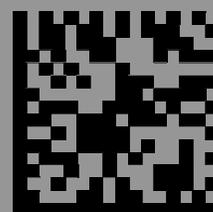


BAR CODE MANUAL

ICR 803
Bar Code Scanner



SICK

Using This Manual

This manual contains bar codes used to program the ICR803.

For initial setup, product identification, and general product information, please refer to the following manuals:

ICR803 Quick Start Manual
ICR803 Command & Communication Guide

Plug and Play Bar Codes

Plug and Play bar codes provide instant engine set up for commonly used interfaces. Please note that the ICR803 interfaces are configured by the factory at time of order. These bar codes are therefore used to default the scanner to get back to the factory setup.

RS-232

The **RS-232** Interface bar code is used when connecting to the serial port of a PC or terminal. The following RS-232 Interface bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below:

Option Setting

Baud Rate 115200 bps

Data Format 8 data bits, no parity bit, 1 stop bit



RS-232 Interface

USB HID

Scan the following code to default the USB version of the ICR803 for USB HID bar code imagers. Scanning this code changes the terminal ID to 131.



USB HID Bar Code Imager

USB COM Port Emulation

Scan the following code to program the USB version of the ICR803 to emulate a regular RS-232 based COM port. If you are using Microsoft Windows, you will need to install the USB Driver for the scanner.

USB COM Port Emulation

Scan the following code to program the FM-204 to emulate a regular RS-232 based COM port. If you are using Microsoft Windows, you will need to install the USB Driver by installing the QuickView utility (see JADAK SDK CD).



USB COM Port Emulation

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

CTS/RTS Emulation



On



* Off

ACK/NAK Mode



On



* Off

RS-232 Baud Rate

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



300



1200



4800



19200



57,600



600



2400



9600



38400



* 115,200

RS-232 Word Length: Data Bits, Stop Bits, and Parity

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

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

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



7 Data, 1 Stop, Parity Even



7 Data, 1 Stop, Parity None



7 Data, 1 Stop, Parity Odd



7 Data, 2 Stop, Parity Even



7 Data, 2 Stop, Parity None



7 Data, 2 Stop, Parity Odd



8 Data, 1 Stop, Parity Even



* 8 Data, 1 Stop, Parity None



8 Data, 1 Stop, Parity Odd

RS-232 Receiver Timeout

The unit stays awake to receive data until the RS-232 Receiver Timeout expires. A manual or serial trigger resets the timeout. When an RS-232 receiver is sleeping, a character may be sent to wake up the receiver and reset the timeout. A transaction on the CTS line will also wake up the receiver. The receiver takes 300 milliseconds to completely come up. Change the RS-232 receiver timeout by scanning the bar code below, then scanning digits from the inside back cover of this manual, then scanning **Save**. The range is 0 to 300 seconds. *Default = 0 seconds (no timeout - always on).*



RS-232 Receiver Timeout

RS-232 Handshaking

RS-232 handshaking is a set of rules concerning the exchange of data between serially communicating devices. *Default = RTS/CTS, XON/XOFF and ACK/NAK Off*



RTS/CTS On



* RTS/CTS Off



XON/XOFF On



* XON/OFF Off



ACK/NAK On



* ACK/NAK Off

Good Read 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 = On.*



* On



Off

Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the imager emits on a good read. *Default = Medium for the IT4010, High for the IT4080.*



Low



Medium



High



Off

Beeper Duration – Good Read

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



* Normal Beep



Short Beep

Reread Delay

This sets the minimum amount of time before the imager 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 rereads in POS (Point Of Sale) applications. Use shorter delays for applications where repetitive scanning is required. (Default = Medium)



Short (500 ms)



* Medium (750 ms)



Long (1000 ms)



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

Good Read Delay

This sets the minimum amount of time before the imager can read another bar code. *Default = 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 Appendix D, then scanning **Save**.



User-Specified Good Read Delay

Trigger Modes

Manual/Serial Trigger

You can activate the imager either by providing an external hardware trigger, or using a serial trigger command. When in manual trigger mode, the imager scans until a bar code is read, or until the hardware trigger is released.

When in serial mode, the imager scans until a bar code has been read or until the deactivate command is sent. In serial mode, the imager can also be set to turn itself off after a specified time has elapsed (see [Read Time Out](#), which follows).



* Manual/Serial Trigger

Read Time Out

Use this selection to set a time out (in milliseconds) of the imager's trigger when using serial commands to trigger the imager, or if the imager is in manual trigger mode. Once the imager has timed out, you can activate the imager 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 from Appendix D, then scanning **Save**. Default = 0 (infinite, or no time out).



