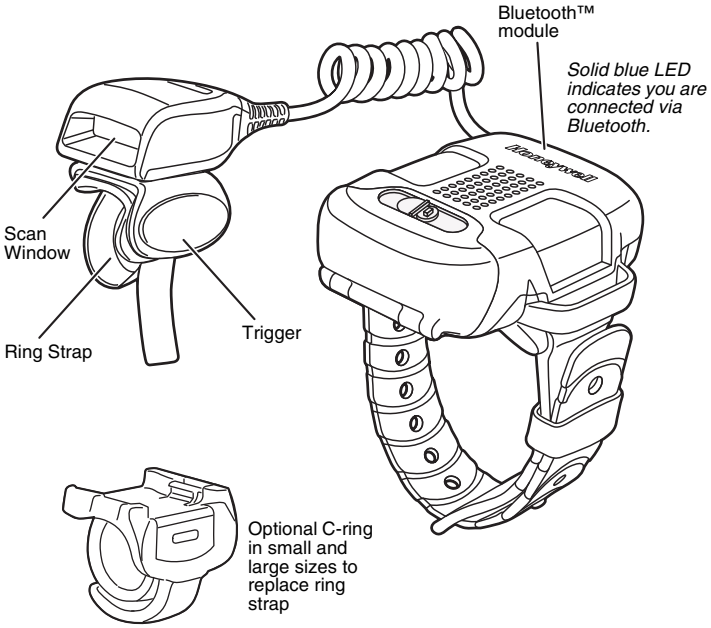
An asterisk (*) next to an option indicates the default setting.

Unpack Your Device

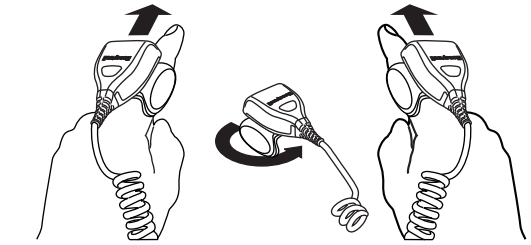
After you open the shipping carton containing the product, take the following steps:

- 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.

Ring Scanner Overview

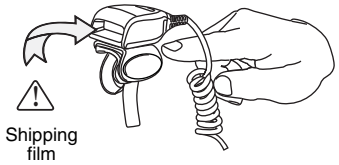


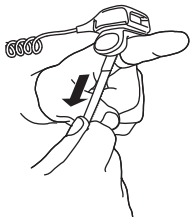
Trigger Rotation



Left Hand Right Hand

Attach the Ring to Your Finger



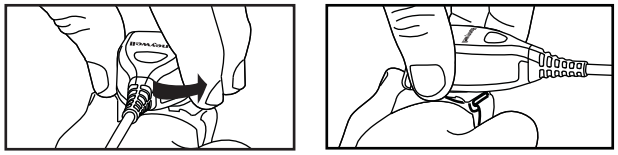


1. Remove the shipping film from the ring scanner window.
2. Slide your finger into the loosened ring strap.
3. Pull the ring strap to secure the ring to your finger.

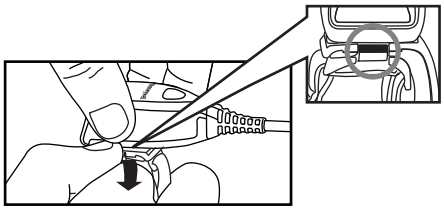
Note: If using the C-ring, simply slide it on to your finger.

Change the Ring Strap to a C-Ring

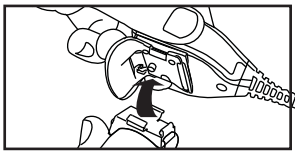
1. Turn the ring scanner 90°.



2. Press the latch down.



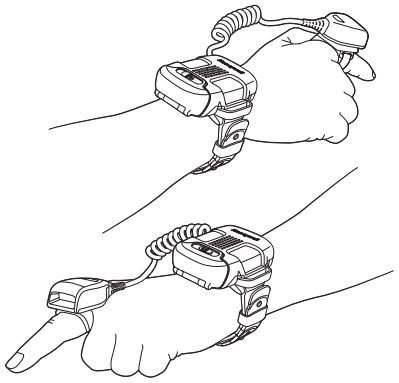
3. Remove the ring strap.



4. Reverse these directions to attach the C-ring.

Wear the Ring Scanner

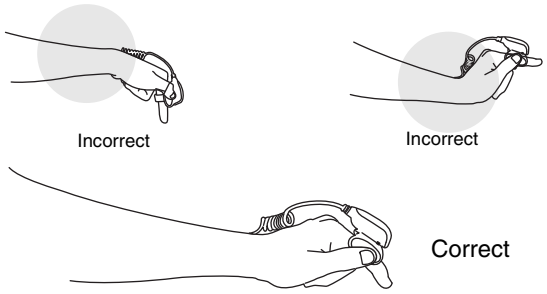
The ring cable should not cross under your hand.



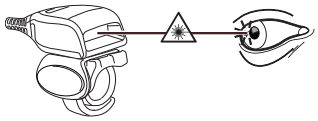
Right handed - wear battery module so Honeywell name is facing toward you

Left handed - wear battery module so Honeywell name is facing away from you

Wrist Position When Scanning



Warning: Do not stare directly into the laser beam.



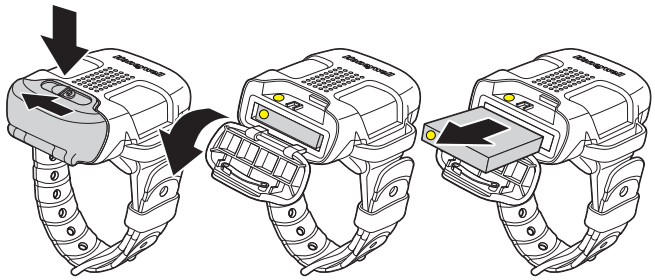
Battery and Charge Information

The battery must be fully charged before the first use. The 8650 8-Bay Battery Charger must be purchased separately.

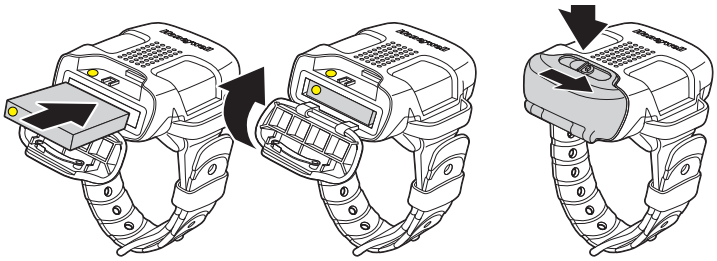
Replace the Battery

Note: The battery should be replaced in an environment free from excessive dust or particulate to avoid an internal buildup of dust in the unit.

If the LED on the ring scanner flashes red, it indicates the battery is low. To replace the battery, press the button and slide the lock to open the Bluetooth™ module and remove the battery.



Replace the battery in the compartment, aligning the yellow dots on the battery and compartment, then slide the lock closed.



The 3.7V, 750mAh lithium ion battery in the Bluetooth module is designed to power the Bluetooth module for 8 hours and remain in standby for approximately 24 hours. Batteries are not fully charged when shipped. The battery should be charged for a minimum of 4 hours before initial use to ensure optimal performance.

The Bluetooth module does not have a power or on-off switch. When the battery is installed, the unit and its accessories are On. Remove the battery to power down or turn off the unit.

Caution: There is a danger of explosion if the batteries are incorrectly replaced. Use only Honeywell lithium ion battery packs, model number HNP-40, rated 3.7 Vdc, 2.77Whr in this device. Use of any non-Honeywell battery may result in damage not covered by the warranty. Dispose of used batteries according to the recycle program for batteries as directed by the governing agency for the country where the batteries are to be discarded.

Battery Recommendations

- The battery is a lithium ion cell and can be used without a full charge, and can also be charged without fully discharging, without impacting the battery life. There is no need to perform any charge/discharge conditioning on this type of battery.
- Replace a defective battery immediately since it could damage the scanner.
- Although your battery can be recharged many times, it will eventually be depleted. Replace it after the battery is unable to hold an adequate charge.
- If you are not sure if the battery or charger is working properly, send it to Honeywell International Inc. or an authorized service center for inspection. Refer to Customer Support on page -iii for additional information.

Safety Precautions for Lithium Batteries

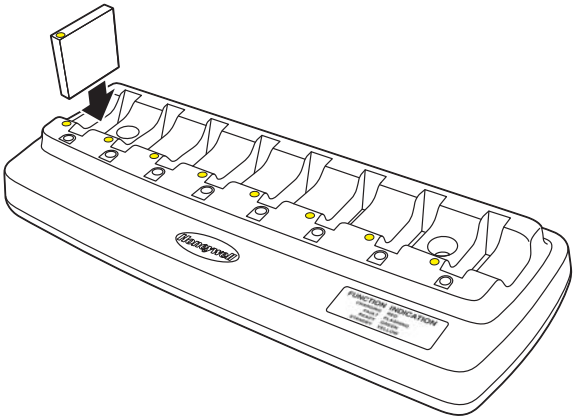
- Do not place batteries in fire or heat the batteries.
- Do not store batteries near fire or other high temperature locations.
- Do not store or carry batteries together with metal objects.
- Do not expose batteries to water or allow the batteries to get wet.
- Do not connect (short) the positive and negative terminals, of the batteries, to each other with any metal object.
- Do not pierce, strike or step on batteries or subject batteries to strong impacts or shocks.
- Do not disassemble or modify batteries.

Proper Disposal of the Battery

When the battery has reached the end of its useful life, the battery should be disposed of by a qualified recycler or hazardous materials handler. Do not incinerate the battery or dispose of the battery with general waste materials. You may send the scanner's battery to us. (postage paid). The shipper is responsible for complying with all federal, state, and local laws and regulations related to the packing, labeling, manifesting, and shipping of spent batteries. Contact the Customer Support (page -iii) for recycling or disposal information. Since you may find that your cost of returning the batteries significant, it may be more cost effective to locate a local recycle/disposal company.

Charge the Battery

Hold the battery with its three charging contacts in line with the three charging contacts in the charging pocket (use the direction of the arrow on the battery label as a guide and line up the yellow dot on the battery with the yellow dot on the charger). Firmly press the battery straight down into the battery charging pocket.



It is important that battery packs are inserted into the charging pocket correctly. Inserting the battery incorrectly could result in damage to the battery pack or the charger.

When a battery is placed in a charging pocket, the battery charger begins charging the battery. There is a slight delay while the charger evaluates the condition of the battery before charging begins. While charging, the charger and battery pack will generate enough heat to feel warm. This is normal and does not indicate a problem. The red LED on the 8-Bay Charger indicates the battery is charging. A green LED indicates the battery has been fully charged and can be removed. Refer to the 8650 8-Bay Battery Charger Quick Start Guide, available at www.honeywellaidc.com, for complete information about the operation of the charger.

Beeper, Vibration, and LED Sequences and Meaning

The scanner contains LEDs on the top of the unit that indicate linking status, decoding state, and battery condition. The following table lists the LED indicators, beeps, and vibrations for the scanner.

LED Indication	Beeper Indication	Vibrate Indication	Cause
Communication and Battery			
Red flash	None	None	Battery low
Green flash	1 beep	None	Successful link
Red flashes	None	None	Scanner and Bluetooth module have a cable issue
Bar Code Reading			
Green flash	2 beeps	2 vibrations	Successful menu change
Red flash	Razz or error tone	1 vibration	Unsuccessful menu change
Green flash	1 beep	1 vibration	Bar code successfully read

The following table lists the LED indicators for the Bluetooth module.

LED Indication	Cause
Bluetooth	
Blue flash	Bluetooth connection is being attempted
Blue on	Successful Bluetooth connection
Blue off	No Bluetooth connection

Pair the Ring Scanner with Bluetooth Devices

The ring scanner can be used with Bluetooth devices, Honeywell mobile computers, Honeywell vehicle mount computers, Honeywell Charge and Communication Bases (CCBs), and Honeywell Access Points (APs).

Pair with a Bluetooth Device Using a HID Keyboard

The 8670 ring scanner can pair with host Bluetooth devices such as personal computers, laptops, tablets, and Apple® devices. Follow the steps below to establish one-way communication with the host device.

1. Scan the appropriate **Bluetooth HID Keyboard Connect** bar code below.

*** Bluetooth HID Keyboard Connect**

Bluetooth HID Japanese Keyboard Connect

2. Set your host device so it searches for other Bluetooth devices. (Refer to your host device's User's Guide for pairing instructions.)
3. Once your host device has located the scanner, select the 8670 ring scanner name from the list displayed.

Note: Select the serial number that is shown on the ring scanner, not on the battery module.

4. Some host devices will automatically pair with the ring scanner. If your host device automatically pairs with the ring scanner, it displays a successful pairing message and you do not need to continue to the next step.
5. Some PDT hosts display a prompt for a PIN. Ignore this message.
6. If your host device does not automatically pair with the ring scanner, a PIN is displayed. This PIN must be scanned within 60 seconds. Using the ring scanner, you must quickly scan Bluetooth PIN Code below, then scan the numeric bar code(s) for the PIN code from the chart below, then scan the **Save** bar code.

Bluetooth PIN Code

0

1

2

3

4

5

6

7

8

9

Save

When the ring scanner pairs with a host, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Your host device should now be paired with the ring scanner. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual.

Disconnect from the Host

Once your ring scanner has been connected to a host, you must disconnect it in order to communicate with a different device. Scan the **Bluetooth HID Keyboard Disconnect** bar code to unlink the ring scanner from the currently linked host.

Bluetooth HID Keyboard Disconnect

For further information about working with a system of multiple ring scanners and/or multiple hosts, refer to Wireless System Operation beginning on page 3-1.

Pair with a Bluetooth Serial Port - PCs/Laptops

The 8670 ring scanner can pair with a Bluetooth serial port on a PC or laptop. Scanning the **Non-Base BT Connection** bar code below unlinks your scanner and puts it into a discoverable state. Once the scanner searches for and connects with a Bluetooth host, the scanner stores the connection to the host device address and switches virtual COM ports. This allows the scanner to automatically relink to the host if the connection is lost.

1. Scan the **Non-Base BT Connection** bar code below to unlink your ring scanner and put it in a discoverable state.

Non-Base BT Connection

2. Set your host device so it searches for other Bluetooth devices. (Refer to your host device's User's Guide for pairing instructions.)
3. Once your host device has located the scanner, select the 8670 ring scanner name from the list displayed.

Note: Select the serial number that is shown on the ring scanner, not on the battery module.

4. If a PIN is requested, enter **1234** (the default).

When the ring scanner pairs with the serial port of the host, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Your host device should now be paired with the ring scanner. The connection to the host device address is stored in the ring scanner and virtual COM ports are switched. This allows the ring scanner to automatically relink to the host if the connection is lost.

Once the scanner battery is charged and you have paired it to a host device, you may begin scanning bar codes. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual.

Pair with a Honeywell Mobile Computer

The 8670 ring scanner can pair with Honeywell mobile computers such as the Dolphin 70e or 75e. (For Tecton mobile computers, see Pair with a Honeywell Mobile Computer on page 1-8.)

1. Set your mobile computer so it searches for other Bluetooth devices. (Refer to your device's User's Guide for pairing instructions.)
2. Scan the **BT Connection - PDA/Mobility Systems Device** bar code below.

BT Connection - PDA/Mobility Systems Device

If the bar code above does *not* pair your mobile computer with the ring scanner, scan the following bar code.

Non-Base BT Connection

3. Once your mobile computer has located the scanner, select the 8670 ring scanner name from the list displayed.

Note: Select the serial number that is shown on the ring scanner, not on the battery module.

4. If a PIN is requested, enter **1234** (the default).

When the ring scanner pairs with the mobile device, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Your mobile computer should now be paired with the ring scanner and be able to accept incoming data from the 8670.

Once the scanner battery is charged and you have paired it to a host device, you may begin scanning bar codes. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual.

Pair with an Android™ or Apple Device

The 8670 ring scanner can pair with Android or Apple devices.

Note: The 8670 only supports connecting to Apple devices using Bluetooth HID mode.

1. Set your Android or Apple device so it searches for other Bluetooth devices. (Refer to your Android /Apple device's User's Guide for pairing instructions.)
2. Scan the **BT Connection - Android/Apple Device** bar code below.

BT Connection - Android/Apple Device

On the Android device, the 8670 ring scanner will be shown as a keyboard. Click on it to pair. Once the ring scanner pairs with the Android device, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual. If the ring scanner clicks instead of beeping when you press the trigger, then the connection was not successful.

Virtual Keyboard

Once your scanner has been connected directly to an Apple device, smart phone, or laptop, you can toggle the virtual keyboard on your device using the scanner trigger. If you have paired with an Apple device, the on-screen keyboard is activated by pressing the ring scanner trigger twice, quickly. If you have paired with an Android device (v 4.4 and higher), the on-screen keyboard must be configured by going to **Settings - Language & input**. Tap on **Default** and change the setting for **Hardware Physical keyboard** to **Off**.

Pair with a Honeywell Vehicle Mount Computer

The 8670 ring scanner can pair with Honeywell vehicle mount computers, such as the Thor VM1 or VM2, or with Tecton mobile computers.

Use the ring scanner to scan the EZPairing bar code that is either supplied with the device, attached to the device, or displayed on the screen. The EZPairing bar code begins with **LnkB** followed by 10 digits, like the sample below.

When the ring scanner pairs with the host, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Once the scanner battery is charged and you have paired it to a host device, you may begin scanning bar codes. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual.

Pair with a Communication Base or Access Point

The 8670 ring scanner can pair with a Honeywell Charge and Communication Base CCB01-010BT or CCB02-100BT, and with a Honeywell Access Point AP-010BT or AP-100BT.

1. Scan the **Bluetooth HID Keyboard Disconnect** bar code.

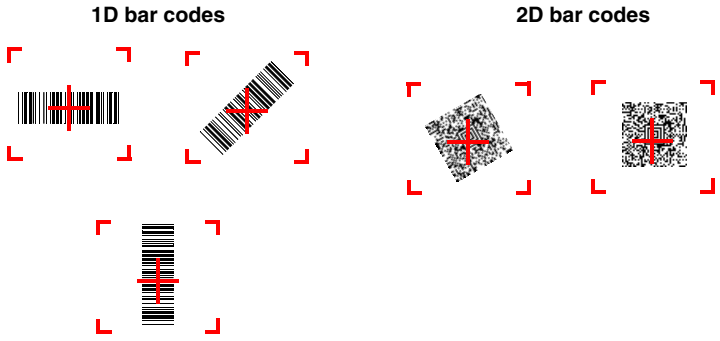
Bluetooth HID Keyboard Disconnect

Use the ring scanner to scan the Mac address bar code that is either supplied with the device or attached to the device. The ring scanner begins ticking and the LED on top of the Bluetooth module blinks to indicate pairing mode.

When the ring scanner pairs with the host, the LED on the top of the ring scanner flashes green and the LED on the Bluetooth module remains solid blue. Once the scanner battery is charged and you have paired it to a host device, you may begin scanning bar codes. Verify the ring scanner operation by scanning a bar code from the Sample Symbols in the back of this manual.

Reading Techniques

The 8670 ring scanner has a view finder that projects a bright red aiming pattern. This aiming pattern should be centered over the bar code, but it can be positioned in any direction for a good read.



The aiming pattern is smaller when the scanner is closer to the code and larger when it is farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit. To read single or multiple symbols (on a page or on an object), hold the ring scanner at an appropriate distance from the target, press the trigger, and center the aiming beam or pattern on the symbol. If the code being scanned is highly reflective (e.g., laminated), it may be necessary to tilt the code up 15° to 18° to prevent unwanted reflection.

Menu Bar Code Security Settings

Honeywell scanners are programmed by scanning menu bar codes or by sending serial commands to the scanner. If you want to restrict the ability to scan menu codes, you can use the Menu Bar Code Security settings. Please contact the nearest technical support office (see Technical Assistance on page -iii) 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** bar code below before scanning the menu commands for your custom defaults. If a menu command requires scanning numeric codes from the back cover, then a **Save** code, that entire sequence will be saved to your custom defaults. When you have entered all the commands you want to save for your custom defaults, scan the **Save Custom Defaults** bar code.

Set Custom Defaults

Save Custom Defaults

*Note: The Custom Defaults settings apply to all workgroups. Scanning the **Save Defaults** bar code also causes both the ring scanner and the host to perform a reset and become unlinked. You must relink (pair) the ring scanner to the host.*

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

Reset Custom Defaults

If you want the custom default settings restored to your scanner, scan the **Activate Custom Defaults** bar code below. This is the recommended default bar code 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.

Activate Custom Defaults

*Note: The Custom Defaults settings apply to all workgroups Scanning the **Save Defaults** bar code also causes both the ring scanner and the host to perform a reset and become unlinked. You must relink (pair) the ring scanner to the host.*

2 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 bar codes 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.

Keyboard Wedge

If you want your system programmed for an IBM PC AT and compatibles keyboard wedge interface with a USA keyboard, scan the bar code below. Keyboard wedge is the default interface.

Note: The following bar code also programs a carriage return (CR) suffix.

IBM PC AT and Compatibles with CR suffix

Laptop Direct Connect

For most laptops, scanning the **Laptop Direct Connect** bar code allows operation of the scanner in parallel with the integral keyboard. The following **Laptop Direct Connect** bar code also programs a carriage return (CR) suffix and turns on Emulate External Keyboard (page 2-16).

Laptop Direct Connect with CR suffix

RS232 Serial Port

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

RS232 Interface

RS485

Scan one of the following “Plug and Play” codes to program the scanner for an IBM POS terminal interface.

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

IBM Port 5B Interface

IBM Port 9B HHBCR-1 Interface

IBM Port 17 Interface

IBM Port 9B HHBCR-2 Interface

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

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

* Suffixes programmed for Code 128 with IBM 4683 Port 5B, IBM 4683 Port 9B HHBCR-1, and IBM 4683 Port 17 Interfaces
**Suffixes programmed for Code 128 with IBM 4683 Port 9 HHBCR-2 Interface

RS485 Packet Mode

The following selection allows you to break up large bar code data into smaller packets on an IBM POS terminal. To break up large bar codes into small packets, scan the Packet Mode On bar code below. Scan the Packet Mode Off bar code if you want large bar code data to be sent to the host in a single chunk. *Default = Packet Mode Off.*

*** Packet Mode Off**

Packet Mode On

RS485 Packet Length

If you are using Packet mode, you can specify the size of the data "packet" that is sent to the host. Scan the **Packet Length** bar code, then the packet size (from 20 - 256) from the Programming Chart inside the back cover of this manual, then **Save**. *Default = 40*.

Packet Length

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.

USB IBM SurePos (USB Handheld Scanner) Interface

USB IBM SurePos (USB Tabletop Scanner) Interface

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

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

USB PC or Macintosh Keyboard

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

USB Keyboard (PC)

USB Keyboard (Mac)

USB Japanese Keyboard (PC)

USB HID

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

PAP131.
USB HID Bar Code Scanner

USB Serial

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

TRMUSB130.
USB Serial

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

CTS/RTS Emulation

USBCTS1.
CTS/RTS Emulation On

USBCTS0.
*** CTS/RTS Emulation Off**

ACK/NAK Mode

USBACK1.
ACK/NAK Mode On

USBACK0.
*** ACK/NAK Mode Off**

Remote MasterMind™ for USB

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

REMIFC0.
ReM Off

ReM On

Verifone® Ruby Terminal Default Settings

Scan the following Plug and Play code to program the scanner for a Verifone Ruby terminal. This bar code sets the baud rate to 1200 bps and the data format to 8 data bits, mark parity bit, 1 stop bit. It also adds a line feed (LF) suffix and programs the following prefixes for each symbology:

Symbology	Prefix
UPC-A	A
UPC-E	A
EAN-8	FF
EAN-13	F

Verifone Ruby Settings

Gilbarco® Terminal Default Settings

Scan the following Plug and Play code to program the scanner for a Gilbarco terminal. This bar code sets the baud rate to 2400 bps and the data format to 7 data bits, even parity, 2 stop bits. It also adds a carriage return (CR) suffix and programs the following prefixes for each symbology:

Symbology	Prefix
UPC-A	A
UPC-E	E0
EAN-8	FF
EAN-13	F

Gilbarco Settings

Honeywell Bioptic Aux Port Configuration

Scan the following Plug and Play code to program the scanner for a Honeywell bioptic scanner auxiliary port configuration. This bar code sets the baud rate to 38400 bps and the data format to 8 data bits, no parity, 1 stop bit.

Honeywell Bioptic Settings

Datalogic™ Magellan® Aux Port Configuration

Scan the following Plug and Play code to program the scanner for a Datalogic Magellan auxiliary port configuration. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, no parity, 1 stop bit.

Datalogic Magellan Settings

NCR Bioptic Aux Port Configuration

Scan the following Plug and Play code to program the scanner for an NCR bioptic scanner auxiliary port configuration. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
UPC-A	A	Interleaved 2 of 5	b
UPC-E	E0	Code 128	f
		Code 32 Pharmaceutical (PARAF)	a
EAN-8	FF	Code 39	a
EAN-13	F		

NCR Bioptic Settings

Wincor Nixdorf Terminal Default Settings

Scan the following Plug and Play code to program the scanner for a Wincor Nixdorf terminal. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, no parity, 1 stop bit.

Wincor Nixdorf Terminal Settings

Wincor Nixdorf Beetle™ Terminal Default Settings

Scan the following Plug and Play code to program the scanner for a Wincor Nixdorf Beetle terminal. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
Aztec Code	V	Interleaved 2 of 5	I
Codabar	N	MaxiCode	T
Code 93	L	MicroPDF417	S
Code 128	K	PDF417	Q
Data Matrix	R	QR Code	U
EAN-8	B	Straight 2 of 5 IATA	H
EAN-13	A	UPC-A	A0
GS1 DataBar	E	UPC-E	C
GS1-128	P	All other bar codes	M

Wincor Nixdorf Beetle Settings

Wincor Nixdorf RS232 Mode A

Scan the following Plug and Play code to program the scanner for a Wincor Nixdorf RS232 Mode A terminal. This bar code sets the baud rate to 9600 bps and the data format to 8 data bits, odd parity, 1 stop bit. The following prefixes are programmed for each symbology:

Symbology	Prefix	Symbology	Prefix
Code 128	K	EAN-13	A
Code 93	L	GS1-128	K
Codabar	N	Interleaved 2 of 5	I
UPC-A	A0	Plessey	O
UPC-E	C	Straight 2 of 5 IATA	H
EAN-8	B	GS1 DataBar	E
All other bar codes	M		

Wincor Nixdorf RS232 Mode A Settings

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** bar code below. By default, national character replacements are used for the following characters: **# $ @ [\ ] ^ ‘ { | } ~**. Refer to the "ISO 2022/ISO 646 Character Replacements" on page A-7 to view the character replacements for each country.

Keyboard Countries


KBDCTY0.
*** United States**


KBDCTY35.
Albania


KBDCTY81.
Azeri (Cyrillic)


KBDCTY80.
Azeri (Latin)


KBDCTY82.
Belarus


KBDCTY1.
Belgium


KBDCTY33.
Bosnia


KBDCTY16.
Brazil


KBDCTY59.
Brazil (MS)


KBDCTY52.
Bulgaria (Cyrillic)

Keyboard Countries (Continued)


KBDCTY53.
Bulgaria (Latin)


KBDCTY54.
Canada (French legacy)


KBDCTY18.
Canada (French)


KBDCTY55.
Canada (Multilingual)


KBDCTY32.
Croatia


KBDCTY15.
Czech


KBDCTY40.
Czech (Programmers)


KBDCTY39.
Czech (QWERTY)


KBDCTY38.
Czech (QWERTZ)


KBDCTY8.
Denmark


KBDCTY11.
Dutch (Netherlands)

Keyboard Countries (Continued)


KBDCTY41.
Estonia


KBDCTY83.
Faroese


KBDCTY2.
Finland


KBDCTY3.
France


KBDCTY84.
Gaelic


KBDCTY4.
Germany


KBDCTY17.
Greek


KBDCTY64.
Greek (220 Latin)


KBDCTY61.
Greek (220)


KBDCTY65.
Greek (319 Latin)


KBDCTY62.
Greek (319)

Keyboard Countries (Continued)


KBDCTY63.
Greek (Latin)


KBDCTY66.
Greek (MS)


KBDCTY60.
Greek (Polytonic)


KBDCTY12.
Hebrew


KBDCTY50.
Hungarian (101 key)


KBDCTY19.
Hungary


KBDCTY75.
Iceland


KBDCTY73.
Irish


KBDCTY56.
Italian (142)


KBDCTY5.
Italy


KBDCTY28.
Japan ASCII

Keyboard Countries (Continued)


KBDCTY78.
Kazakh


KBDCTY79.
Kyrgyz (Cyrillic)


KBDCTY14.
Latin America


KBDCTY42.
Latvia


KBDCTY43.
Latvia (QWERTY)


KBDCTY44.
Lithuania


KBDCTY45.
Lithuania (IBM)


KBDCTY34.
Macedonia


KBDCTY74.
Malta


KBDCTY86.
Mongolian (Cyrillic)


KBDCTY9.
Norway

Keyboard Countries (Continued)


KBDCTY20.
Poland


KBDCTY57.
Polish (214)


KBDCTY58.
Polish (Programmers)


KBDCTY13.
Portugal


KBDCTY25.
Romania


KBDCTY26.
Russia


KBDCTY67.
Russian (MS)


KBDCTY68.
Russian (Typewriter)


KBDCTY21.
SCS


KBDCTY37.
Serbia (Cyrillic)


KBDCTY36.
Serbia (Latin)

Keyboard Countries (Continued)


KBDCTY22.
Slovakia


KBDCTY49.
Slovakia (QWERTY)


KBDCTY48.
Slovakia (QWERTZ)


KBDCTY31.
Slovenia


KBDCTY10.
Spain


KBDCTY51.
Spanish variation


KBDCTY23.
Sweden


KBDCTY29.
Switzerland (French)


KBDCTY6.
Switzerland (German)


KBDCTY85.
Tatar


KBDCTY27.
Turkey F

Keyboard Countries (Continued)


KBDCTY24.
Turkey Q


KBDCTY76.
Ukrainian


KBDCTY7.
United Kingdom


KBDCTY87.
United States (Dvorak)


KBDCTY88.
United States (Dvorak left)


KBDCTY89.
United Stated (Dvorak right)


KBDCTY30.
United States (International)


KBDCTY77.
Uzbek (Cyrillic)

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.


KBDSTY0.
*** Regular**

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


KBDSTY1.
Caps Lock

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

KBDSTY2.
Shift Lock

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

KBDSTY6.
Automatic Caps Lock

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

KBDSTY7.
Autocaps via NumLock

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

KBDSTY5.
Emulate External Keyboard

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

Keyboard Conversion

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

These settings override Keyboard Style selections.

Note: If your interface is a keyboard wedge, first scan the menu code for Automatic Caps Lock (page 2-16). Otherwise, your output may not be as expected.

Default = Keyboard Conversion Off.

KBDCNV0.
*** Keyboard Conversion Off**

KBDCNV1.
Convert All Characters to Upper Case

KBDCNV2.
Convert All Characters to Lower Case

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 A-3. Only codes 00 through 1F are converted (the first column of the chart). *Default = Off.*

Note: Control + X (Control + ASCII) Mode overrides this mode. See Keyboard Modifiers, below.

Control Character Output On

*** Control Character Output Off**

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 A-3 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.

Default = Control + X Mode Off.

Windows Mode Control + X Mode On

*** Control + X Mode Off**

DOS Mode Control + X Mode On

Windows Mode Prefix/Suffix Off

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


KBDTMD1.
Turbo Mode On


KBDTMD0.
*** Turbo Mode Off**

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


KBDNPS1.
Numeric Keypad Mode On


KBDNPS0.
*** Numeric Keypad Mode Off**

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


KBDADC1.
Automatic Direct Connect Mode On


KBDADC0.
*** Automatic Direct Connect Mode Off**

3

Wireless System Operation

The 8670 wireless ring scanner can be used with Bluetooth devices, Honeywell mobile computers, Honeywell vehicle mount computers, Honeywell Charge and Communication Bases and Access Points. See Pair the Ring Scanner with Bluetooth Devices, beginning on page 1-6 for pairing instructions. The following information describes additional wireless settings as well as settings for working with a system of multiple ring scanners.

Change a Scanner's Bluetooth PIN Code

Some devices require a PIN code as part of the Bluetooth security features. Your scanner's default PIN is 1234, which you may need to enter the first time you connect to your host. When using multiple scanners, you may want to change the PIN so each scanner is uniquely identified. The PIN code must be between 1 and 16 characters. To change the PIN for your scanner, scan the bar code below and then scan the appropriate numeric bar codes from the Programming Chart inside the back cover of this manual. Scan **Save** to save your selection.

Bluetooth PIN

Minimize Bluetooth/ISM Band Network Activity

The settings described below can help you customize the relinking behavior of your wireless system to obtain the best compromise between convenience and low interference.

Note: ISM band refers to the 2.4 to 2.48 GHz frequency band used by wireless networks, cordless phones, and Bluetooth.

Auto Reconnect Mode

Auto Reconnect controls whether or not the scanner automatically begins the relink process when a loss of connection is detected. When the **Auto Reconnect On** bar code is scanned, the scanner begins the relink process immediately, without user intervention. *Default = Auto Reconnect On.*

*** Auto Reconnect On**

Auto Reconnect Off

Note: If you are connecting to a Bluetooth Interface Module, set Auto Reconnect to Off.

The table below shows the results of the Auto Reconnect On and Off settings:

Event	Auto Reconnect On	Auto Reconnect Off
Scanner out of range	Relink occurs automatically. If maximum number of link attempts is unsuccessful, then the scanner must be relinked by either pressing the trigger or relinking the scanner to the host. See Pair the Ring Scanner with Bluetooth Devices on page 1-6. Also see Maximum Link Attempts on page 3-2.	The scanner is relinked by pressing the trigger or relinking to the host.

Event	Auto Reconnect On	Auto Reconnect Off
Host reset (firmware upgrade or power cycle)	Scanner behaves as if out of range.	No attempt to relink made while host is powered off. Trigger must be pressed to initiate relinking.
Scanner power down due to Power Time-Out Timer setting (see page 3-6)	Trigger must be pressed.	
Scanner reset due to firmware upgrade	Relink occurs automatically.	
Scanner reset due to battery change	Relink occurs automatically.	

Maximum Link Attempts

The Maximum Link Attempts setting controls the number of times the scanner tries to form a connection with a host. During the connection setup process, the scanner transmits in order to search for and connect to a host. In order to prevent continuous transmissions that could interfere with other users of the ISM band, the number of attempts to connect is limited by this setting. After the maximum number of attempts is reached, the scanner will not attempt to reconnect to a host. Pressing the trigger, scanning a host linking bar code, or pairing the scanner with a host resets the attempt count and the scanner will again try to link.

Scan the **Maximum Link Attempts** bar code, then scan the number of attempts for the setting (from 0-100) from the inside back cover. Scan **Save** to save the setting. *Default = 0.*

Maximum Link Attempts

Note: When Auto Reconnect Mode is On, setting Maximum Link Attempts to zero will cause the scanner to try to link until the Power Time-Out Timer setting (see page 3-6) expires. When Auto Reconnect Mode is Off, setting Maximum Link Attempts to zero will cause the scanner to only attempt linking one time after a trigger press.

Relink Time-Out

Relink Time-Out controls the idle time between relink attempts. An attempt to link a scanner to a host typically lasts up to 5 seconds. This is the time when the scanner is actually attempting a contact. Relink Time-Out controls the amount of time, in seconds, that elapses between the end of one connection attempt and the start of the next.

Note: The length of time for an attempt depends on the number of scanners connected to a host. An extra 7 seconds may be required when a connection is successful.

Scan the **Relink Time-Out** bar code, then scan the number of seconds for the setting (from 1-100) from the inside back cover. Scan **Save** to save the setting. *Default = 3 seconds.*

Relink Time-Out

Bluetooth/ISM Network Activity Examples

Note: See Batch Mode on page 3-13 for information about using Batch Mode.

Default values

When the scanner goes out of range, the scanner repeatedly attempts to connect to the host. Each attempt consists of approximately 5 seconds of active time followed by 3 seconds of idle time. After one hour, the scanner powers off and batch mode data is lost.

Maximum Link Attempts set to 15
Other values at default setting

When the scanner goes out of range, 15 attempts are made to link to the host. Each attempt consists of approximately 5 seconds of active time followed by 3 seconds of idle time. After 15 cycles (8*15 =120), or about 2 minutes, the scanner stops trying to connect to the host, but retains any bar codes that may have been saved in batch mode. After one hour, the scanner powers off and batch mode data is lost.

Auto Reconnect Mode set to 0
Maximum Link Attempts set to 15
Other values at default setting

When the scanner goes out of range, no action is taken to relink. When the trigger is pressed, 15 attempts are made to link to the host. Each attempt consists of approximately 5 seconds of active time followed by 3 seconds of idle time. After 15 cycles (8*15 =120), or about 2 minutes, the scanner stops trying to connect to the host, but retains any bar codes that may have been saved in batch mode. After one hour, the scanner powers off and batch mode data is lost. Refer to Auto Reconnect Mode, page 3-1, to review other events that can start the relink process.

Auto Reconnect Mode set to 1
Maximum Link Attempts set to 0
Relink Time-Out set to 10
Scanner Power Time-Out Timer set to 1800

Note: See Scanner Power Time-Out Timer on page 3-6.

The scanner attempts to connect to the host every 15 seconds, measured from one attempt start to the next attempt start. After one half hour, the scanner powers off.

Communication Between the Scanner and the Host

When data is scanned, the data is sent to the host system. The scanner provides immediate feedback in the form of a “good read” indication with a green LED on the scanner, an audible beep, and a vibration. This indicates only that the bar code has been scanned correctly.

When using a Honeywell Charge and Communication Base (CCB) or a Honeywell Access Point (AP), the host also acknowledges when it has received the data. The scanner recognizes data acknowledgment (ACK) from the host. If a CCB or an AP cannot determine that the data has been properly sent to the host, the scanner issues an error tone. You must then check to see if the scanned data was received by the host.

Program the Scanner and Host

When using the scanner and host together as a system, menu parameters and configuration settings are stored in the host. If the scanner is not linked to a host, configuration settings are stored in the scanner.

RF (Radio Frequency) Module Operation

The wireless system uses a two-way Bluetooth radio utilizing adaptive frequency hopping (AFH) to transmit and receive data between the scanner and the host. Designed for point-to-point and multiple point-to-single-point applications, the radio operates using a license-free ISM band, which sends relatively small data packets at a fast data rate over a radio signal with randomly changing frequencies. This makes the wireless system highly responsive to a wide variety of data collection applications and resistant to noisy RF environments. The communication range between the scanner and host, depending on the environment, is 33 feet (10m). See Flexible Power Management, page 3-7, for information about controlling this range.

System Conditions

The components of the wireless system interact in specific ways as you move a scanner out of range, bring a scanner back in range, or swap scanners between two hosts. The following information explains the wireless system operating conditions.

Scanner Is Out of Range

The scanner is in communication with its host, even when it is not transmitting bar code data. Whenever the scanner can't communicate with the host for a few seconds, it is out of range. If the scanner is out of range and you scan a bar code, the scanner issues an error tone indicating that there was no communication with the host. Refer to Out-of-Range Alarm, page 3-6 and Auto Reconnect Mode, page 3-1.

Scanner Is Moved Back Into Range

The scanner relinks if the scanner or the host have been reset, or the scanner comes back into range. If the scanner relinks, you will hear a single chirp when the relinking process (uploading of the parameter table) is complete. Refer to Out-of-Range Alarm on page 3-6 and Auto Reconnect Mode, page 3-1 for further information.

Out of Range and Back into Range with Batch Mode On

Note: See Batch Mode, beginning on page 3-13, for further information.

The scanner may store a number of symbols (approximately 500 U.P.C. symbols; others may vary) when it is out of range and then send them to the host when back in range.

You will not hear a communication error tone in this mode, but you will hear a short buzz when you press the trigger if the radio communication is not working. Once the radio connection is made, the scanner produces a series of beeps and vibrations while the data is being transferred to the host.

Reset Scanner

Scanning this bar code reboots the scanner and causes it to relink with the host.

Reset Scanner

Scanner Report

Scan the bar code below to generate a report for the connected scanners. The report indicates the port, work group, scanner name, and address. To assign a name to your scanner, refer to Scanner Name, page 3-8.

Scanner Report

Scanner Address

Scan the bar code below to determine the address of the scanner you are using.

Scanner Address

Linked Modes

Note: This feature is only supported by a Honeywell Charge and Communication Base (CCB).

Locked Link Mode and Open Link Mode are the link modes that accommodate different applications. Scan the appropriate bar codes included in the Open Link and Locked Link Mode explanations that follow to switch from one mode to another. *Default = Open Link Mode*.

Locked Link Mode - Single Scanner

When you scan the bar code below, only the linked scanner can connect to the CCB and other scanners are blocked from being linked to that CCB.

Locked Link Mode
(Single Scanner)

To use a different scanner, you need to unlink the original scanner by scanning the **Unlink Scanner** bar code. (See Unlink a Scanner, below.)

Open Link Mode - Single Scanner

When in Open Link - Single Scanner Mode, each time a scanner is paired with a CCB, the scanner becomes linked to the CCB and the old scanner is unlinked.

*** Open Link Mode**
(Single Scanner)

Unlink a Scanner

If a host has a scanner linked to it, that scanner must be unlinked before a new scanner can be linked. Once the previous scanner is unlinked, it will no longer communicate with the host. To unlink the scanner from a host, scan the **Unlink Scanner** bar code below.

Unlink Scanner

Override Locked Scanner

If you need to replace a broken or lost scanner that is linked to a host, scan the **Override Locked Scanner** bar code below with a new scanner and pair that scanner with the host. The locked link will be overridden; the broken or lost scanner's link with the host will be removed, and the new scanner will be linked.

Override Locked Scanner
(Single Scanner)

Out-of-Range Alarm

Note: This feature is only supported by a Honeywell Charge and Communication Base (CCB) or a Honeywell Access Point (AP).

If your scanner is out range of the host, an alarm sounds from the scanner. The alarm stops when the scanner is moved closer to the host, when the host links to another scanner, or when the alarm duration expires. To set the alarm duration, scan the bar code below and then set the time-out duration (from 0-3000 seconds) by scanning digits on the Programming Chart inside the back cover, then scanning **Save**. *Default = 0 sec (no alarm).*

Scanner Alarm Duration

Note: If you are out of range when you scan a bar code, you will receive an error tone even if you do not have the alarm set because the data could not be communicated to the host.