Read Time Out

Manual Trigger, Low Power

The imager powers down until the trigger is pulled. When the trigger is pulled, the imager powers up and operates until there is no triggering for the time set with the **Low Power Time Out** bar code below. There is a delay of up to one second in operation when the imager is first triggered, but there is no delay when operating in low power timeout mode.



Manual Trigger, Low Power

Low Power Time Out Timer

Scan the Low Power Time Out bar code to change the time out duration (in seconds). Then scan the time out duration (from 0-300 seconds) from Appendix D, and **Save**. Default = 120 seconds.

If the unit remains idle during the low power time out interval, the unit goes into low power mode. Whenever the trigger is enabled, the low power time out timer is reset.



Low Power Time Out

Note: This timeout does not begin until the imager timeout setting has expired.

Scan Stand Mode

When a unit is in Scan Stand mode, it remains idle as long as it sees the Scan Stand symbol. (See **Scan Stand Symbol** that follows.) When a different code is presented, the Imager is triggered to read the new code.

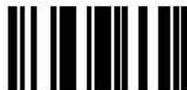
Note: The imager automatically adjusts the illumination LEDs to the lowest light level possible to maintain a good lock on the Scan Stand symbol. When a symbol is presented, the imager's light levels adjust to the saved LED power setting.



Scan Stand Mode

Scan Stand Symbol

When a unit is in Scan Stand mode, the LEDs shine at the Scan Stand symbol on the base of the stand which tells it to remain idle. When the Scan Stand symbol is covered, the imager turns the LEDs on at the configured power level (Default High) and attempts to find and decode bar codes in its field of view.



Scan Stand Symbol

Presentation Mode

This programs the imager to work in Presentation mode. The LEDs are either off or at the lowest power for ambient conditions until a bar code is presented to the imager. Then the LEDs turn on automatically to read the code. Presentation Mode uses ambient light to detect the bar codes. If the light level in the room is not high enough, Presentation Mode may not work properly.



Presentation Mode

Presentation LED Behavior after Decode

When an imager is in presentation mode, the LEDs remain on and continue scanning for a short time after a bar code is decoded. If you wish to turn the LEDs off immediately after a bar code is decoded, scan the **LEDs Off** bar code, below. Default = LEDs On.



* LEDs On



LEDs Off

Presentation Sensitivity

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



Sensitivity

Hands Free Time Out

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

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



Hands Free Time Out

LED Power Level

This selection allows you to adjust LED and aimer brightness. **Off** is used when no illumination is needed. **Low** is used if low illumination is sufficient. **High** (the default) is the brightest setting. If you have an aimer delay programmed (see [Aimer Delay](#)), the aimer will be at 100% power during the delay, regardless of the LED Power Level.

Note: If you scan the **Off** bar code, both the aimer and illumination lights turn off, making it impossible to scan bar codes in low light. To turn the LED Power Level back on, move to a brightly lit area and scan either the **Low** or the **High** bar code below.



Off



Low (50%)



* High (100%)

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.

Note: This setting does not affect the aimer light.



* Lights On



Lights Off

Imager Time Out

Imager Time Out powers down the imager after the unit has been idle for the specified time. To prevent the imager from powering down, set this time out to 0. Scan the bar code below, then set the time out by scanning digits (from 0 - 999,999 ms) from Appendix D, then scanning **Save**.



Imager Time Out

Aimer Delay

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



200 milliseconds



400 milliseconds



* Off (*no delay*)

Aimer Mode

This feature allows you to lower peak current during scanning by alternating the aimer and illumination LEDs. When the **Interlaced** bar code is scanned, the aimer and illumination LEDs are not allowed to be on at the same time. While this does limit peak current during scanning, the scanner performance may be slower. When the **Concurrent** bar code is scanned, the aimer and illumination LEDs are allowed to light at the same time. Select **Off** if you don't want to use either aimer mode.