Alarm Sound Type

Change the alarm type by scanning the following bar code and then scanning a digit (0-7) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = 0.*

The sounds are as follows:

Setting	Sound
0	3 long beeps, medium pitch
1	3 long beeps, high pitch
2	4 short beeps, medium pitch
3	4 short beeps, high pitch
4	single chirps, medium pitch
5	2 chirps, then 1 chirp, medium pitch
6	single chirps, high pitch
7	2 chirps, then 1 chirp, high pitch

Scanner Alarm Type

Scanner Power Time-Out Timer

When there is no activity within a specified time period, the scanner enters low power mode. Scan the appropriate scanner power time-out bar code to change the time-out duration (in seconds).

Note: Scanning zero (0) is the equivalent of setting no time-out.

If there are no trigger presses during the timer interval, the scanner goes into power down mode. Whenever the trigger is pressed, the timer is reset. The scanner will not go into power down mode when the battery is charging. *Default = 3600 seconds.*

0 seconds

BT_LPT200.
200 seconds

BT_LPT400.
400 seconds

BT_LPT900.
900 seconds

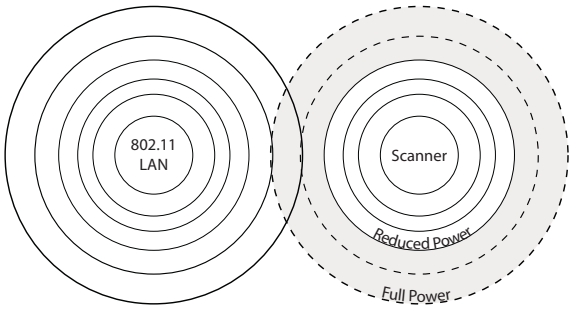
BT_LPT3600.
*** 3600 seconds**

BT_LPT7200.
7200 seconds

Note: When the scanner is in power down mode, press the trigger to power the unit back up. There will be a set of power up beeps and a delay of up to a few seconds for the radio to join. The scanner will then be ready to use.

Flexible Power Management

If you are experiencing network performance issues, and suspect the scanner is interfering with other devices, you can turn down the power output of the scanner. This reduces the range between the scanner and a host as shown in the following illustration:



Scan one of the bar codes below to set the scanner's power output to **Full Power** (100%), **Medium Power** (35%), **Medium Low Power** (5%), or **Low Power** (1%). *Default = Full Power.*

BT_TXP100.
*** Full Power**

BT_TXP35.
Medium Power

Medium Low Power

Low Power

Multiple Scanner Operation

Note: This feature is only supported by a Honeywell Charge and Communication Base (CCB) or a Honeywell Access Point (AP). Multiple Scanner Operation Mode allows you to link up to 7 scanners to one AP or CCB. You cannot join an 8th scanner until you unlink one of the 7 scanners or take a scanner out of range.

To put the scanner in multiple scanner mode, scan the bar code below. Once you scan this bar code, the scanner is unlinked from the current host CCB or AP and must be paired with a CCB or AP to relink.

Multiple Scanner Operation

Scanner Name

You may assign a name to each scanner you are using for identification purposes. For example, you may want to have a unique identifier for a scanner that is receiving specific commands sent from the host.

The default name is in the format “Honeywell-8670-SN-############ (12 digit serial number)” If you have more than one scanner linked to a host and they all have the same name, the first scanner linked to the host receives commands. When renaming a series of scanners with identical names, unlink all except one of the scanners from the host.

Perform the rename operation using either the bar codes on page 3-9, or by sending the serial command **:*Scanner-Name*:BT_NAM*NewName*.** where *ScannerName* is the current name of the scanner, and *NewName* is the new name for the scanner. If you wish to change the names of additional scanners, link them one at a time and repeat the **:*ScannerName*:BT_NAM*NewName*.** command for each scanner.

To rename scanners with sequential numeric names, scan the bar codes below. Scan the **Reset** code after each name change and wait for the scanner to relink to the host before scanning a bar code to rename the next scanner.

0001

0002

0003

0004

0005

0006

0007

Reset

You may also scan the **Scanner Name** bar code below and scan a number for the scanner name. For example, if you wanted to name the linked scanner "312," you would scan the bar code below, scan the **3**, **1**, and **2** bar codes on the Programming Chart inside the back cover of this manual, then scan **Save**. Scan the **Reset** bar code and wait for the scanner to relink to the host.

Scanner Name

Application Work Groups

Note: Application Work Groups can only be used with a Honeywell Charge and Communication Base (CCB) or a Honeywell Access Point (AP).

Your wireless system can have up to 7 scanners linked to one host CCB or AP. You can also have up to 7 work groups. If you want to have all of the scanners' settings programmed alike, you don't need to use more than one work group. If you want each scanner to have unique settings (e.g., beeper volume, prefix/suffix, data formatter), then you may program each scanner to its own unique work group and may program each scanner independently. For example, you might want to have multiple work groups in a retail/warehouse application where you need to have different data appended to bar codes used in the warehouse area versus the retail area. You could assign all the scanners in the retail area to one work group and those in the warehouse to another. Consequently, any desired changes to either the retail or warehouse area would apply to all scanners in that particular work group. Honeywell's online configuration tool, EZConfig-Scanning (see page 9-3), makes it easy for you to program your system for use with multiple scanners and multiple work groups.

The scanner keeps a copy of the menu settings it is using. Whenever the scanner is connected or reconnected to a host CCB or AP, the scanner is updated with the latest settings from the CCB or AP for its work group. The scanner also receives menu setting changes processed by the host CCB or AP. If a scanner is removed from a CCB or AP and linked to another CCB or AP, it will be updated with the new host CCB or AP settings for whatever work group to which that the scanner was previously assigned. For example, if the scanner was in work group 1 linked to the first CCB or AP, it will be placed in work group 1 in the second CCB or AP with the associated settings.

Application Work Group Selection

This programming selection allows you to assign a scanner to a work group by scanning the bar code below. You may then program the settings (e.g., beeper volume, prefix/suffix, data formatter) that your application requires. *Default = Group 0.*

*** Group 0**

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Reset the Factory Defaults: All Application Work Groups

The following bar code defaults all of the work groups to the factory default settings.

Factory Default Settings:
All Work Groups

To see what the factory default settings are, refer to the table of Serial Programming Commands, beginning on page 10-1. The standard product default settings for each of the commands are indicated by an asterisk (*).

Note: Scanning this bar code also causes both the scanner and the host CCB or AP to perform a reset and become unlinked. You must relink (pair) the scanner to the CCB or AP. Refer to Pair the Ring Scanner with Bluetooth Devices, page 1-6 for additional information.
If your scanner is in multiple scanner mode, you will hear up to 30 seconds of beeping while all scanners are relinked to the host CCB or AP and the settings are changed.

Reset the Custom Defaults: All Application Work Groups

If you want the custom default settings restored to all of the work groups, scan the **Custom Product Default Settings** bar code below. (If there are no custom defaults, it will reset the work groups to the factory defaults.) See Set Custom Defaults on page 1-11 for further information about custom defaults.

PAPDFT.

Custom Default Settings: All Work Groups

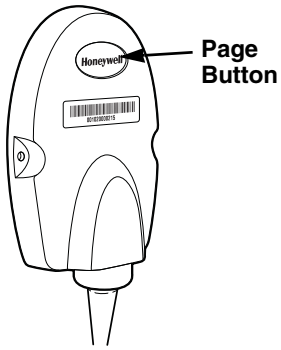
Note: Scanning this bar code also causes both the scanner and the host CCB or AP to perform a reset and become unlinked. You must relink (pair) the scanner to the CCB or AP. See Pair the Ring Scanner with Bluetooth Devices, page 1-6 for additional information.
If your scanner is in multiple scanner mode, you will hear up to 30 seconds of beeping while all scanners are relinked to the host CCB or AP and the settings are changed.

Access Point Operations

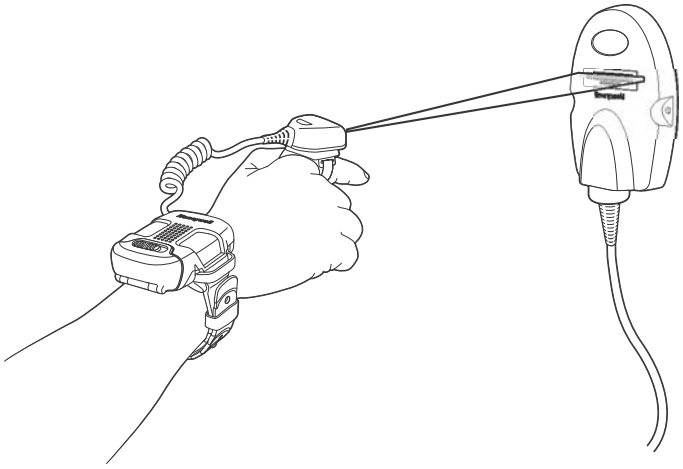
The 8670 ring scanner can pair with a Honeywell Access Point (AP-010BT or AP-100BT), which provides 2-way communication between the scanner and host.

Link the Scanner to an Access Point

Turn on the host computer (laptop/desktop). Plug the interface cable into the Access Point first and then into the appropriate port on the computer. The Page button lights up when the connection to the host is made.



Scan the **Bluetooth HID Keyboard Disconnect** bar code below, then scan the linking bar code on the top of the Access Point to establish a connection between the Access Point and the scanner. The scanner emits a short beep and flashes the green LED to confirm a connection with the Access Point. The Access Point's Page button remains blue.



If the Access Point sounds 5 error tones followed by 3 beeps, it indicates that you are attempting to link to the incorrect model Access Point.

Disconnect from Host and Connect to an Access Point

If your ring scanner has been connected directly to an iPad, smart phone, or laptop, you must disconnect it in order to communicate with an Access Point. Scan the **Bluetooth HID Keyboard Disconnect** bar code to unlink the ring scanner from the currently linked host. Scan the linking bar code on the Access Point to link the ring scanner to the Access Point.

Bluetooth HID Keyboard Disconnect

Replace a Linked Scanner

If you need to replace a broken or lost ring scanner that is linked to an Access Point, scan the **Override Locked Scanner** bar code below with a new ring scanner and scan the Access Point linking bar code. The locked link will be overridden; the broken or lost scanner's link with the Access Point will be removed, and the new ring scanner will be linked.

Override Locked Scanner (Single Scanner)

Access Point LED Sequences and Meaning

The Access Point has a blue LED on the top of the unit that indicates its power up and communication condition.

Blue LED - Host Communication	
Blue LED	**Communication Condition**
Off	USB suspend
On continuously	Power on, system idle
Short blinks in multiple pulses. Occurs while transferring data to/ from the host.	Receiving data

Access Point Address

Scan the bar code below to determine the address of the Access Point you are using.

Base Address

Page Scanners

Paging Mode

By default, the paging button on the Access Point pages the scanners associated with that Access Point. If you want the paging button on your Access Point to be disabled, scan the **Paging Mode Off** bar code, below. When Paging Mode is off, the Access Point will no longer page scanners when the button is pressed. The blue LED on the Access Point will remain lit to indicate that Paging Mode is off. (This light will go out when the button is pressed, then back on when it's released.) *Default = Paging Mode On.*

*** Paging Mode On**

Paging Mode Off

Paging Pitch

When you press the Page button on the Access Point, the scanners associated with that Access Point will begin beeping. You can set the pitch of the paging beep for each scanner by scanning one of the following bar codes. *Default = Low.*

*** Low (1000 Hz)**

Medium (3250 Hz)

High (4200 Hz)

Batch Mode

Batch mode is used to store bar code data when a scanner is out of range of its Honeywell Charge and Communication Base (CCB) or Honeywell Access Point (AP), or when performing inventory. The scanner may store a number of symbols (approximately 500 U.P.C. symbols; others may vary) when it is out of range and then send them to the CCB or AP when back in range or when the records are manually transmitted.

Note: Batch Mode is only supported by a Honeywell CCB or AP. Batch mode has limitations when using multiple scanners to one CCB or AP. When a wireless system is being used in "multiple link mode," where up to 7 scanners are connected to one host CCB or AP, some accumulated or batched scans could be lost if scanners are constantly moved in and out of range.

Automatic Batch Mode stores bar code data when the scanner is out of range of the host CCB or AP. The data is automatically transmitted to the host once the scanner is back in range. When the scanner's buffer space is full, any bar codes scanned generate an error tone. In order to scan bar codes again, the scanner must be moved back into range of the host CCB or AP so data can be transmitted.

Inventory Batch Mode stores bar code data, whether or not you are in range of the host CCB or AP. To transmit the stored data to the host CCB or AP, scan Transmit Inventory Records (page 3-17). When the scanner's buffer space is full, any bar codes scanned generate an error tone. In order to scan bar codes again, the data must be transmitted to the host CCB or AP. Once the data is transmitted, it is cleared in the scanner.

Persistent Batch Mode is the same as Inventory Batch Mode except that once the data is transmitted to the host CCB or AP, it is retained in the scanner. If you want to transmit more than once, you can do so using this mode. In order to clear the scanner's buffer, you must scan Clear All Codes (see page 3-17).

Default = Batch Mode Off.

*** Batch Mode Off**

Automatic Batch Mode

Inventory Batch Mode

Persistent Batch Mode

Batch Mode Beep

When scanning in Inventory Batch Mode (page 3-14), the scanner beeps and vibrates every time a bar code is scanned. When **Batch Mode Beep** is **On**, you will also hear a click when each bar code is sent to the host CCB or AP**.** If you do not want to hear these clicks, scan **Batch Mode Beep Off**. *Default = Batch Mode Beep On.*

Batch Mode Beep Off

*** Batch Mode Beep On**

Batch Mode Storage

When a scanner is storing data during a Batch Mode process, you can select whether the data is stored in Flash memory or in RAM.

Flash Storage: The scanner writes any untransmitted data to flash memory prior to powering down. The data will still be there when the scanner powers back up. However, the scanner will power down, even with untransmitted data, if it reaches a power down timeout or if the battery power is very low.

RAM Storage: The scanner will not power down while it contains data that has not been transmitted to the host CCB or AP, even if it reaches a power down timeout. However, if the scanner runs out of battery power, it will power down and the data will be lost.

Default = Flash Storage.

*** Flash Storage**

RAM Storage

Batch Mode Quantity

When in Batch Mode, you may wish to transmit the number of multiple bar codes scanned, rather than a single bar code multiple times. For example, if you scan three bar codes called XYZ with **Batch Mode Quantity Off**, when you transmit your data it will appear as XYZ three times. Using **Batch Mode Quantity On** and the **Quantity Codes** (page 3-16), you could output your data as "XYZ, 00003" instead.

Note: If you wish to format your output, for example, place a CR or tab between the bar code data and the quantity, refer to Data Formatting beginning on page 6-1.

Default = Batch Mode Quantity Off.

*** Batch Mode Quantity Off**

Batch Mode Quantity On

Enter Quantities

Quantity Codes (page 3-16) allow you to enter a quantity for the last item scanned, up to 9999 (default = 1). Quantity digits are shifted from right to left, so if a 5th digit is scanned, the 1st digit scanned is discarded and the 2nd, 3rd and 4th digits are moved to the left to accommodate the new digit.

For example, if the Quantity 5 bar code is scanned after the quantity has been set to 1234, then the 1 is dropped, the quantity will be 2345.

Example: Add a quantity of 5 for the last item scanned.
1. Scan the item's bar code.
2. Scan the quantity 5 bar code.

Example: Add a quantity of 1,500 for the last item scanned.
1. Scan the item's bar code.
2. Scan the quantity 1 bar code.
3. Scan the quantity 5 bar code.
4. Scan the quantity 0 bar code.
5. Scan the quantity 0 bar code.

Example: Change a quantity of 103 to 10.

To correct an incorrect quantity, scan the quantity 0 bar code to replace the incorrect digits, then scan the correct quantity bar codes.

1. Scan the quantity 0 bar code to change the quantity to 1030.
2. Scan the quantity 0 bar code to change the quantity to 0300.
3. Scan the quantity 1 bar code to change the quantity to 3001.
4. Scan the quantity 0 bar code to change the quantity to 0010.

Default = 1.

Quantity Codes

0

1

2

3

4

5

6

7

8

9

Batch Mode Output Order

When batch data is transmitted, select whether you want that data sent as **FIFO** (first-in first-out), or **LIFO** (last-in first-out). *Default = Batch Mode FIFO.*

*** Batch Mode FIFO**

Batch Mode LIFO

Total Records

If you wish to output the total number of bar codes scanned when in Batch Mode, scan **Total Records**.

Total Records

Delete Last Code

If you want to delete the last bar code scanned when in Batch Mode, scan **Delete Last Code**.

Delete Last Code

Clear All Codes

If you want to clear the scanner's buffer of all data accumulated in Batch Mode, scan **Clear All Codes**.

Clear All Codes

Transmit Records to Host

If you are operating in Inventory Batch Mode (see Inventory Batch Mode on page 3-14), you must scan the following bar code to transmit all the stored data to the host CCB or AP.

Transmit Inventory Records

Batch Mode Transmit Delay

Sometimes when accumulated scans are sent to the host CCB or AP, the transmission of those scans is too fast for the application to process. To program a transmit delay between accumulated scans, scan one of the following delays. *Default = Off.*

Note: In most cases, a short (250 millisecond) delay is recommended, however, longer delays may be programmed. Contact Technical Support (page -iii) for additional information.

*** Batch Mode Transmit Delay Off (No Delay)**

Batch Mode Transmit Delay Short (250 ms)

Batch Mode Transmit Delay Medium (500 ms)

Batch Mode Transmit Delay Long (1000 ms)

Host Acknowledgment

Some applications require that the host validate incoming bar code data (database look-up) and provide acknowledgment to the scanner whether or not to proceed. In Host ACK Mode, the scanner waits for this acknowledgment after each scan. Visual and audible acknowledgments provide valuable feedback to the scan operator. The Host ACK functionality is controlled via a number of pre-defined escape commands that are sent to the scanner to make it behave in different ways.

Note: System performance degrades when using Host ACK at rates lower than 9600 baud.

The following criteria must be met for the Host ACK to work correctly:

- The wireless system must be configured for Host Port RS232 (terminal ID = 000) or USB COM Emulation (terminal ID = 130).
- RTS/CTS is defaulted off. You must enable it if the host system requires it.
- Host ACK must be set to On (page 3-19).
- A comma must be used as a terminator.
- The host terminal software must be capable of interpreting the bar code data, make decisions based on the data content, and send out appropriate escape commands to the scanner.

Escape commands are addressed to the scanner via Application Work Groups. Once a command is sent, all scanners in a group respond to that command. Because of this, **it is recommended that each scanner is assigned to its own group in Host ACK mode**.

The commands to which the scanner responds are listed on page 3-19. The **[ESC]** is a **1B** in hex. A typical command string is **y [ESC] x,** where "y" is the application work group number, "[ESC] x" is the escape command, and the comma is the terminator, which is required. (When "y" is not specified, the command is sent to the default Application Work Group 0.)

Example: Commands may be strung together to create custom response sequences. An example of a command string is listed below.

0[ESC]4,[ESC]5,[ESC]6,

The above example will make a scanner that is in application work group zero beep low, then medium, then high.

Example: A good read beep is required for any item on file, but a razz or error tone is required if the item is not on file. In this case,

[ESC]7, is sent to the host for an on-file product

[ESC]8,[ESC]8, is sent to the host for a not-on-file product

When a bar code is scanned, the scanner enters a timeout period until either the host ACK sequence is received, or the timeout expires (in 10 seconds, by default).

Once Host ACK is enabled, the system works as follows when a bar code is scanned:

- The scanner reads the code and sends data to the host. No audible or visual indication is emitted until the scanner receives an escape command. The scanner read illumination goes out when there's a successful read.
- Scanner operation is suspended until 1) a valid escape string is received from the host or 2) the scanner times out.
- Once condition 1 or 2 above has been met, the scanner is ready to scan again, and the process repeats.

A time-out occurs if the scanner does not receive a valid escape command within 10 seconds. A time-out is indicated by an error tone. If a time-out occurs, the operator should check the host system to understand why a response to the scanner was not received.

Host ACK On/Off

Host ACK On

*** Host ACK Off**

Host ACK Timeout

You can set a timeout for the length of time the scanner waits for a valid escape command when using Host Acknowledgment Mode. Set the length (in seconds) for a timeout by scanning the following bar code, then setting the timeout (from 1-90 seconds) by scanning digits from the Programming Chart inside the back cover of this manual, then scanning **Save**. *Default = 10.*

Host ACK Timeout

Host ACK Responses

Command	Action
[ESC] a,	Double beeps and vibrations to indicate a successful menu change was made.
[ESC] b,	Razz or error tone to indicate a menu change was unsuccessful.
[ESC] 1,	The green LED illuminates for 135 milliseconds followed by a pause.
[ESC] 2,	The green LED illuminates for 2 seconds followed by a pause.
[ESC] 3,	The green LED illuminates for 5 seconds followed by a pause.
[ESC] 4,	Emits a beep at a low pitch.
[ESC] 5,	Emits a beep at a medium pitch.
[ESC] 6,	Emits a beep at a high pitch.
[ESC] 7,	Beeps and vibrates to indicate a successful decode and communication to host.
[ESC] 8,[ESC] 8,	Razz or error tone to indicate a decode/communication to host was unsuccessful.

4

Input/Output Settings

Power Up Beeper

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

Power Up Beeper Off - Scanner

*** 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** bar code below, the scanner will beep every time a BEL character is received from the host. *Default = Beep on BEL Off.*

***Beep on BEL Off**

Beep on BEL On

Trigger Click

To hear an audible click every time the scanner trigger is pressed, scan the **Trigger Click On** bar code 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.*

***Trigger Click Off**

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. *Default = High.*


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)

High (4200 Hz)

Vibrate – Good Read

The scanner vibrates once when a bar code is successfully read, and twice when a programming bar code is successfully read. When a programming bar code is unsuccessful, the scanner emits one long vibration (2 times the Vibrate Duration length). Scan **Vibrate - Good Read Off** to keep the scanner from vibrating. *Default = Vibrate - Good Read On.*

Vibrate- Good Read Off

*** Vibrate- Good Read On**

Vibrate Duration

If you want to set the length for the good read vibration, scan the bar code below, then set the duration (from 100 - 2,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**. *Default = 300 ms.*

Vibrate Duration

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.*

*** Razz (250 Hz)**

Medium (3250 Hz)

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.*

*** Normal Beep**

Short Beep

LED – Good Read

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

*** LED - Good Read On**

LED - Good Read Off

Number of Beeps – Good Read

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

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 bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = 1.*

Number of Error Beeps/LED Flashes

Good Read Delay

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

*** No Delay**

Short Delay (500 ms)

Medium Delay (1,000 ms)

Long Delay (1,500 ms)

User-Specified Good Read Delay

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

User-Specified Good Read Delay

Manual Trigger Modes

When in manual trigger mode, the scanner scans until a bar code 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.*

*** Manual Trigger - Normal**

Manual Trigger - Enhanced

Serial Trigger Mode

You can activate the scanner either by pressing the trigger, or using a serial trigger command (see Trigger Commands on page 10-3). You must be in a serial interface mode in order to use serial triggering. Refer to RS232 Serial Port (page 2-1) or USB Serial (page 2-4) for further information. When in serial mode, the scanner scans until a bar code 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** bar code, set the time-out duration (from 0-300,000 milliseconds) by scanning digits on the Programming Chart inside the back cover, then scanning **Save**. *Default = 30,000 ms.*

Read Time-Out

Poor Quality Codes

Poor Quality 1D Codes

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

Poor Quality 1D Reading On

*** Poor Quality 1D Reading Off**

Poor Quality PDF Codes

This setting improves the scanner's ability to read damaged or badly printed PDF codes by combining information from multiple images. When **Poor Quality PDF 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 bar codes. This setting does not affect 1D bar code reading. *Default = Poor Quality PDF Reading Off.*

Poor Quality PDF Reading On

*** Poor Quality PDF Reading Off**

CodeGate®

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

*** CodeGate Off Out-of-Stand**

CodeGate On Out-of-Stand

Streaming Presentation™ Mode

When in Streaming Presentation mode, the scanner's aimer goes out after a short time, but the scan illumination remains on all the time to continuously search for bar codes. The following modes are available, **Temporary**, **Normal** and **Enhanced**.

Temporary Streaming Presentation works on a timer. Using this mode, a trigger press starts the Streaming Presentation mode. It remains in this mode while scanning bar codes. If no bar code scans or trigger presses occur within the timeout period, the scanner returns to triggered scanning. The next trigger press begins the process again. To use Temporary Streaming Presentation, scan the bar code below, then set the timeout (from 1 - 300,000 milliseconds) by scanning digits from the Programming Chart inside the back cover of this manual, then scanning **Save**. *Default = 60,000.*

Normal Streaming Presentation offers good scan speed and the longest working ranges (depth of field).

Enhanced Streaming Presentation 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.

*** Temporary Streaming Presentation**

Streaming Presentation Mode - Normal

Streaming Presentation Mode - Enhanced

When using Preferred Symbology (page 4-12), a lower priority symbol must be centered on the aiming pattern to be read in Streaming Presentation Mode.

Hands Free Time-Out

If the scanner's trigger is pressed when using Streaming Presentation, 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 presses) the scanner reverts to the original Streaming Presentation mode.

Scan the **Hands Free Time-Out** bar code, then scan the time-out duration (from 0-300,000 milliseconds) from the inside back cover, and **Save**. *Default = 5,000 ms.*

TRGPTO.
Hands Free Time-Out

Mobile Phone Read Mode

When this mode is selected, your scanner is optimized to read bar codes from mobile phone or other LED displays. However, the speed of scanning printed bar codes may be slightly lower when this mode is enabled. You can enable Mobile Phone Reading for either a hand held device, or for a hands-free (presentation) application.

PAPHHC.
Hand Held Scanning - Mobile Phone

PAPSPC.
Streaming Presentation - Mobile Phone

Note: To turn off Mobil Phone Read Mode, scan a Manual or Serial Trigger Mode bar code (see page 4-5).

Reread Delay

This sets the time period before the scanner can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads. Use shorter delays in applications where repetitive bar code scanning is required. Reread Delay only works when in a Streaming Presentation™ Mode (see page 4-7). *Default = Medium.*

DLYRRD500.
Short (500 ms)

DLYRRD750.
*** Medium (750 ms)**

DLYRRD1000.
Long (1000 ms)

DLYRRD2000.
Extra Long (2000 ms)

User-Specified Reread Delay

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

User-Specified Reread Delay

2D Reread Delay

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

*** 2D Reread Delay Off**

Short (1000ms)

Medium (2000ms)

Long (3000ms)

Extra Long (4000ms)

Illumination Lights

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

Note: This setting does not affect the aimer light. The aiming light can be set using Aimer Mode (page 4-10).

*** Lights On**

Lights Off

Aimer Delay

The aimer delay allows a delay time for the operator to aim the scanner before the image is taken. Use these codes to set the time between when the trigger is pressed and when the image 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.*

200 milliseconds

400 milliseconds

*** Off *(no delay)***

User-Specified Aimer Delay

If you want to set your own length for the duration of the delay, scan the bar code below, then set the time-out by scanning digits (0 - 4,000 ms) from the Programming Chart inside the back cover of this manual, then scan **Save**.

Delay Duration

Aimer Mode

This feature allows you to turn the aimer on and off. When the **Interlaced** bar code is scanned, the aimer is interlaced with the illumination LEDs. *Default = Interlaced*

Off

*** Interlaced**

Centering

Use Centering to narrow the scanner's field of view to make sure that it reads only those bar codes you intend to read. 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 4-10, 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 bar code scanners.)

Single Code Centering

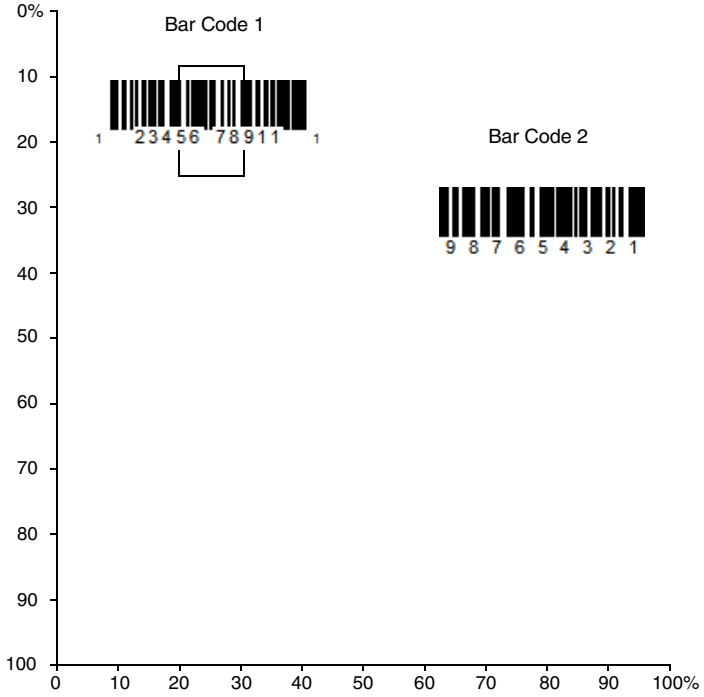
Scan **Single Code Centering** to target the bar code closest to the center of the image. Singling out a bar code in this manner increases scanning accuracy when there are multiple bar codes close together.

Single Code Centering

Custom Centering Settings

Use the following settings to customize your centering window. If a bar code 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** bar codes.

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



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

Scan **Centering On**, then scan one of the following bar codes to change the top, bottom, left, or right of the centering window. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual.

Scan **Save**. *Default Centering = 40% for Top and Left, 60% for Bottom and Right.*

Centering On

*** Centering Off**

Top of Centering Window

Bottom of Centering Window

Left of Centering Window

Right of Centering Window

Preferred Symbology

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

For example, you may be using the scanner in a retail setting to read U.P.C. symbols, but have occasional need to read a code on a drivers license. Since some licenses have a Code 39 symbol as well as the PDF417 symbol, you can use Preferred 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 4-13) while it searches for the high priority symbology. If a high priority symbology is located during this period, then that data is read immediately.

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

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

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

Preferred Symbology On

*** Preferred Symbology Off**

High Priority Symbology

To specify the high priority symbology, scan the High Priority Symbology bar code below. On the Symbology Charts on page A-1, find the symbology you want to set as high priority. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover). Scan **Save** to save your selection. *Default = None*

High Priority Symbology

Low Priority Symbology

To specify the low priority symbology, scan the Low Priority Symbology bar code below. On the Symbology Charts on page A-1, find the symbology you want to set as low priority. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover).

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

Low Priority Symbology

Preferred Symbology Time-out

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

Preferred Symbology Time-out

Preferred Symbology Default

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

Preferred Symbology Default

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 bar codes are scanned. Reading the ***Default Sequence*** symbol programs the scanner to the Universal values, shown below. These are the defaults. Be **certain** you want to delete or clear all formats before you read the ***Default Sequence*** symbol.

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

To Add an Output Sequence

1. Scan the ***Enter Sequence*** symbol (see Require Output Sequence, page 4-16).

2. **Code I.D.**
   On the Symbology Charts on page A-1, find the symbology to which you want to apply the output sequence format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart (inside back cover).

3. **Length**
   Specify what length (up to 9999 characters) of data output will be acceptable for this symbology. Scan the four digit data length from the Programming Chart. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.) When calculating the length, you must count any programmed prefixes, suffixes, or formatted characters as part of the length (unless using 9999).

4. **Character Match Sequences**
   On the ASCII Conversion Chart (Code Page 1252), page A-3, find the Hex value that represents the character(s) you want to match. Use the Programming Chart to read the alphanumeric combination that represents the ASCII characters. (99 is the Universal number, indicating all characters.)

5. **End Output Sequence Editor**
   Scan ***F F*** to enter an Output Sequence for an additional symbology, or ***Save*** to save your entries.

Other Programming Selections

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

Output Sequence Example

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

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

A - Code 39

B - Code 128

C - Code 93

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

SEQBLK62999941FF6A999942FF69999943FF

The breakdown of the command line is shown below:

SEQBLK sequence editor start command

62 code identifier for **Code 39**

9999 code length that must match for Code 39, 9999 = all lengths

41 start character match for Code 39, 41h = “A”

FF termination string for first code

6A code identifier for **Code 128**

9999 code length that must match for Code 128, 9999 = all lengths

42 start character match for Code 128, 42h = “B”

FF termination string for second code

69 code identifier for **Code 93**

9999 code length that must match for Code 93, 9999 = all lengths

43 start character match for Code 93, 43h = “C”

FF termination string for third code

To program the previous example using specific lengths, you would have to count any programmed prefixes, suffixes, or formatted characters as part of the length. If you use the example on page 4-14, but assume a <CR> suffix and specific code lengths, you would use the following command line:

SEQBLK62001241FF6A001342FF69001243FF

The breakdown of the command line is shown below:

SEQBLKsequence editor start command

62 code identifier for **Code 39**

0012 A - Code 39 sample length (11) plus CR suffix (1) = 12

41 start character match for Code 39, 41h = “A”

FF termination string for first code

6A code identifier for **Code 128**

0013 B - Code 128 sample length (12) plus CR suffix (1) = 13

42 start character match for Code 128, 42h = “B”

FF termination string for second code

69 code identifier for **Code 93**

0012 C - Code 93 sample length (11) plus CR suffix (1) = 12

43 start character match for Code 93, 43h = “C”

FF termination string for third code

Output Sequence Editor

Enter Sequence

Default Sequence

Partial Sequence

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

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

Transmit Partial Sequence


SEQTTS0.
*** Discard Partial Sequence**

Require Output Sequence

When an output sequence is **Required**, all output data must conform to an edited sequence or the 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.

When the output sequence is ***Off***, the bar code 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.


SEQ_EN2.
Required


SEQ_EN1.
On/Not Required


SEQ_EN0.
***Off**

Multiple Symbols

When this programming selection is turned **On**, it allows you to read multiple symbols with a single press 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 vibrating for each read. The scanner attempts to find and decode new symbols as long as the trigger is pressed. 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 9-3), an "NR" appears when a code cannot be read. If No Read is turned **Off**, the "NR" will not appear. *Default = Off.*


SHWNRD1.
On

*** Off**

If you want a different notation than “NR,” for example, “Error,” or “Bad Code,” you can edit the output message (see Data Formatting beginning on page 6-1). The hex code for the No Read symbol is 9C.

Video Reverse

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

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

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

Video Reverse Only

Video Reverse and Standard Bar Codes

*** Video Reverse Off**

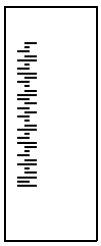
Working Orientation

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

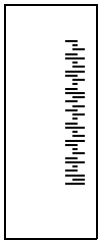
Upright:

Upside Down:

Vertical, Top to Bottom:
(Rotate CW 90°)



Vertical, Bottom to Top:
(Rotate CCW 90°)



ROTATN0.
*** Upright**

ROTATN1.
Vertical, Bottom to Top

ROTATN2.
Upside Down

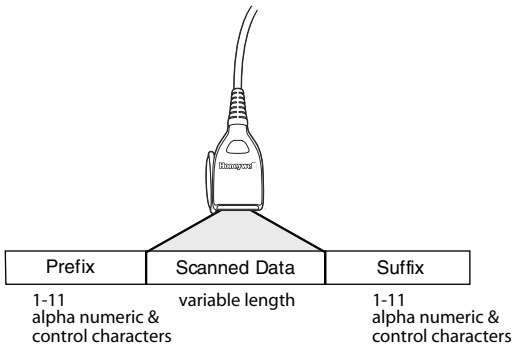
ROTATN3.
Vertical, Top to Bottom

5 Data Editing

Prefix/Suffix Overview

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

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



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None.*
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the ASCII Conversion Chart (Code Page 1252), beginning on page A-3, 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 5-2).

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the Symbology Charts, beginning on page A-1) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Code ID is “j” and Hex ID is “6A”.

Step 3. Scan the 2 hex digits from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Step 4. Determine the hex value from the ASCII Conversion Chart (Code Page 1252), beginning on page A-3, for the prefix or suffix you wish to enter.

*Note: To add the Code I.D., scan **5**, **C**, **8**, **0**.*
*To add AIM I.D., scan **5**, **C**, **8**, **1**.*
*To add a backslash (\), scan **5**, **C**, **5**, **C**.*
To add a backslash (\), you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.

Step 5. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

Step 6. Repeat Steps 4 and 5 for every prefix or suffix character.

Step 7. Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Repeat Steps 1-6 to add a prefix or suffix for another symbology.

Example: Add a Tab Suffix to All Symbologies

Step 1. Scan **Add Suffix**.

Step 2. Scan **9**, **9** from the Programming Chart inside the back cover of this manual to apply this suffix to all symbologies.

Step 3. Scan **0**, **9** from the Programming Chart inside the back cover of this manual. This corresponds with the hex value for a horizontal tab, shown in the ASCII Conversion Chart (Code Page 1252), beginning on page A-3.

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 A-1) for the symbology from which you want to clear the prefix or suffix.

Step 3. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Your change is automatically saved.

Add a Carriage Return Suffix to All Symbologies

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

VSUFCR.
Add CR Suffix All Symbologies

Prefix Selections

PREBK2.
Add Prefix

PRECL2.
Clear One Prefix

PRECA2.
Clear All Prefixes

Suffix Selections

SUFBK2.
Add Suffix

SUFCL2.
Clear One Suffix

SUFCA2.
Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the scanner transmits the function code to the terminal. Charts of these function codes are provided in Symbology Charts, beginning on page A-1. When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted. *Default = Enable.*

RMVFNC0.
*** Enable**

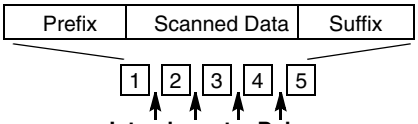
RMVFNC1.
Disable

Intercharacter, Interfunction, and Intermessage Delays

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

Intercharacter Delay

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



Intercharacter Delay

DLYCHR.
Intercharacter Delay

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

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

User Specified Intercharacter Delay

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

Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for a printable character to trigger the delay (see Lower ASCII Reference Table, page A-4.)

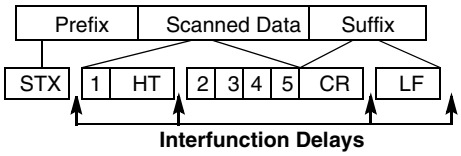
DLYCRX.
Delay Length

DLY_XX.
Character to Trigger Delay

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

Interfunction Delay

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



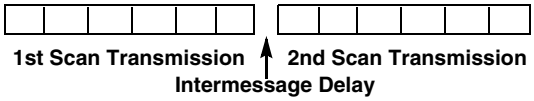
Interfunction Delays

DLYFNC.
Interfunction Delay

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

Intermessage Delay

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


1st Scan Transmission **2nd Scan Transmission**
Intermessage Delay

DLYMSG.
Intermessage Delay

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

6 Data Formatting

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 bar code data as it is scanned. The selections in the following pages are used only if you wish to alter the output. *Default Data Format setting = None.*

Normally, when you scan a bar code, it is output automatically. However, when you create a format, you must use a "send" command (see Send Commands on page 6-3) 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 bar code is read that fails the first data format, the next data format, if there is one, will be used on the bar code data. If there is no other data format, the raw data is output.

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

*** Default Data Format**

Add a Data Format

Step 1. Scan the **Enter Data Format** symbol (page 6-2).

Step 2. Select **Primary/Alternate Format**

Determine if this will be your primary data format, or one of 3 alternate formats. This allows you to save a total of 4 different data formats. To program your primary format, scan **0** using the Programming Chart inside the back cover of this manual. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on which alternate format you are programming. (See "Primary/Alternate Data Formats" on page 6-13 for further information.)

Step 3. Terminal Type

Refer to Terminal ID Table (page 6-3) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover 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 A-1, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

If you wish to create a data format for all symbologies, with the exception of some specific symbologies, refer to B8 (page 6-11).

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

Note: 99 indicates all symbologies.

Step 5. Length

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

Note: 9999 indicates all lengths.

Step 6. Editor Commands

Refer to Data Format Editor Commands (page 6-3). 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.


DFMBK3.
Enter Data Format


MNUSAV.
Save


MNUABT.
Discard

Other Programming Selections

Clear One Data Format

This deletes one data format for one symbology. If you are clearing the primary format, scan **0** from the Programming Chart inside the back cover of this manual. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the format you are clearing. Scan the Terminal Type and Code I.D. (see Symbology Charts on page A-1), and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.

Clear all Data Formats

This clears all data formats.

Save to exit and save your data format changes.

Discard to exit without saving any data format changes.


DFMCL3.
Clear One Data Format


DFMCA3.
Clear All Data Formats


MNUSAV.
Save


MNUABT.
Discard

Terminal ID Table

Terminal	Model(s)	Terminal ID
USB	PC keyboard (HID)	124
	Mac Keyboard	125
	PC Keyboard (Japanese)	134
	Serial (COM driver required)	130
	HID POS	131
	USB SurePOS Handheld	128
	USB SurePOS Tabletop	129
Serial	RS232 TTL	000
	RS232 True	000
	RS485 (IBM-HHBCR 1+2, 46xx)	051
Keyboard	PS2 compatibles	003
	AT compatibles	002

Data Format Editor Commands

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

Send Commands

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 A-3 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 A-3 for decimal, hex and character codes.

F2 Example: Send a number of characters

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

F2 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 bar code 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 A-3 for decimal, hex and character codes.

F3 Example: Send all characters up to a particular character

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

Command string: **F3440D**

F3 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 = B9nnnns...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 A-3 for decimal, hex and character codes.

B9 Example: Send all characters up to a defined string

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

Command string: **B900024142**

B9 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 A-3 for decimal, hex and character codes.

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

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

Command string: **E908F40902**

E9 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" command

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 A-3 for decimal, hex and character codes.

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

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

Command string: **B900024142BA00022A2AF10D**

B9 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:
1234567890ABCDEFGHIJ**
<CR>

Insert symbology name

B3 Insert the name of the bar code's symbology in the output message, without moving the cursor. Only symbologies with a Honeywell ID are included (see Symbology Charts on page A-1). Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

Insert bar code length

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

B3 and B4 Example: Insert the symbology name and length

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

Command string: **B3F42001B4F42001F10D**

B3 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 bar code 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 A-10). Any key can be inserted, including arrows and functions. *Syntax = B5xxssnn* where xx is the number of keys pressed (without key modifiers), ss is the key modifier from the table below, and nn is the key number from the Keyboard Key References, page A-10.

Key Modifiers	
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 keys pressed (without the key modifier), 02 is the key modifier for Shift Right, and 1F is the "a" key. If a lower case "a" were to be inserted, B501001F would be entered.

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

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

Move Commands

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 bar code data from the bar code 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 bar codes that begin with a 1

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

Command string: **FE31F7F2060D**

FE 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 A-3 for decimal, hex and character codes.

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

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

Command string: **F844F10D**

F8 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 A-3 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 character string “Test.”
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 for decimal, hex and character codes.

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

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

Command string: **B00003464748F10D**

B0 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 character string “Test.”
Refer to the ASCII Conversion Chart (Code Page 1252), beginning on page A-3 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 A-3 for decimal, hex and character codes.

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

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

Command string: **E630F10D**

E6 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 A-3 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 bar code data

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

Command string: **FB0120F10D**

FB 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 = E4nnxx$_1$xx$_2$yy$_1$yy$_2$...zz$_1$zz$_2$* where nn is the total count of the number of characters in the list (characters to be replaced plus replacement characters); xx$_1$ defines characters to be replaced and xx$_2$ defines replacement characters, continuing through zz$_1$ and zz$_2$.

E4 Example: Replace zeroes with CRs in bar code data

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

Command string: **E402300DF10D**

E4 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 A-3 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 A-3 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 bar code begins with a number

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

Command string: **ECF10D**

EC is the “Check for a number” command

F1 is the “Send all characters” command

0D is the hex value for a CR

If this bar code is read,  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 bar code is read:  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 bar code begins with a letter

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

Command string: **EDF10D**

ED is the "Check for a non-numeric character" command

F1 is the "Send all characters" command

0D is the hex value for a CR

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

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

AB1234
<CR>

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.a

Discard Data

B8 Discards types of data. For example, you may want to discard Code 128 bar codes that begin with the letter A. In step 4 (page 6-1), select 6A (for Code 128), and in step 5, select 9999 (for all lengths). Enter FE41B8 to compare and discard Code 128 bar codes that begin with the letter A. *Syntax = B8.*

Note: The B8 command must be entered after all other commands.
*The Data Format must be **Required** (see page 6-12) in order for the B8 command to work.*
*If Data Format is **On, but Not Required** (page 6-12), bar code data that meets the B8 format is scanned and output as usual.*
*Because the data format needs to be **On** and **Required** (page 6-12) for the B8 command, you must input data formats for all bar codes you wish to discard as well as all bar codes you wish to output.*
*Other data format settings impact the B8 command. If Data Format Non-Match Error Tone is **On** (page 6-13), 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 bar code data is output to the host as read, including prefixes and suffixes.

Data Formatter Off

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

Data Formatter On, Not Required, Keep Prefix/Suffix
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted.

Data Formatter On, Not Required, Drop Prefix/Suffix
Scanned data is modified according to your data format. If a data format is found for a particular symbol, those prefixes and suffixes are not transmitted. If a data format is *not* found for that symbol, the prefixes and suffixes *are* transmitted.

Data Format Required, Keep Prefix/Suffix
Scanned data is modified according to your data format, and prefixes and suffixes are transmitted. Any data that does not match your data format requirements generates an error tone and the data in that bar code is not transmitted. If you wish to process this type of bar code without generating an error tone, see Data Format Non-Match Error Tone.

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

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

*** Data Formatter On, Not Required, Keep Prefix/Suffix**

Data Formatter On, Not Required, Drop Prefix/Suffix

Data Format Required, Keep Prefix/Suffix

Data Format Required, Drop Prefix/Suffix

Data Format Non-Match Error Tone

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

*** 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 bar codes below.

Primary Data Format

Data Format 1

Data Format 2

Data Format 3

Single Scan Data Format Change

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

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

Single Scan-Primary Data Format

Single Scan-Data Format 1

Single Scan-Data Format 2

Single Scan-Data Format 3

7 Symbologies

This programming section contains the following menu selections. Refer to Chapter 10 for settings and defaults.

- All Symbologies
- 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
- 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
- GS1 DataBar Omnidirectional
- QR Code
- Straight 2 of 5 IATA (two-bar start/stop)
- Straight 2 of 5 Industrial (three-bar start/stop)
- TCIF Linked Code 39 (TLC39)
- Telepen
- Trioptic Code
- UPC-A
- UPC-A/EAN-13 with Extended Coupon Code
- UPC-E0
- UPC-E1

All Symbologies

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

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

All Symbologies On

All Symbologies Off

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

Message Length Description

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

EXAMPLE: Decode only those bar codes with a count of 9-20 characters.
Min. length = 09Max. length = 20

EXAMPLE: Decode only those bar codes with a count of 15 characters.
Min. length = 15Max. length = 15

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

Codabar

<Default All Codabar Settings>


CBRDFT.

Codabar On/Off


CBRENA1.
*** On**


CBRENA0.
Off

Codabar Start/Stop Characters

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


CBRSSX1.
Transmit


CBRSSX0.
*** Don't Transmit**

Codabar Check Character

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

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

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

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


CBRCK20.
*** No Check Character**


CBRCK21.
Validate Modulo 16, but Don't Transmit


CBRCK22.
Validate Modulo 16 and Transmit

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.


CBRCCT1.
On


CBRCCT0.
*** Off**


CBRCCT2.
Require

Codabar Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.


CBRMIN.
Minimum Message Length

CBRMAX.
Maximum Message Length

Code 39

< Default All Code 39 Settings >

C39DFT.

Code 39 On/Off

C39ENA1.
*** On**

C39ENA0.
Off

If you are reading Code 39 bar codes, Codablock A should remain disabled. If you are enabling Codablock A (see Codablock A on page 7-33), you should disable Code 39.

Code 39 Start/Stop Characters

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

C39SSX1.
Transmit

C39SSX0.
*** Don't Transmit**

Code 39 Check Character

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

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

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

C39CK20.
*** No Check Character**

C39CK21.
Validate, but Don't Transmit

C39CK22.
Validate and Transmit

Code 39 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.

C39MIN.
Minimum Message Length

C39MAX.
Maximum Message Length

Code 39 Append

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

C39APP1.
On

C39APP0.
*** Off**

Code 32 Pharmaceutical (PARAF)

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

Note: Trioptic Code (page 7-32) must be turned off while scanning Code 32 Pharmaceutical codes.

C39B321.
On

C39B320.
*** Off**

Full ASCII

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

NUL	%U	DLE	$P	SP	SPACE	0	0	@	%V	P	P	‘	%W	p	+P
SOH	$A	DC1	$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	$B	DC2	$R	“	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	$C	DC3	$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	$D	DC4	$T	$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	$E	NAK	$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	$F	SYN	$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	$G	ETB	$W	‘	/G	7	7	G	G	W	W	g	+G	w	+W
BS	$H	CAN	$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	$I	EM	$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	$J	SUB	$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L	|	%Q
CR	$M	GS	%C	-	-	=	%H	M	M	]	%M	m	+M	}	%R
SO	$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

Character pairs /M and /N decode as a minus sign and period respectively.

Character pairs /P through /Y decode as 0 through 9.

Full ASCII On

*** Full ASCII Off**

Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

Code 39 Code Page

Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >

I25DFT.

Interleaved 2 of 5 On/Off

I25ENA1.

*** On**

I25ENA0.

Off

Check Digit

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

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

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

I25CK20.

*** No Check Digit**

I25CK21.

Validate, but Don't Transmit

I25CK22.

Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

I25MIN.

Minimum Message Length

I25MAX.
Maximum Message Length

NEC 2 of 5

< Default All NEC 2 of 5 Settings >

N25DFT.

NEC 2 of 5 On/Off

N25ENA1.
*** On**

N25ENA0.
Off

Check Digit

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

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

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

N25CK20.
*** No Check Digit**

N25CK21.
Validate, but Don't Transmit

N25CK22.
Validate and Transmit

NEC 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

N25MIN.
Minimum Message Length

N25MAX.
Maximum Message Length

Code 93

< Default All Code 93 Settings >

C93DFT.

Code 93 On/Off

C93ENA1.
*** On**

C93ENA0.
Off

Code 93 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

C93MIN.
Minimum Message Length

C93MAX.
Maximum Message Length

Code 93 Append

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

On

*** Off**

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

Code 93 Code Page

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

<Default All Straight 2 of 5 Industrial Settings>

R25DFT.

Straight 2 of 5 Industrial On/Off

R25ENA1.
On

R25ENA0.
*** Off**

Straight 2 of 5 Industrial Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

R25MIN.
Minimum Message Length

R25MAX.
Maximum Message Length

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

<Default All Straight 2 of 5 IATA Settings>

A25DFT.

Straight 2 of 5 IATA On/Off

A25ENA1.

On

A25ENA0.

*** Off**

Straight 2 of 5 IATA Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

A25MIN.

Minimum Message Length

A25MAX.

Maximum Message Length

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>

X25DFT.

Matrix 2 of 5 On/Off

X25ENA1.
On

X25ENA0.
*** Off**

Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

X25MIN.
Minimum Message Length

X25MAX.
Maximum Message Length

Code 11

<Default All Code 11 Settings>

C11DFT.

Code 11 On/Off

C11ENA1.
On

C11ENA0.
*** Off**

Check Digits Required

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

C11CK20.
One Check Digit

C11CK21.
*** Two Check Digits**

Code 11 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

C11MIN.
Minimum Message Length

C11MAX.
Maximum Message Length

Code 128

<Default All Code 128 Settings>

Code 128 On/Off

*** On**

Off

If you are reading Code 128 bar codes, Codablock F should remain disabled. If you are enabling Codablock F (see Codablock F on page 7-34), you should disable Code 128.

ISBT 128 Concatenation

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

On

*** Off**

Code 128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 128 Append

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

*** On**

Off

Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

Code 128 Code Page

GS1-128

<Default All GS1-128 Settings>

GS1DFT.

GS1-128 On/Off

GS1ENA1.
*** On**

GS1ENA0.
Off

GS1-128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 1, Maximum Default = 80.

GS1MIN.
Minimum Message Length

GS1MAX.
Maximum Message Length

Telepen

<Default All Telepen Settings>

TELDFT.

Telepen On/Off

TELENA1.
On

TELENA0.
*** 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.*

TELOLD0.
*** AIM Telepen Output**

TELOLD1.
Original Telepen Output

Telepen Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.

TELMIN.
Minimum Message Length

TELMAX.
Maximum Message Length

UPC-A

<Default All UPC-A Settings>


UPADFT.

UPC-A On/Off


UPAENA1.

*** On**


UPAENA0.

Off

Note: To convert UPC-A bar codes to EAN-13, see Convert UPC-A to EAN-13 on page 7-24.

UPC-A Check Digit

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


UPACKX1.

*** On**


UPACKX0.

Off

UPC-A Number System

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


UPANSX1.

*** On**


UPANSX0.

Off

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.

UPAAD21.
2 Digit Addenda On

UPAAD20.
*** 2 Digit Addenda Off**

UPAAD51.
5 Digit Addenda On

UPAAD50.
*** 5 Digit Addenda Off**

UPC-A Addenda Required

When ***Required*** is scanned, the scanner will only read UPC-A bar codes that have addenda. You must then turn on a 2 or 5 digit addenda listed on page 7-20. *Default = Not Required.*

UPAARQ1.
Required

UPAARQ0.
*** Not Required**

UPC-A Addenda Separator

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

UPAADS1.
*** On**

UPAADS0.
Off

UPC-A/EAN-13 with Extended Coupon Code

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

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

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

*** Off**

Allow Concatenation

Require Concatenation

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.*

*** GS1 Output Off**

GS1 Output On

UPC-E0

<Default All UPC-E Settings>


UPEDFT.

UPC-E0 On/Off

Most U.P.C. bar codes lead with the 0 number system. To read these codes, use the **UPC-E0 On** selection. If you need to read codes that lead with the 1 number system, use UPC-E1 (page 7-24). *Default = On.*


UPEEN01.
*** UPC-E0 On**


UPEEN00.
UPC-E0 Off

UPC-E0 Expand

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


UPEEXP1.
On


UPEEXP0.
*** Off**

UPC-E0 Addenda Required

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


UPEARQ1.
Required


UPEARQ0.
*** Not Required**

UPC-E0 Addenda Separator

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

*** On**

Off

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.*

*** On**

Off

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.*

*** On**

Off

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.*

2 Digit Addenda On

*** 2 Digit Addenda Off**

UPEAD51.

5 Digit Addenda On

UPEAD50.

*** 5 Digit Addenda Off**

UPC-E1

Most U.P.C. bar codes lead with the 0 number system. For these codes, use UPC-E0 (page 7-22). If you need to read codes that lead with the 1 number system, use the **UPC-E1 On** selection. *Default = Off.*

UPEEN11.

UPC-E1 On

UPEEN10.

*** UPC-E1 Off**

EAN/JAN-13

<Default All EAN/JAN Settings>

E13DFT.

EAN/JAN-13 On/Off

E13ENA1.

*** On**

E13ENA0.

Off

Convert UPC-A to EAN-13

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

UPAENA0.

UPC-A Converted to EAN-13

*** Do not Convert 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.*

*** On**

Off

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.*

2 Digit Addenda On

*** 2 Digit Addenda Off**

5 Digit Addenda On

*** 5 Digit Addenda Off**

EAN/JAN-13 Addenda Required

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

Required


E13ARQ0.
*** Not Required**

EAN/JAN-13 Addenda Separator

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


E13ADS1.
*** On**


E13ADS0.
Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code (page 7-21).

ISBN Translate

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


E13ISB1.
On


E13ISB0.
*** Off**

EAN/JAN-8

<Default All EAN/JAN-8 Settings>


EA8DFT.

EAN/JAN-8 On/Off


EA8ENA1.
*** On**


EA8ENA0.
Off

EAN/JAN-8 Check Digit

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


EA8CKX1.
*** On**


EA8CKX0.
Off

EAN/JAN-8 Addenda

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


EA8AD21.
2 Digit Addenda On


EA8AD20.
*** 2 Digit Addenda Off**


EA8AD51.
5 Digit Addenda On


EA8AD50.
*** 5 Digit Addenda Off**

EAN/JAN-8 Addenda Required

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


EA8ARQ1.
Required


EA8ARQ0.
*** Not Required**

EAN/JAN-8 Addenda Separator

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


EA8ADS1.
*** On**


EA8ADS0.
Off

MSI

<Default All MSI Settings>

MSIDFT.

MSI On/Off

MSIENA1.
On

MSIENA0.
*** Off**

MSI Check Character

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

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

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

MSICHK0.
*** Validate Type 10, but Don't Transmit**

MSICHK1.
Validate Type 10 and Transmit

MSICHK2.
Validate 2 Type 10 Characters, but Don't Transmit

MSICHK3.
Validate 2 Type 10 Characters and Transmit

MSICHK4.
Validate Type 11 then Type 10 Character, but Don't Transmit

Validate Type 11 then Type 10 Character and Transmit

Disable MSI Check Characters

MSI Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) 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 >

RSSDFT.

GS1 DataBar Omnidirectional On/Off

RSSENA1.
*** On**

RSSENA0.
Off

GS1 DataBar Limited

< Default All GS1 DataBar Limited Settings >

RSLDFT.

GS1 DataBar Limited On/Off

RSLENA1.
*** On**

RSLENA0.
Off

GS1 DataBar Expanded

< Default All GS1 DataBar Expanded Settings >

RSEDFT.

GS1 DataBar Expanded On/Off

RSEENA1.
*** On**

RSEENA0.
Off

GS1 DataBar Expanded Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.

RSEMIN.
Minimum Message Length

RSEMAX.
Maximum Message Length

Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes (page 7-5), Trioptic Code must be off.

Trioptic Code is used for labeling magnetic storage media.

TRIENA1.
On

TRIENA0.
*** Off**

Codablock A

<Default All Codablock A Settings>


CBADFT.

Codablock A On/Off


CBAENA1.
On


CBAENA0.
*** Off**

If you are reading Code 39 bar codes, Codablock A should remain disabled. If you are enabling Codablock A, you should disable Code 39 (see Code 39 on page 7-4).

Codablock A Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-600. Minimum Default = 1, Maximum Default = 600.


CBAMIN.
Minimum Message Length


CBAMAX.
Maximum Message Length

Codablock F

<Default All Codablock F Settings>

CBFDFT.

Codablock F On/Off

CBFENA1.
On

CBFENA0.
*** Off**

If you are reading Code 128 bar codes, Codablock F should remain disabled. If you are enabling Codablock F, you should disable Code 128 (see Code 128 on page 7-15).

Codablock F Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.

CBFMIN.
Minimum Message Length

CBFMAX.
Maximum Message Length

Label Code

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

LBLENA1.
On

LBLENA0.
***Off**

PDF417

< Default All PDF417 Settings >


PDFDFT.

PDF417 On/Off


PDFENA1.

*** On**


PDFENA0.

Off

PDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.


PDFMIN.

Minimum Message Length


PDFMAX.

Maximum Message Length

MacroPDF417

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


PDFMAC1.

*** On**


PDFMAC0.

Off

MicroPDF417

< Default All MicroPDF417 Settings >

MPDDFT.

MicroPDF417 On/Off

MPDENA1.
On

MPDENA0.
*** Off**

MicroPDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.

MPDMIN.
Minimum Message Length

MPDMAX.
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.*

COMENA1.
On

COMENA0.
*** Off**

UPC/EAN Version

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

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 7-21) for further information.

GS1 Composite Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) 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 GS1-128 DataBar and GS1 Composites. (Any application that accepts GS1 data can be simplified since it only needs to recognize one data carrier type.)

If **GS1-128 Emulation** is scanned, all retail codes (U.P.C., UPC-E, EAN8, EAN13) are expanded out to 16 digits. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see Symbology Charts on page A-1).

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,]e*m* (see Symbology Charts on page A-1).

If **GS1 Code Expansion Off** is scanned, retail code expansion is disabled, and UPC-E expansion is controlled by the UPC-E0 Expand (page 7-22) setting. If the AIM ID is enabled, the value will be the GS1-128 AIM ID,]C1 (see Symbology Charts on page A-1).

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

Default = GS1 Emulation Off.

GS1-128 Emulation


EANEMU2.
GS1 DataBar Emulation


EANEMU3.
GS1 Code Expansion Off


EANEMU4.
EAN8 to EAN13 Conversion


EANEMU0.
*** GS1 Emulation Off**

TCIF Linked Code 39 (TLC39)

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


T39ENA1.
On


T39ENA0.
*** Off**

QR Code

< Default All QR Code Settings >


QRCDFT.

QR Code On/Off

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


QRCENA1.
*** On**


QRCENA0.
Off

QR Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-7089. Minimum Default = 1, Maximum Default = 7089.

QRCMIN.
Minimum Message Length

QRCMAX.
Maximum Message Length

QR Code Append

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

QRCAPP1.
*** On**

QRCAPP0.
Off

QR Code Page

QR Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

QRCDCP.
QR Code Page

Data Matrix

< Default All Data Matrix Settings >


IDMDFT.

Data Matrix On/Off


IDMENA1.
*** On**


IDMENA0.
Off

Data Matrix Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-3116. Minimum Default = 1, Maximum Default = 3116.


IDMMIN.
Minimum Message Length


IDMMAX.
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 bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.


IDMDCP.
Data Matrix Code Page

MaxiCode

< Default All MaxiCode Settings >


MAXDFT.

MaxiCode On/Off


MAXENA1.

On


MAXENA0.

*** Off**

MaxiCode Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-150. Minimum Default = 1, Maximum Default = 150.


MAXMIN.

Minimum Message Length


MAXMAX.

Maximum Message Length

Aztec Code

< Default All Aztec Code Settings >

AZTDFT.

Aztec Code On/Off

AZTENA1.
*** On**

AZTENA0.
Off

Aztec Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-3832. Minimum Default = 1, Maximum Default = 3832.

AZTMIN.
Minimum Message Length

AZTMAX.
Maximum Message Length

Aztec Append

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

AZTAPP1.
*** On**

AZTAPP0.
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 bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar

codes were created (see ISO 2022/ISO 646 Character Replacements on page A-7), and scan the value and the **Save** bar code from the Programming Chart on the inside the back cover of this manual. The data characters should then appear properly.

AZTDCP.
Aztec Code Page

Chinese Sensible (Han Xin) Code

< Default All Han Xin Settings >

HX_DFT.

Han Xin Code On/Off

HX_ENA1.
On

HX_ENA0.
*** Off**

Han Xin Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 1-7833. Minimum Default = 1, Maximum Default = 7833.

HX_MIN.
Minimum Message Length

HX_MAX.
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.*

POSTAL0.
*** 2D Postal Codes Off**

Single 2D Postal Codes:

POSTAL1.
Australian Post On

POSTAL7.
British Post On

POSTAL30.
Canadian Post On

POSTAL10.
Intelligent Mail Bar Code On

POSTAL3.
Japanese Post On

POSTAL4.
KIX Post On

POSTAL5.
Planet Code On

Also see Planet Code Check Digit, page 7-47.

POSTAL9.
Postal-4i On

Postnet On

Also see Postnet Check Digit, page 7-47.

Postnet with B and B' Fields On

InfoMail On

Combination 2D Postal Codes:

InfoMail and British Post On

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

Postnet and Postal-4i On

Postnet and Intelligent Mail Bar Code On

Postal-4i and Intelligent Mail Bar Code On

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

Planet Code and Postnet On

POSTAL13.

Planet Code and Postal-4i On

POSTAL18.

Planet Code and Postnet with B and B' Fields On

POSTAL15.

Planet Code and Intelligent Mail Bar Code On

POSTAL21.

Planet Code, Postnet, and Postal-4i On

POSTAL22.

Planet Code, Postnet, and Intelligent Mail Bar Code On

POSTAL23.

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

POSTAL24.

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

POSTAL25.

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

POSTAL26.

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

POSTAL27.

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


POSTAL28.

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


POSTAL29.

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

Planet Code Check Digit

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


PLNCKX1.

Transmit Check Digit


PLNCKX0.

*** Don't Transmit Check Digit**

Postnet Check Digit

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


NETCKX1.

Transmit Check Digit


NETCKX0.

*** Don't Transmit Check Digit**

Australian Post Interpretation

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

Bar Output lists the bar patterns in "0123" format.

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

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

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

AUSINT0.
*** Bar Output**

AUSINT1.
Numeric N Table

AUSINT2.
Alphanumeric C Table

AUSINT3.
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>

CPCDFT.

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

CPCENA1.
On

CPCENA0.
*** Off**

China Post (Hong Kong 2 of 5) Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

CPCMIN.
Minimum Message Length

CPCMAX.
Maximum Message Length

Korea Post

<Default All Korea Post Settings>

KPCDFT.

Korea Post

KPCENA1.
On

KPCENA0.
*** Off**

Korea Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (page 7-1) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.

KPCMIN.
Minimum Message Length

KPCMAX.
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.*

KPCCHK1.
Transmit Check Digit

KPCCHK0.
*** Don't Transmit Check Digit**

8 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.

Note: Imaging Commands are only supported by a Honeywell Charge and Communication Base (CCB) or a Honeywell Access Point (AP). The ring scanner must be connected to one of these devices in order to capture images using the following commands.

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 10). 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 or IMGBOX), you must follow it with an IMGSHP 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;IMGSHP.**

The imaging commands are:

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 object you are capturing.

Step 1 - Take a Picture Using IMGSNP

Image Snap - IMGSNP

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

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

IMGSNP Modifiers

P - Imaging Style

This sets the Image Snap style.

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

B - Beeper

Causes a beep to sound after an image is snapped.

0B No beep *(default)*

1B Sounds a beep when the image is captured.

T - Wait for Trigger

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

0T Takes image immediately *(default)*

1T Waits for a button push, then takes the image

L - LED State

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

0L LEDs off *(default)*

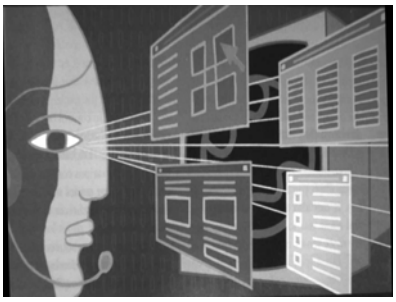
1L LEDs on

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)*

*n*E Range: 1 - 7874

Example of Exposure at 7874E with fluorescent lighting:



Example of 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 of Gain at 1G:

Example of Gain at 4G:

Example of Gain at 8G:

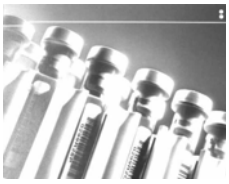
W - Target White Value

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)*

*n*W Range: 0 - 255

Example of White Value at 75W:

Example of White Value at 125W:



Example of 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)*

*n*D 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)*

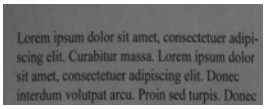
*n*U Range: 0 - 10

% - Target Set Point Percentage

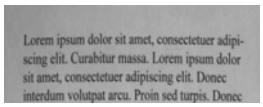
Sets the target point for the light and dark values in the captured image. A setting of 75% means 75% of the pixels are at or below the target white value, and 25% of the pixels are above the target white value. Altering this setting from the default is not recommended under normal circumstances. To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

n% Range: 1 - 99

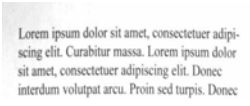
Example of Target Set Point Percentage at 97%:



Example of Target Set Point Percentage at 50%:



Example of Target Set Point Percentage at 40%:



Step 2 - Ship a Picture Using IMGSHP

Image Ship - IMGSHP

An image is taken whenever the button is pressed, or when the Image Snap (IMGSNP) command is processed. The last image is always stored in memory. You can “ship” the image by using the IMGSHP 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 IMGSHP command. For example, you can use the following command to snap and ship a bitmap image with gamma correction and document image filtering: **IMGSNP;IMGSHP8F75K26U**

IMGSHP Modifiers

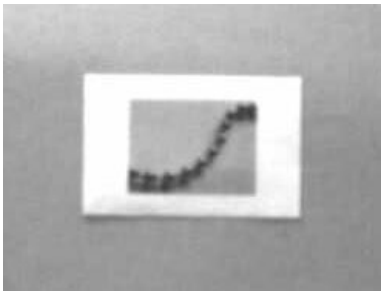
A - Infinity Filter

Enhances pictures taken from very long distances (greater than 10 feet or 3m). The Infinity Filter should not be used with IMGSNP Modifiers (page 8-1).

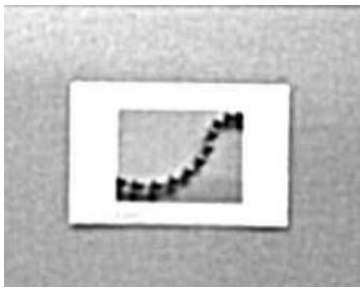
0A Infinity filter off *(default)*

1A Infinity filter on

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



Example of 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 of Compensation at 0C:

Example of 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.

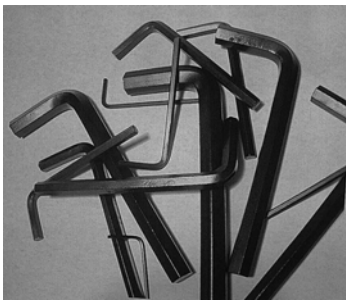
0E Don't sharpen image *(default)*

14E Apply edge sharpen for typical image

*n*e Apply edge sharpen using strength *n* (*n* = 1-24)

Example of Edge Sharpen at 0E:

Example of 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)

10F TIFF color compressed image

11F TIFF color uncompressed image

12F JPEG color image

14F BMP color format

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 of Histogram Stretch at 0H:

Example of 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 of image not inverted:

Example of image with Invert Image set to 1ix:

Example of image with Invert Image set to 1iy:

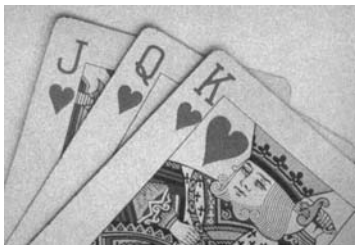
IF- Noise Reduction

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

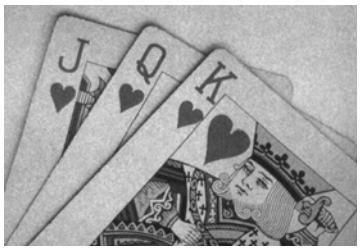
0if No salt and pepper noise reduction (default)

1if Salt and pepper noise reduction

Example of Noise Reduction Off (0if):



Example of 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 of Image Rotate set to 0ir:

Example of Image Rotate set to 2ir:

Example of Image Rotate set to 1ir:

Example of 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)*

*n*J Image is compressed as much as possible while preserving quality factor of *n* (*n* = 0 - 100)

0J worst quality (smallest file)

100Jbest quality (largest file)

K - Gamma Correction

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

0K Gamma correction off *(default)*

50K Apply gamma correction for brightening typical document image

*n*K Apply gamma correction factor *n* (*n* = 0-1,000)

Example of Gamma Correction set to 0K:

Example of Gamma Correction set to 50K:

Example of Gamma Correction set to 255K:

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

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

*n*L The left edge of the shipped image corresponds to column *n* of the image in memory. Range: 000 - 843. *(Default = 0)*

*n*R The right edge of the shipped image corresponds to column *n* - 1 of the image in memory. Range: 000 - 843. *(Default = all columns)*

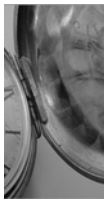
*n*T The top edge of the shipped image corresponds to row *n* of the image in memory. Range: 000 - 639. *(Default = 0)*

*n*B The bottom edge of the shipped image corresponds to row *n* - 1 of the image in memory. Range: 000 - 639. *(Default = all rows)*

Uncropped Image:

Example of Image Crop set to 300R:

Example of Image Crop set to 300L:



Example of Image Crop set to 200B:

Example of Image Crop set to 200T:

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

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

Example of 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. For example, **4S** would transmit every fourth pixel from every fourth line. The smaller number of pixels shipped, the smaller the image, however, after a certain point the image becomes unusable.

1S ship every pixel *(default)*

2S ship every 2nd pixel, both horizontally and vertically

3S ship every 3rd pixel, both horizontally and vertically

Example of Pixel Ship set to 1S:

Example of Pixel Ship set to 2S:

Example of Pixel Ship set to 3S:

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 8-7), with the scanner in a stand, and the image captured using the command:

IMGSNP1P0L168W90%32D

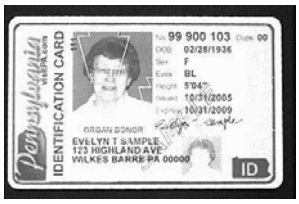
This filter typically provides better JPEG compression than the standard E - Edge Sharpen command (see page 8-9). This filter also works well when shipping pure black and white images (1 bit per pixel). The optimal setting is 26U.

0U Document image filter off *(default)*

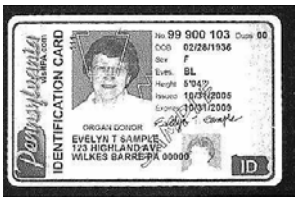
26U Apply document image filter for typical document image

*n*U 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 8-5) to 22e. Range: 0-255.

Example of Document Image Filter set to 0U:



Example of Document Image Filter set to 26U:



V - Blur Image

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

0V Don't blur *(default)*

1V Blur

Example of Blur Image Off (0V):

Example of Blur Image On (1V):

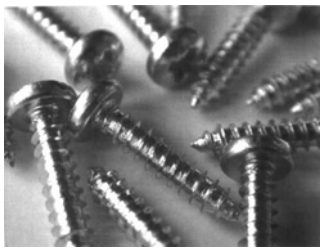
W - Histogram Ship

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

Image used for histogram:



Histogram of image at left:

Image Size Compatibility

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

IMGVGA1.

Force VGA Resolution

IMGVGA0.

*** Native Resolution**

Intelligent Signature Capture - IMGBOX

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

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

Signature Capture Optimize

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

DECBND1.

Optimize On

DECBND0.

*** Optimize Off**

Below is an example of a signature capture application. In this example, the aimer is centered over the signature capture area and the trigger is pressed. The scanner beeps and vibrates once, indicating that the scanner has read a Code 128 bar code and the data has been transferred to the host. An IMGBOX command may now be sent from the host to specify the coordinates of the signature capture area below that code, and indicating that only that area containing the signature should be transferred as an image to the host.

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

Send the following IMGBOX command string after the button push:

Example: IMGBOX245w37h55y.

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

The following image is captured:

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

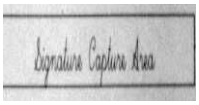
Note: The IMGBOX command will return a NAK unless a window size (width and height) are specified. See H - Height of Signature Capture Area (page 8-12) and W - Width of Signature Capture Area (page 8-13).

IMGBOX Modifiers

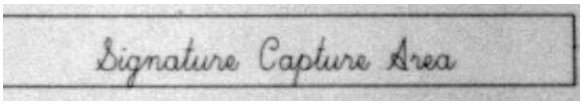
A - Output Image Width

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

Example of Image Width set to 200A:



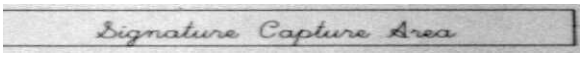
Example of Image Width set to 600A:



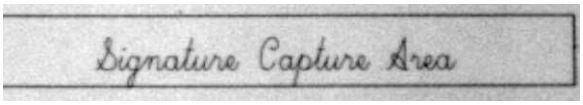
B - Output Image Height

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

Example of Image Height set to 50B:



Example of Image Height set to 100B:



D - Pixel Depth

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

8D 8 bits per pixel, grayscale image *(default)*

1D 1 bit per pixel, black and white image

F - File Format

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

0F KIM format

1F TIFF binary

2F TIFF binary group 4, compressed

3F TIFF grayscale

4F Uncompressed Binary

5F Uncompressed grayscale

6F JPEG image *(default)*

7F Outlined image

8F BMP format

H - Height of Signature Capture Area

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

Example: ***IMGBOX245w37h55y.***

K - Gamma Correction

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

0K Gamma correction off *(default)*

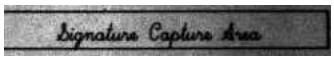
50K Apply gamma correction for brightening typical document image

*n*K Apply gamma correction factor *n* (*n* = 1-255)

Example of Gamma Correction set to 0K:

Example of Gamma Correction set to 50K:

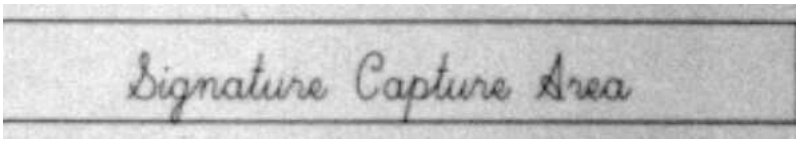
Example of Gamma Correction set to 255K:



R - Resolution of Signature Capture Area

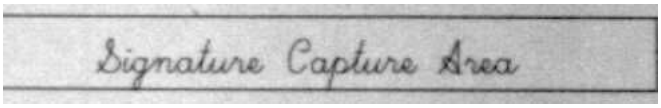
The resolution is the number of pixels that the scanner outputs per each minimum bar width. The higher the value for R, the higher the quality of the image, but also the larger the file size. Values begin at 1000. The scanner automatically inserts a decimal point between the first and second digit. For example, use 2500 to specify a resolution of 2.5. Set to zero when using the A and B modifiers (see A - Output Image Width and B - Output Image Height on page 8-12).

Example of Resolution set to 0R:



Example of Resolution set to 1000R:

Example of Resolution set to 2000R:



S - Bar Code Aspect Ratio

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

W - Width of Signature Capture Area

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

Example: *IMGBOX**245w**37h55y.*

X - Horizontal Bar Code Offset

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

Example of Horizontal Offset set to 75X:

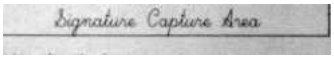
Example of Horizontal Offset set to -75X:

Y - Vertical Bar Code Offset

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

Example of Vertical Offset set to -7Y:

Example of Vertical Offset set to 65Y:



RF Default Imaging Device

The scanner supports imaging command processing (IMGSHP, IMGSNP, IMGBOX) so that EZConfig-Scanning (see page 9-3) and other applications are able to perform imaging functions as if they were communicating directly with a scanner. To accomplish this, the scanner uses a menu command called RF_DID (RF Default Imaging Device). RF_DID is the name of the scanner (BT_NAM) that is to receive imaging commands. The default for RF_DID is "*"indicating that imaging commands are to be sent to all associated scanners. Change this setting to RF_DID*scanner_name* to ensure that they are sent to a particular scanner. Refer to Scanner Report on page 3-4 to generate a report containing the port, work group, scanner name, and address for each scanner. Refer to Scanner Name on page 3-8 set a unique name for each scanner.

9 Utilities

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 A-1) 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 Decoder Revision

Scan the bar code below to output the decoder revision.

Show Decoder Revision

Show Scan Driver Revision

Scan the bar code below to output the scan driver revision. The scan driver controls image capture.

Show Scan Driver Revision

Show Software Revision

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

Show Software Revision

Show Data Format

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

Data Format Settings

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.


TSTMNU1.
On


TSTMNU0.
*** Off**

TotalFreedom

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

Application Plug-Ins (Apps)

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


PLGDCE1.
*** Decoding Apps On**


PLGDCE0.
Decoding Apps Off


PLGFOE1.
*** Formatting Apps On**


PLGFOE0.
Formatting Apps Off


PLGINF.
List Apps

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

EZConfig-Scanning Introduction

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

EZConfig-Scanning Operations

The EZConfig-Scanning software performs the following operations:

Scan Data

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

Configure

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

Imaging

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

Install EZConfig-Scanning from the Web

Note: EZConfig-Scanning requires .NET software. If .NET is not installed on your PC, you will be prompted to install it during the EZConfig-Scanning installation.

1. Access the Honeywell web site at www.honeywellaidc.com
2. Click on the **Products** tab. Under **Software**, select **Device Management**.
3. Click on **EZConfig-Device Configuration Software**.
4. Click on the **Software** tab. Select **EZConfig Cloud For Scanning** (online version, must register for access) or **EZConfig for Scanning** (to install on your PC, follow the next steps).
5. To install on your PC, when prompted, select **Save File**, and save the files to the **c:\windows\temp** directory.
6. Once you have finished downloading the file, exit the web site.
7. Using Explorer, go to the **c:\windows\temp** file.
8. Double click on the **Setup.exe** file. Follow the screen prompts to install the EZConfig-Scanning program.
9. If you've selected the defaults during installation, you can click on **Start Menu-All Programs-Honeywell-EZConfig-Scanning** and select EZConfig for your browser.

Reset the Factory Defaults

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** bar code, then scan **Activate Defaults**. This resets the scanner to the factory default settings.

Remove Custom Defaults

Activate Defaults

Note: If you are using a Honeywell Charge and Communication Base (CCB) or Honeywell Access Point (AP), the scanner will reset and become unlinked. The CCB or AP linking bar code must be scanned to relink the scanner.

The Menu Commands, beginning on page 10-4 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

10 Serial Programming Commands

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

The device must be set to an RS232 interface (see page 2-1). 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:

parameter A label representing the actual value you should send as part of a command.

[*option*] An optional part of a command.

{Data} Alternatives in a command.

bold Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.

Menu Command Syntax

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

Prefix [: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 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), use **:**Xenon**:** The default factory setting for a Xenon scanner is Xenon scanner. This setting is changed by using the BT_NAM command, which accepts alphanumeric values. If the name is not known, a wildcard (*) 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 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 bar code (page 4-5), or by sending a serial menu command for triggering (page 4-5). 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 bar code has been read, until the deactivate command is sent, or until the serial time-out has been reached (see "Read Time-Out" on page 4-6 for a description, and the serial command on page 10-10).

Resetting the Custom Defaults

If you want the custom default settings restored to your scanner, scan the **Activate Custom Defaults** bar code 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: If using a cordless system, scanning this bar code also causes both the scanner and the Honeywell Charge and Communication Base (CCB) or Honeywell Access Point (AP) to perform a reset and become unlinked. The scanner must be placed in its base to re-establish the link. If using a CCB or an AP, the linking bar code must be scanned.

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
Getting Started			
Pair with a Bluetooth Device Using a HID Keyboard	* Bluetooth HID Keyboard Connect	PAPBTH	1-6
	Bluetooth HID Japanese Keyboard Connect	PAPJKB	1-6
	Bluetooth PIN Code	BT_PIN#	1-6
Disconnect from the Host	Bluetooth HID Keyboard Disconnect	PAPSPP	1-8
Pair with a Bluetooth Serial Port - PCs/Laptops	Non-Base BT Connection	BT_TRM0;BT_DNG5	1-8
Pair with a Honeywell Mobile Computer	BT Connection - PDA/Mobility Systems Devices	BT_TRM0;BT_DNG1	1-8
	Non-Base BT Connection	BT_TRM0;BT_DNG5	1-9
Pair with an Android or Apple Device	BT Connection - Android/Apple Device	DEFALT;PAPBTH	1-9
Pair with a Communication Base or Access Point	Bluetooth HID Keyboard Disconnect	PAPSPP	1-10
Set Custom Defaults	Set Custom Defaults	MNUCDP	1-11
	Save Custom Defaults	MNUCDS	1-11
Reset Custom Defaults	Activate Custom Defaults	DEFALT	1-11
Program the Interface			
Plug and Play Codes	Keyboard Wedge: IBM PC AT and Compatibles with CR suffix	PAP_AT	2-1
	Laptop Direct Connect with CR suffix	PAPLTD	2-1
	RS232 Serial Port	PAP232	2-1
Plug and Play Codes: RS485	IBM Port 5B Interface	PAPP5B	2-2
	IBM Port 9B HHBCR-1 Interface	PAP9B1	2-2
	IBM Port 17 Interface	PAPP17	2-2
	IBM Port 9B HHBCR-2 Interface	PAP9B2	2-2
	RS485 Packet Mode On	RTLPDF1	2-2
	RS485 Packet Mode Off	RTLPDF0	2-2
	RS485 Packet Length (20-256)	RTLMPS	2-3
Plug and Play Codes: IBM SurePos	USB IBM SurePos Handheld	PAPSPH	2-3
	USB IBM SurePos Tabletop	PAPSPT	2-3

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Plug and Play Codes: USB	USB Keyboard (PC)	PAP124	2-3
	USB Keyboard (Mac)	PAP125	2-3
	USB Japanese Keyboard (PC)	TRMUSB134	2-3
	USB HID	PAP131	2-4
	USB Serial	TRMUSB130	2-4
	CTS/RTS Emulation On	USBCTS1	2-4
	CTS/RTS Emulation Off*	USBCTS0	2-4
	ACK/NAK Mode On	USBACK1	2-4
	ACK/NAK Mode Off*	USBACK0	2-4
Remote MasterMind for USB	ReM Off	REMIFC0	2-4
	ReM On	REMIFC1	2-4
Plug and Play Codes	Verifone Ruby Terminal	PAPRBY	2-5
	Gilbarco Terminal	PAPGLB	2-5
	Honeywell Bioptic Aux Port	PAPBIO	2-5
	Datalogic Magellan Aux Port	PAPMAG	2-6
	NCR Bioptic Aux Port	PAPNCR	2-6
	Wincor Nixdorf Terminal	PAPWNX	2-6
	Wincor Nixdorf Beetle	PAPBTL	2-7
	Wincor Nixdorf RS232 Mode A	PAPWMA	2-7
Program Keyboard Country	*U.S.A.	KBDCTY0	2-8
	Albania	KBDCTY35	2-8
	Azeri (Cyrillic)	KBDCTY81	2-8
	Azeri (Latin)	KBDCTY80	2-8
	Belarus	KBDCTY82	2-8
	Belgium	KBDCTY1	2-8
	Bosnia	KBDCTY33	2-8
	Brazil	KBDCTY16	2-8
	Brazil (MS)	KBDCTY59	2-8
	Bulgaria (Cyrillic)	KBDCTY52	2-8
	Bulgaria (Latin)	KBDCTY53	2-9
	Canada (French legacy)	KBDCTY54	2-9
	Canada (French)	KBDCTY18	2-9
	Canada (Multilingual)	KBDCTY55	2-9
	Croatia	KBDCTY32	2-9
	Czech	KBDCTY15	2-9
	Czech (Programmers)	KBDCTY40	2-9
	Czech (QWERTY)	KBDCTY39	2-9
	Czech (QWERTZ)	KBDCTY38	2-9
	Denmark	KBDCTY8	2-9
	Dutch (Netherlands)	KBDCTY11	2-9
	Estonia	KBDCTY41	2-10
	Faroese	KBDCTY83	2-10

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	Finland	KBDCTY2	2-10
	France	KBDCTY3	2-10
	Gaelic	KBDCTY84	2-10
	Germany	KBDCTY4	2-10
	Greek	KBDCTY17	2-10
	Greek (220 Latin)	KBDCTY64	2-10
	Greek (220)	KBDCTY61	2-10
	Greek (319 Latin)	KBDCTY65	2-10
	Greek (319)	KBDCTY62	2-10
	Greek (Latin)	KBDCTY63	2-11
	Greek (MS)	KBDCTY66	2-11
	Greek (Polytonic)	KBDCTY60	2-11
	Hebrew	KBDCTY12	2-11
	Hungarian (101 key)	KBDCTY50	2-11
	Hungary	KBDCTY19	2-11
	Iceland	KBDCTY75	2-11
	Irish	KBDCTY73	2-11
	Italian (142)	KBDCTY56	2-11
	Italy	KBDCTY5	2-11
	Japan ASCII	KBDCTY28	2-11
	Kazakh	KBDCTY78	2-12
	Kyrgyz (Cyrillic)	KBDCTY79	2-12
	Latin America	KBDCTY14	2-12
	Latvia	KBDCTY42	2-12
	Latvia (QWERTY)	KBDCTY43	2-12
	Lithuania	KBDCTY44	2-12
	Lithuania (IBM)	KBDCTY45	2-12
	Macedonia	KBDCTY34	2-12
	Malta	KBDCTY74	2-12
	Mongolian (Cyrillic)	KBDCTY86	2-12
	Norway	KBDCTY9	2-12
	Poland	KBDCTY20	2-13
	Polish (214)	KBDCTY57	2-13
	Polish (Programmers)	KBDCTY58	2-13
	Portugal	KBDCTY13	2-13
	Romania	KBDCTY25	2-13
	Russia	KBDCTY26	2-13
	Russian (MS)	KBDCTY67	2-13
	Russian (Typewriter)	KBDCTY68	2-13
	SCS	KBDCTY21	2-13
	Serbia (Cyrillic)	KBDCTY37	2-13
	Serbia (Latin)	KBDCTY36	2-13
	Slovakia	KBDCTY22	2-14

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	Slovakia (QWERTY)	KBDCTY49	2-14
	Slovakia (QWERTZ)	KBDCTY48	2-14
	Slovenia	KBDCTY31	2-14
	Spain	KBDCTY10	2-14
	Spanish variation	KBDCTY51	2-14
	Sweden	KBDCTY23	2-14
	Switzerland (French)	KBDCTY29	2-14
	Switzerland (German)	KBDCTY6	2-14
	Tatar	KBDCTY85	2-14
	Turkey F	KBDCTY27	2-14
	Turkey Q	KBDCTY24	2-15
	Ukrainian	KBDCTY76	2-15
	United Kingdom	KBDCTY7	2-15
	United Stated (Dvorak right)	KBDCTY89	2-15
	United States (Dvorak left)	KBDCTY88	2-15
	United States (Dvorak)	KBDCTY87	2-15
	United States (International)	KBDCTY30	2-15
	Uzbek (Cyrillic)	KBDCTY77	2-15
Keyboard Style	*Regular	KBDSTY0	2-15
	Caps Lock	KBDSTY1	2-15
	Shift Lock	KBDSTY2	2-16
	Automatic Caps Lock	KBDSTY6	2-16
	Emulate External Keyboard	KBDSTY5	2-16
Keyboard Conversion	*Keyboard Conversion Off	KBDCNV0	2-16
	Convert all Characters to Upper Case	KBDCNV1	2-16
	Convert all Characters to Lower Case	KBDCNV2	2-16
Control Character Output	*Control Character Output Off	KBDNPE0	2-17
	*Control Character Output On	KBDNPE1	2-17
Keyboard Modifiers	*Control + X Off	KBDCAS0	2-17
	DOS Mode Control + X	KBDCAS1	2-17
	Windows Mode Control + X	KBDCAS2	2-17
	Windows Mode Prefix/Suffix Off	KBDCAS3	2-17
	*Turbo Mode Off	KBDTMD0	2-18
	Turbo Mode On	KBDTMD1	2-18
	*Numeric Keypad Off	KBDNPS0	2-18
	Numeric Keypad On	KBDNPS1	2-18
	*Auto Direct Connect Off	KBDADC0	2-18
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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Straight 2 of 5 IATA	*Off	A25ENA0	7-12
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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UPC-A Number System	Off	UPANSX0	7-19
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UPC-A Addenda Required	*Not Required	UPAARQ0	7-20
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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	Off	UPEADS0	7-23
UPC-E0 Check Digit	Off	UPECKX0	7-23
	*On	UPECKX1	7-23
UPC-E0 Leading Zero	Off	UPENSX0	7-23
	*On	UPENSX1	7-23
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UPC-E1	*Off	UPEEN10	7-24
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EAN/JAN-13	Default All EAN/ JAN Settings	E13DFT	7-24
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	*On	E13ENA1	7-24
Convert UPC-A to EAN-13	UPC-A Converted to EAN-13	UPAENA0	7-24
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	*On	E13CKX1	7-25
EAN/JAN-13 2 Digit Addenda	2 Digit Addenda On	E13AD21	7-25
	*2 Digit Addenda Off	E13AD20	7-25
	5 Digit Addenda On	E13AD51	7-25
	*5 Digit Addenda Off	E13AD50	7-25
EAN/JAN-13 Addenda Required	*Not Required	E13ARQ0	7-25
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EAN/JAN-8	Default All EAN/ JAN 8 Settings	EA8DFT	7-27
	Off	EA8ENA0	7-27
	*On	EA8ENA1	7-27
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EAN/JAN-8 Addenda	*2 Digit Addenda Off	EA8AD20	7-27
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	*5 Digit Addenda Off	EA8AD50	7-27
	5 Digit Addenda On	EA8AD51	7-27

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
EAN/JAN-8 Addenda Required	*Not Required	EA8ARQ0	7-28
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EAN/JAN-8 Addenda Separator	Off	EA8ADS0	7-28
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MSI	Default All MSI Settings	MSIDFT	7-29
	*Off	MSIENA0	7-29
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MSI Check Character	*Validate Type 10, but Don't Transmit	MSICHK0	7-29
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	Validate 2 Type 10 Chars and Transmit	MSICHK3	7-29
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GS1 DataBar Limited	Default All GS1 DataBar Limited Settings	RSLDFT	7-31
	Off	RSLENA0	7-31
	*On	RSLENA1	7-31
GS1 DataBar Expanded	Default All GS1 DataBar Expanded Settings	RSEDFT	7-32
	Off	RSEENA0	7-32
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GS1 DataBar Expanded Msg. Length	Minimum (4 - 74) *4	RSEMIN##	7-32
	Maximum (4 - 74) *74	RSEMAX##	7-32
Trioptic Code	*Off	TRIENA0	7-32
	On	TRIENA1	7-32
Codablock A	Default All Codablock A Settings	CBADFT	7-33
	*Off	CBAENA0	7-33
	On	CBAENA1	7-33
Codablock A Msg. Length	Minimum (1 - 600) *1	CBAMIN###	7-33
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Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
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	On	CBFENA1	7-34
Codablock F Msg. Length	Minimum (1 - 2048) *1	CBFMIN####	7-34
	Maximum (1 - 2048) *2048	CBFMAX####	7-34
Label Code	On	LBLENA1	7-34
	* Off	LBLENA0	7-34
PDF417	Default All PDF417 Settings	PDFDFT	7-35
	*On	PDFENA1	7-35
	Off	PDFENA0	7-35
PDF417 Msg. Length	Minimum (1-2750) *1	PDFMIN####	7-35
	Maximum (1-2750) *2750	PDFMAX####	7-35
MacroPDF417	*On	PDFMAC1	7-36
	Off	PDFMAC0	7-36
MicroPDF417	Default All Micro PDF417 Settings	MPDDFT	7-36
	On	MPDENA1	7-36
	*Off	MPDENA0	7-36
MicroPDF417 Msg. Length	Minimum (1-366) *1	MPDMIN###	7-36
	Maximum (1-366) *366	MPDMAX###	7-36
GS1 Composite Codes	On	COMENA1	7-36
	*Off	COMENA0	7-36
UPC/EAN Version	On	COMUPC1	7-37
	*Off	COMUPC0	7-37
GS1 Composite Codes Msg. Length	Minimum (1-2435) *1	COMMIN####	7-37
	Maximum (1-2435) *2435	COMMAX####	7-37
GS1 Emulation	GS1-128 Emulation	EANEMU1	7-37
	GS1 DataBar Emulation	EANEMU2	7-36
	GS1 Code Expansion Off	EANEMU3	7-38
	EAN8 to EAN13 Conversion	EANEMU4	7-38
	*GS1 Emulation Off	EANEMU0	7-38
TCIF Linked Code 39	On	T39ENA1	7-38
	*Off	T39ENA0	7-38
QR Code	Default All QR Code Settings	QRCDFT	7-38
	*On	QRCENA1	7-38
	Off	QRCENA0	7-38
QR Code Msg. Length	Minimum (1-7089) *1	QRCMIN####	7-39
	Maximum (1-7089) *7089	QRCMAX####	7-39
QR Code Append	*On	QRCAPP1	7-39
	Off	QRCAPP0	7-39
QR Code Page	QR Code Page (*3)	QRCDCP##	7-39
Data Matrix	Default All Data Matrix Settings	IDMDFT	7-40
	*On	IDMENA1	7-40
	Off	IDMENA0	7-40

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Data Matrix Msg. Length	Minimum (1-3116) *1	IDMMIN####	7-40
	Maximum (1-3116) *3116	IDMMAX####	7-40
Data Matrix Code Page	Data Matrix Code Page (*51)	IDMDCP##	7-40
MaxiCode	Default All MaxiCode Settings	MAXDFT	7-41
	On	MAXENA1	7-41
	*Off	MAXENA0	7-41
MaxiCode Msg. Length	Minimum (1-150) *1	MAXMIN###	7-41
	Maximum (1-150) *150	MAXMAX###	7-41
Aztec Code	Default All Aztec Code Settings	AZTDFT	7-42
	*On	AZTENA1	7-42
	Off	AZTENA0	7-42
Aztec Code Msg. Length	Minimum (1-3832) *1	AZTMIN####	7-42
	Maximum (1-3832) *3832	AZTMAX####	7-42
Aztec Append	*On	AZTAPP1	7-42
	Off	AZTAPP0	7-42
Aztec Code Page	Aztec Code Page (*51)	AZTDCP##	7-42
Chinese Sensible (Han Xin) Code	Default All Han Xin Code Settings	HX_DFT	7-43
	On	HX_ENA1	7-43
	*Off	HX_ENA0	7-43
Chinese Sensible (Han Xin) Code Msg. Length	Minimum (1-7833) *1	HX_MIN####	7-43
	Maximum (1-7833) *7833	HX_MAX####	7-43
Postal Codes - 2D			
2D Postal Codes	*Off	POSTAL0	7-44
Single 2D Postal Codes	Australian Post On	POSTAL1	7-44
	British Post On	POSTAL7	7-44
	Canadian Post On	POSTAL30	7-44
	Intelligent Mail Bar Code On	POSTAL10	7-44
	Japanese Post On	POSTAL3	7-44
	KIX Post On	POSTAL4	7-44
	Planet Code On	POSTAL5	7-44
	Postal-4i On	POSTAL9	7-44
	Postnet On	POSTAL6	7-45
	Postnet with B and B' Fields On	POSTAL11	7-45
	InfoMail On	POSTAL2	7-45

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Combination 2D Postal Codes	InfoMail and British Post On	POSTAL8	7-45
	Intelligent Mail Bar Code and Postnet with B and B' Fields On	POSTAL20	7-45
	Postnet and Postal-4i On	POSTAL14	7-45
	Postnet and Intelligent Mail Bar Code On	POSTAL16	7-45
	Postal-4i and Intelligent Mail Bar Code On	POSTAL17	7-45
	Postal-4i and Postnet with B and B' Fields On	POSTAL19	7-45
	Planet and Postnet On	POSTAL12	7-45
	Planet and Postnet with B and B' Fields On	POSTAL18	7-46
	Planet and Postal-4i On	POSTAL13	7-46
	Planet and Intelligent Mail Bar Code On	POSTAL15	7-46
	Planet, Postnet, and Postal-4i On	POSTAL21	7-46
	Planet, Postnet, and Intelligent Mail Bar Code On	POSTAL22	7-46
	Planet, Postal-4i, and Intelligent Mail Bar Code On	POSTAL23	7-46
Combination 2D Postal Codes (continued)	Postnet, Postal-4i, and Intelligent Mail Bar Code On	POSTAL24	7-46
	Planet, Postal-4i, and Postnet with B and B' Fields On	POSTAL25	7-46
	Planet, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL26	7-46
	Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL27	7-46
	Planet, Postal-4i, Intelligent Mail Bar Code, and Postnet On	POSTAL28	7-47
	Planet, Postal-4i, Intelligent Mail Bar Code, and Postnet with B and B' Fields On	POSTAL29	7-46
Planet Code Check Digit	Transmit	PLNCKX1	7-47
	*Don't Transmit	PLNCKX0	7-47
Postnet Check Digit	Transmit	NETCKX1	7-47
	*Don't Transmit	NETCKX0	7-47
Australian Post Interpretation	Bar Output	AUSINT0	7-48
	Numeric N Table	AUSINT1	7-48
	Alphanumeric C Table	AUSINT2	7-48
	Combination N and C Tables	AUSINT3	7-48

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Postal Codes - Linear			
China Post (Hong Kong 2 of 5)	Default All China Post (Hong Kong 2 of 5) Settings	CPCDFT	7-48
	*Off	CPCENA0	7-48
	On	CPCENA1	7-48
China Post (Hong Kong 2 of 5) Msg. Length	Minimum (2 - 80) *4	CPCMIN##	7-48
	Maximum (2 - 80) *80	CPCMAX##	7-48
Korea Post	Default All Korea Post Settings	KPCDFT	7-49
	*Off	KPCENA0	7-49
	On	KPCENA1	7-49
Korea Post Msg. Length	Minimum (2 - 80) *4	KPCMIN##	7-49
	Maximum (2 - 80) *48	KPCMAX##	7-49
Korea Post Check Digit	Transmit Check Digit	KPCCHK1	7-49
	*Don't Transmit Check Digit	KPCCHK0	7-49
Imaging Default Commands			
Image Snap	Default all Imaging Commands	IMGDFT	8-1
	Imaging Style - Decoding	SNPSTY0	8-1
	*Imaging Style - Photo	SNPSTY1	8-1
	Imaging Style - Manual	SNPSTY2	8-1
	Beeper On	SNPBEP1	8-1
	*Beeper Off	SNPBEP0	8-1
	*Wait for Trigger Off	SNPTRG0	8-2
	Wait for Trigger On	SNPTRG1	8-2
	*LED State - Off	SNPLED0	8-2
	LED State - On	SNPLED1	8-2
	Exposure (1-7874 microseconds)	SNPEXP	8-2
	*Gain - None	SNPGAN1	8-2
	Gain - Medium	SNPGAN2	8-2
	Gain - Heavy	SNPGAN4	8-2
	Gain - Maximum	SNPGAN8	8-2
	Target White Value (0-255) *125	SNPWHT###	8-3
	Delta for Acceptance (0-255) *25	SNPDEL###	8-3
	Update Tries (0-10) *6	SNPTRY##	8-3
	Target Set Point Percentage (1-99) *50	SNPPCT##	8-3
Image Ship	*Infinity Filter - Off	IMGINF0	8-4
	Infinity Filter - On	IMGINF1	8-4
	*Compensation Off	IMGCOR0	8-4
	Compensation On	IMGCOR1	8-4
	*Pixel Depth - 8 bits/pixel (grayscale)	IMGBPP8	8-4
	Pixel Depth - 1 bit/pixel (B&W)	IMGBPP1	8-4

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
	*Don't Sharpen Edges	IMGEDG0	8-5
	Sharpen Edges (0-23)	IMGEDG##	8-5
	*File Format - JPEG	IMGFMT6	8-5
	File Format - KIM	IMGFMT0	8-5
	File Format - TIFF binary	IMGFMT1	8-5
	File Format - TIFF binary group 4, compressed	IMGFMT2	8-5
	File Format - TIFF grayscale	IMGFMT3	8-5
	File Format - Uncompressed binary	IMGFMT4	8-5
	File Format - Uncompressed grayscale	IMGFMT5	8-5
	File Format - BMP	IMGFMT8	8-5
	*Histogram Stretch Off	IMGHIS0	8-5
	Histogram Stretch On	IMGHIS1	8-5
	*Noise Reduction Off	IMGFSP0	8-6
	Noise Reduction On	IMGFSP1	8-6
	Invert Image around X axis	IMGNVX1	8-6
	Invert Image around Y axis	IMGNVY1	8-6
	Rotate Image none	IMGROT0	8-7
	Rotate Image 90° right	IMGROT1	8-7
	Rotate Image 180° right	IMGROT2	8-7
	Rotate Image 90° left	IMGROT3	8-7
	JPEG Image Quality (0-100) *50	IMGJQF###	8-7
	*Gamma Correction Off	IMGGAM0	8-7
	Gamma Correction On (0-1000)	IMGGAM###	8-7
	Image Crop - Left (0-843) *0	IMGWNL###	8-8
	Image Crop - Right (0-843) *843	IMGWNR###	8-8
	Image Crop - Top (0-639) *0	IMGWNT###	8-8
	Image Crop - Bottom (0-639) *639	IMGWNB###	8-8
	Image Crop - Margin (1-238) *0	IMGMAR###	8-8
	Protocol - None (raw)	IMGXFR0	8-8
	Protocol - None (default USB)	IMGXFR2	8-8
	Protocol - Hmodem Compressed	IMGXFR3	8-8
	Protocol - Hmodem	IMGXFR4	8-8
	Ship Every Pixel	IMGSUB1	8-8
Image Ship (continued)	Ship Every 2nd Pixel	IMGSUB2	8-8
	Ship Every 3rd Pixel	IMGSUB3	8-9
	*Document Image Filter Off	IMGUSH0	8-9
	Document Image Filter On (0-255)	IMGUSH###	8-9
	*Don't Ship Histogram	IMGHST0	8-9
	Ship Histogram	IMGHST1	8-9

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Image Size Compatibility	Force VGA Resolution	IMGVGA1	8-10
	*Native Resolution	IMGVGA0	8-10
Intelligent Signature Capture	Optimize On	DECBND1	8-10
	*Optimize Off	DECBND0	8-10
Utilities			
Add Code I.D. Prefix to All Symbologies (Temporary)		PRECA2,BK2995C80!	9-1
Show Decoder Revision		REV_DR	9-1
Show Scan Driver Revision		REV_SD	9-1
Show Software Revision		REVINF	9-1
Show Data Format		DFMBK3?	9-1
Test Menu	On	TSTMNU1	9-2
	*Off	TSTMNU0	9-2
Application Plug-Ins (Apps)	*Decoding Apps On	PLGDCE1	9-2
	Decoding Apps Off	PLGDCE0	9-2
	*Formatting Apps On	PLGFOE1	9-2
	Formatting Apps Off	PLGFOE0	9-2
	List Apps	PLGINF	9-2
Reset the Factory Defaults	Remove Custom Defaults	DEFOVR	9-4
	Activate Defaults	DEFALT	9-4

11

Product Specifications

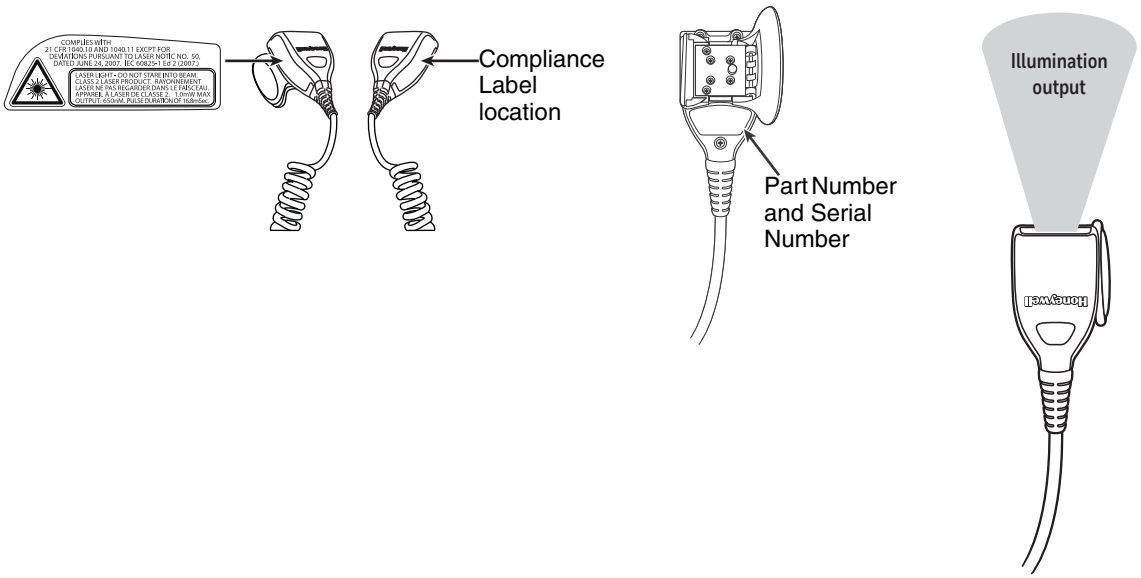
8670 Wireless Ring Scanner Product Specifications

Parameter	Specification
Mechanical	
Dimensions:	
Bluetooth Module:	
Height	1.1 inches (28mm)
Length	3.1 inches (78.2mm)
Width	2.75 inches (70mm)
Ring Scanner:	
Height	1.2 inches (30.5mm)
Length	2 inches (50.8mm)
Width	1.2 inches (30.5mm)
Weight	4.8 ounces (136g)
Electrical	
Battery:	
Lithium Ion	3.7v 750mAh
Expected Number of Scans	At least 6,500 (1 scan every 4 seconds for 7 hours)
Expected Hours of Operation	10 hours typical @ 8 scans/minute 7 hours typical @ 15 scans/minute
Expected Charge Time	4 hours
Illumination	White LED (exempt risk group)
Aiming	650nm high visibility red laser (Class 2)
Radio	
Frequency	2.4 to 2.5 GHz (ISM Band) Frequency Hopping Bluetooth v.2.1
Range	33 ft. (10m) line of sight
Data Rate	Up to 1 Mbps
Environmental	
Operating Temperature	-4° F to 122° F (-20° C to +50° C)
Storage Temperature	-4° F to 140° F (-20°C to +60°C)
Humidity	Up to 95%, non-condensing
Drop	Operational after 30 drops from 5 feet (1.5m) to concrete
Environmental Sealing	IP54
Vibration	Withstands 10G peak from 10 to 500 Hz
ESD	20kV air, 8kV contact
Image	
Image Size	844 x 640 pixels
Scan Performance	
Pitch, Skew	±45°, ±60°
Symbol Contrast	20%
Motion Tolerance:	up to 230 inches (584cm) per second in total darkness for 100% UPC at 4 inch (10cm) distance
Depth of Field	
Typical Performance 5 mil Code 39	54 - 153mm (2.1 - 6 in.)
10 mil Code 39	18 - 328mm (0.7 - 12.9 in.)
13 mil UPC-A	36 - 409mm (1.4 - 16.1 in.)

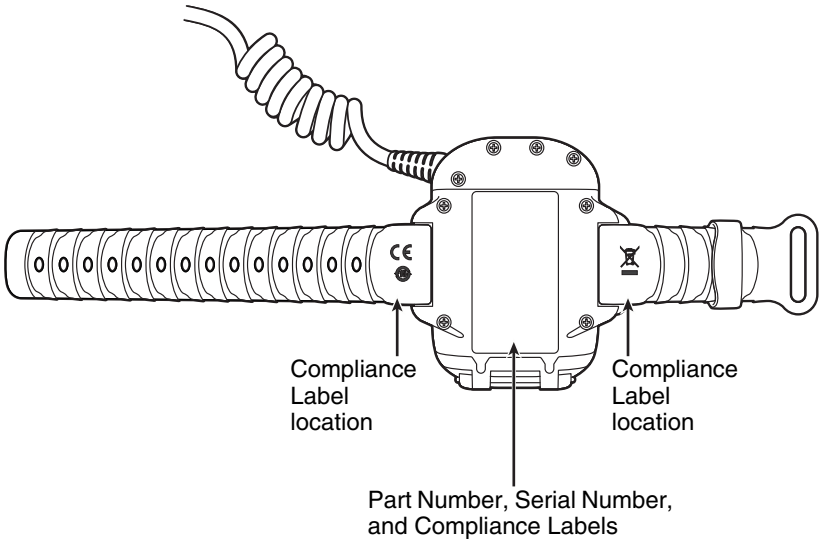
Parameter	Specification
6.7 mil PDF417	36 - 175mm (1.4 - 6.9 in.)
10mil Data Matrix	43 - 193mm (1.7 - 7.6 in.)
Guaranteed Performance 5 mil Code 39	81 - 132mm (3.2 - 5.2 in.)
10 mil Code 39	38 - 295mm (1.5 - 11.6 in.)
13 mil UPC-A	43 - 371mm (1.7 - 14.6 in.)
6.7 mil PDF417	54 - 158mm (2.1 - 6.2 in.)
10mil Data Matrix	64 - 175mm (2.5 - 6.9 in.)

Required Safety Labels

8670 Ring Scanner



Bluetooth Module



12 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 -iii).

Maintenance

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

Clean the Scanner

The scanner and Bluetooth module housing may be cleaned with a soft cloth or tissue dampened with water (or a mild detergent-water solution.) If a detergent solution is used, rinse with a clean tissue dampened with water only.

⚠ Caution:

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

Do not use abrasive wipes or tissues 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.

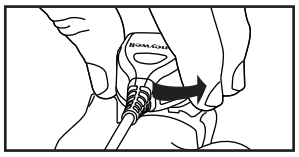
Clean the Window

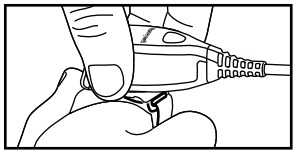
Reading performance may degrade if the scanner's window is not clean. If the window is visibly dirty, or if the scanner isn't operating well, clean it with a soft cloth or tissue dampened with water (or a mild detergent-water solution.) If a detergent solution is used, rinse with a clean tissue dampened with water only.

Replace Scanner Ring Strap and Trigger

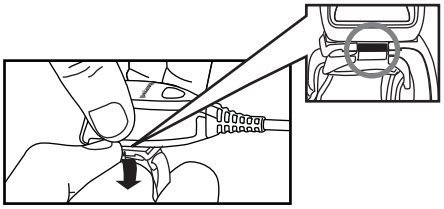
Remove Ring Strap/C-Ring

1. Turn the ring scanner 90°.

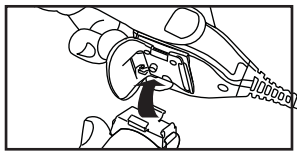




2. Press the latch down.

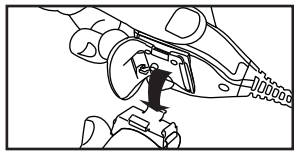


3. Remove the ring strap or C-ring.

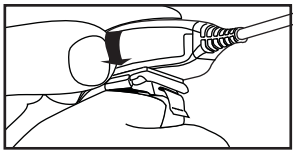


Replace Ring Strap/C-Ring

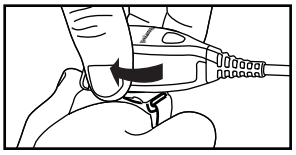
1. Connect the ring latch with the trigger catch.



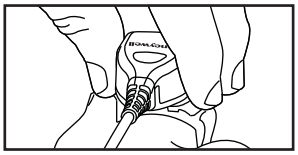
2. Press together until it clicks.



3. Turn 90°.

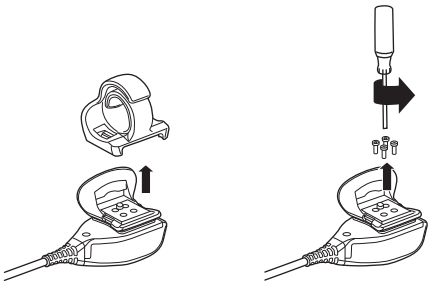


4. Ready to scan.

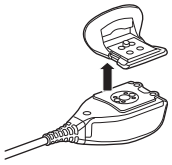


Replace Trigger

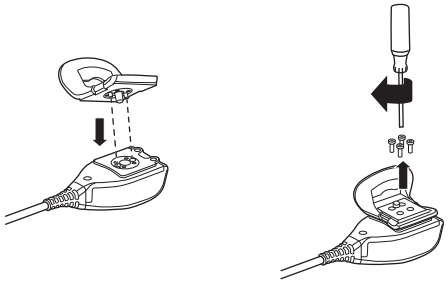
1. Remove the ring strap or C-ring and unscrew the 4 screws to remove the trigger.



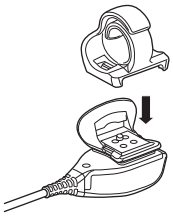
2. Remove the trigger.



3. Place the trigger on the ring scanner and screw in the 4 screws to secure the new trigger.



4. Snap on the ring strap or C-ring.



Troubleshooting

Note: Make sure your battery is charged.

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 host to which the scanner connects.

Is the bar code displayed but not entered into the application?

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

- You need to program a suffix. Programming a suffix enables the scanner to output the bar code data plus the key you need (such as "CR") to enter the data into your application. Refer to Prefix/Suffix Overview on page 5-1 for further information.

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

- Scan the sample bar codes in the back of this manual. If the scanner reads the sample bar codes, check that your bar code is readable.

Verify that your bar code symbology is enabled (see Chapter 7).

If the scanner still can't read the sample bar codes, scan All Symbologies on page 7-1.

A

Reference Charts

Symbology Charts

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

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

Refer to Data Editing beginning on page 5-1 and Data Formatting beginning on page 6-1 for information about using Code ID and AIM ID.

Linear Symbologies

	AIM		Honeywell	
Symbology	**ID**	**Possible modifiers (*m*)**	**ID**	**Hex**
All Symbologies				99
Codabar	]F*m*	0-1	a	61
Code 11	]H3		h	68
Code 128	]C*m*	0, 1, 2, 4	j	6A
Code 32 Pharmaceutical (PARAF)	]X0		<	3C
Code 39 (supports Full ASCII mode)	]A*m*	0, 1, 3, 4, 5, 7	b	62
TCIF Linked Code 39 (TLC39)	]L2		T	54
Code 93 and 93i	]G*m*	0-9, A-Z, a-m	i	69
EAN	]E*m*	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
EAN-8 with Add-On	]E3		D	44
GS1				
GS1 DataBar	]e*m*	0	y	79
GS1 DataBar Limited	]e*m*		{	7B
GS1 DataBar Expanded	]e*m*		}	7D
GS1-128	]C1		I	49
2 of 5				
China Post (Hong Kong 2 of 5)	]X0		Q	51
Interleaved 2 of 5	]I*m*	0, 1, 3	e	65
Matrix 2 of 5	]X0		m	6D
NEC 2 of 5	]X0		Y	59
Straight 2 of 5 IATA	]R*m*	0, 1, 3	f	66
Straight 2 of 5 Industrial	]S0		f	66
MSI	]M*m*	0, 1	g	67
Telepen	]B*m*		t	74
UPC		0, 1, 2, 3, 8, 9, A, B, C		

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
UPC-A	]E0		c	63
UPC-A with Add-On	]E3		c	63
UPC-A with Extended Coupon Code	]E3		c	63
UPC-E	]E0		E	45
UPC-E with Add-On	]E3		E	45
UPC-E1	]X0		E	45

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

2D Symbologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
All Symbologies				99
Aztec Code	]z*m*	0-9, A-C	z	7A
Chinese Sensible Code (Han Xin Code)	]X0		H	48
Codablock A	]O6	0, 1, 4, 5, 6	V	56
Codablock F	]O*m*	0, 1, 4, 5, 6	q	71
Code 49	]T*m*	0, 1, 2, 4	l	6C
Data Matrix	]d*m*	0-6	w	77
GS1	]e*m*	0-3	y	79
GS1 Composite	]e*m*	0-3	y	79
GS1 DataBar Omnidirectional	]e*m*	0-3	y	79
MaxiCode	]U*m*	0-3	x	78
PDF417	]L*m*	0-2	r	72
MicroPDF417	]L*m*	0-5	R	52
QR Code	]Q*m*	0-6	s	73
Micro QR Code	]Q*m*		s	73

Postal Symbologies

Symbology	AIM		Honeywell	
	ID	Possible modifiers (*m*)	ID	Hex
All Symbologies				99
Australian Post	]X0		A	41

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

ASCII Conversion Chart (Code Page 1252)

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

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

Non-printable characters ASCII control			Keyboard Control + ASCII (CTRL+X) Mode		
				Windows Mode Control + X Mode On (KBDCAS2)	
DEC	HEX	Char	Control + X Mode Off (KBDCAS0)	CTRL + X	CTRL + X function
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	CTRL+]	
30	1E	RS	F9	CTRL+ ^	
31	1F	US	F10	CTRL+ -	
127	7F	⌂	NP Enter		

Lower ASCII Reference Table

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

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

Printable Characters (Continued)								
DEC	HEX	Character	DEC	HEX	Character	DEC	HEX	Character
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	ƒ	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	ˆ	ê	Page Up	0x49
137	89	‰	ë	Page Down	0x51
138	8A	Š	è	Right ALT	0x38
139	8B	‹	ï	Right CTRL	0x1D
140	8C	Œ	î	Reserved	n/a
141	8D		ì	Reserved	n/a
142	8E	Ž	Ä	Numeric Keypad Enter	0x1C
143	8F		Å	Numeric Keypad /	0x35
144	90		É	F1	0x3B
145	91	‘	æ	F2	0x3C
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	›	¢	F12	0x58
156	9C	œ	£	Numeric Keypad +	0x4E
157	9D		¥	Numeric Keypad -	0x4A
158	9E	ž	Pts	Numeric Keypad *	0x37
159	9F	Ÿ	ƒ	Caps Lock	0x3A
160	A0		á	Num Lock	0x45
161	A1	¡	í	Left Alt	0x38
162	A2	¢	ó	Left Ctrl	0x1D
163	A3	£	ú	Left Shift	0x2A
164	A4	¤	ñ	Right Shift	0x36
165	A5	¥	Ñ	Print Screen	n/a
166	A6	¦	ª	Tab	0x0F
167	A7	§	º	Shift Tab	0x8F
168	A8	¨	¿	Enter	0x1C
169	A9	©	⌐	Esc	0x01
170	AA	ª	¬	Alt Make	0x36
171	AB	«	½	Alt Break	0xB6
172	AC	¬	¼	Control Make	0x1D
173	AD		¡	Control Break	0x9D
174	AE	®	«	Alt Sequence with 1 Character	0x36

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
175	AF	¯	»	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	└		
193	C1	Á	┴		
194	C2	Â	┬		
195	C3	Ã	├		
196	C4	Ä	─		
197	C5	Å	í		
198	C6	Æ	╞		
199	C7	Ç	╟		
200	C8	È	╚		
201	C9	É	╔		
202	CA	Ê	╩		
203	CB	Ë	╦		
204	CC	Ì	╠		
205	CD	Í	═		
206	CE	Î	╬		
207	CF	Ï	╧		
208	D0	Ð	╨		
209	D1	Ñ	╤		
210	D2	Ò	╥		
211	D3	Ó	╙		
212	D4	Ô	╘		
213	D5	Õ	╒		
214	D6	Ö	╓		
215	D7	×	╫		
216	D8	Ø	╪		
217	D9	Ù	┘		
218	DA	Ú	┌		
219	DB	Û	█		
220	DC	Ü	▄		
221	DD	Ý	▌		
222	DE	Þ	▐		
223	DF	ß	▀		
224	E0	à	α		
225	E1	á	ß		
226	E2	â	Γ		

Extended ASCII Characters (Continued)					
DEC	HEX	CP 1252	ASCII	Alternate Extended	PS2 Scan Code
227	E3	ã	π		
228	E4	ä	Σ		
229	E5	å	σ		
230	E6	æ	µ		
231	E7	ç	τ		
232	E8	è	Φ		
233	E9	é	Θ		
234	EA	ê	Ω		
235	EB	ë	δ		
236	EC	ì	∞		
237	ED	í	φ		
238	EE	î	ε		
239	EF	ï	∩		
240	F0	ð	≡		
241	F1	ñ	±		
242	F2	ò	≥		
243	F3	ó	≤		
244	F4	ô	⌠		
245	F5	õ	⌡		
246	F6	ö	÷		
247	F7	÷	≈		
248	F8	ø	°		
249	F9	ù	·		
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

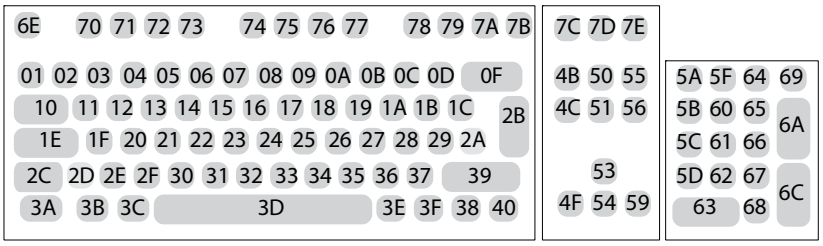
Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code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

Code Page Selection Method/Country	Standard	Keyboard Country	Honeywell Code Page Option
United States (standard ASCII)	ISO/IEC 646-IRV	n/a	1
Automatic National Character Replacement	ISO/IEC 2022	n/a	2 (default)
Binary Code page	n/a	n/a	3
Default "Automatic National Character replacement" will select the below Honeywell Code Page options for Code128, Code 39 and Code 93.			
United States	ISO/IEC 646-06	0	1
Canada	ISO /IEC 646-121	54	95
Canada	ISO /IEC 646-122	18	96
Japan	ISO/IEC 646-14	28	98

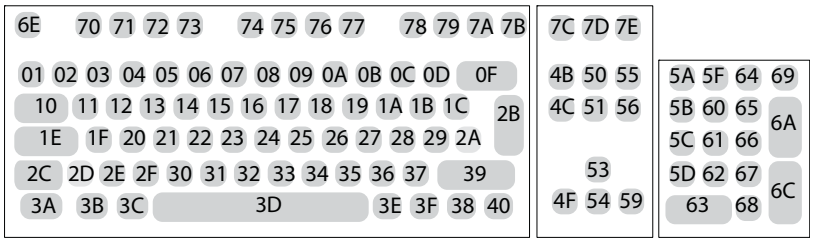
Code Page Selection Method/Country	Standard	Keyboard Country	Honeywell Code Page Option
China	ISO/IEC 646-57	92	99
Great Britain (UK)	ISO /IEC 646-04	7	87
France	ISO /IEC 646-69	3	83
Germany	ISO/IEC646-21	4	84
Switzerland	ISO /IEC 646-CH	6	86
Sweden / Finland (extended Annex C)	ISO/IEC 646-11	2	82
Ireland	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	§	^	µ	é	ù	è	¨
DE	**4**	**84**	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
CH	**6**	**86**	ù	$	à	é	ç	ê	î	ô	ä	ö	ü	û
SE/FI	**2**	**82**	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
DK	**8**	**88**	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
NO	**9**	**94**	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	¯
IE	**73**	**97**	£	$	Ó	É	Í	Ú	Á	ó	é	í	ú	á
IT	**5**	**85**	£	$	§	°	ç	é	^	ù	à	ò	è	ì
PT	**13**	**92**	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
ES	**10**	**90**	#	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
ES	**51**	**91**	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨
COUNTRY	**Country Keyboard**	**Honeywell CodePage**	**ISO / IEC 646 National Character Replacements**											

Keyboard Key References



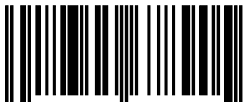
104 Key U.S. Style Keyboard



105 Key European Style Keyboard

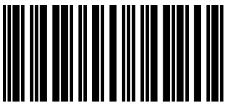
Sample Symbols

UPC-A



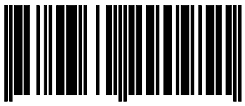
0 123456 7890

Interleaved 2 of 5



1234567890

EAN-13



9 780330 290951

Code 128

Code 128

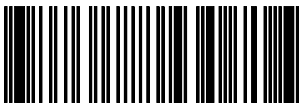
Code 39

BC321

Codabar

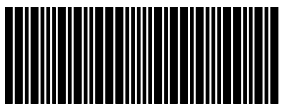
A13579B

Code 93



123456-9$

Code 2 of 5



123456

Matrix 2 of 5

6543210

RSS-14

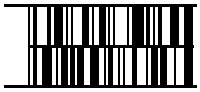
(01)00123456789012

Sample Symbols

PDF417

Car Registration

Code 49



1234567890

Postnet

Zip Code

Data Matrix

Test Symbol

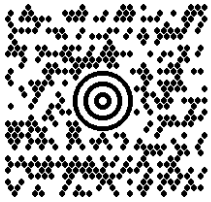
QR Code

Numbers

Aztec

Package Label

MaxiCode



Test Message

Micro PDF417

Test Message

Programming Chart

0

1

2

3

4

5

6

7

8

9

Programming Chart

A

B

C

D

E

F

Save

Discard

Reset

*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.*

Honeywell Scanning & Mobility
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