Off



* Concurrent

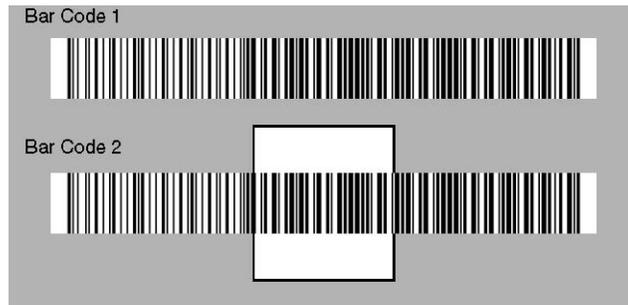


Interlaced

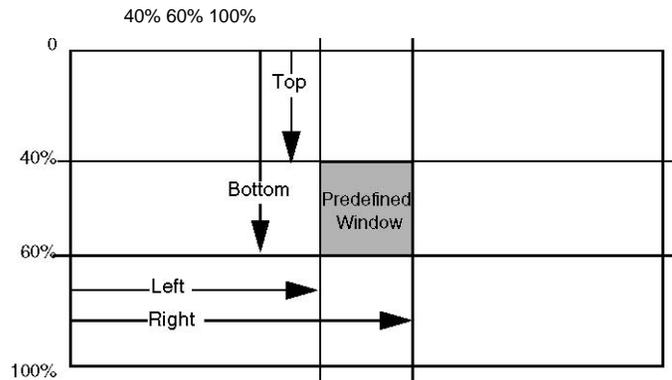
Centering

Use Centering to narrow the imager's field of view to make sure the imager reads only those bar codes intended by the user. For instance, if multiple codes are placed closely together, centering will insure that only the desired codes are read.

In the example below, the gray area is the full imager field of view and the white area is the centering window. Bar Code 1 will not be read, while Bar Code 2 will be.



The default centering window is a 60 pixel square area in the center of the imager's field of view. The following diagram illustrates the default top, bottom, left, and right pixel positions, measured from the top and the left side of the imager's field of view, which is 640 by 480 pixels.



The centering window must intersect the center of the image. If a bar code is not within the predefined window, it will not be decoded or output by the imager. If centering is turned on by scanning **Centering On**, the imager only reads codes that intersect the centering window you specify using the **Top**, **Bottom**, **Left**, or **Right** bar codes.

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 in Appendix D of this manual. Scan **Save**. Default Centering = 40% for Top and Left, 60% for Bottom and Right.

-



Centering On



Top of Centering Window



Left of Centering Window



* Centering Off



Bottom of Centering Window



Right of Centering Window

Decode Search Mode

There are three selectable decode (scanning) modes:

Full Omnidirectional (default) - Searches for bar code features beginning at the center of an image, and searches to the image's limits. This mode reads all symbologies (including OCR), in any orientation. The Full Omnidirectional search is very thorough which may slow performance time.



Full Omnidirectional

Quick Omnidirectional - This is an abbreviated search for bar code features around the center region of an image. This mode quickly reads all symbologies in any orientation. The Quick Omnidirectional mode may miss some off-center symbols, as well as larger Data Matrix and QR Code symbols.



Quick Omnidirectional

Advanced Linear Decoding - Performs quick horizontal linear scans in a center band of the image. This mode is not omni-directional, but does quickly read linear and stacked bar codes. Advanced Linear Decoding cannot read 2D, OCR, or Postal symbols.



Advanced Linear Decoding

Output Sequence Overview

Require Output Sequence

When turned off, the bar code data will be output to the host as the Imager decodes it. When turned on, all output data must conform to an edited sequence or the Imager will not transmit the output data to the host device.

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

Output Sequence Editor

This programming selection allows you to program the Imager 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 Imager 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 (in Appendix D) to read these options.

To Add an Output Sequence

1. Scan the **Enter Sequence** symbol.
2. **Code I.D.** On the [Symbology Chart \(Appendix A\)](#), 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 (Appendix D).
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.)
4. **Character Match Sequences** On the [ASCII Conversion Chart \(Appendix B\)](#), 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 imager 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

Output Sequence Editor



Enter Sequence



Default Sequence

Require Output Sequence

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

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



Required



On/Not Required



Off

Multiple Symbols

Note: This feature does not work when the Imager is in Low Power mode.

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



On



* Off

No Read

With No Read turned **On**, the Imager notifies you if a code cannot be read. If using a Quick*View Scan Data Window, an "NR" appears when a code cannot be read. If No Read is turned **Off**, the "NR" will not appear.



On



* Off

The default no read message of 'NR' can be changed to 'No Read' by scanning the barcode below:



Output
"No Read"



Default back
to 'NR' message

If you want a different notation, for example, "Error," or "Bad Code," you can edit the output message using the [Data Formatter](#). The hex code for the No Read symbol is 9C.

Print Weight

Print Weight is used to adjust the way the imager reads Matrix symbols. If an imager will be seeing consistently heavily printed matrix symbols, then a print weight of 6 may improve the reading performance. For consistently light printing, a print weight of 2 may help. After scanning the **Set Print Weight** bar code, set the print weight (from 1-7) by scanning digits from Appendix D, then scanning **Save**. Default = 4.



Set Print Weight



* Default

Video Reverse

Video Reverse is used to allow the imager to read bar codes that are inverted. The "Off" bar code below is an example of this type of bar code. If additional menuing is required, Video Reverse must be disabled to read the menu bar codes and then re-enabled after menuing is completed. Note: Images downloaded from the unit will not be reversed. This is a setting for decoding only.



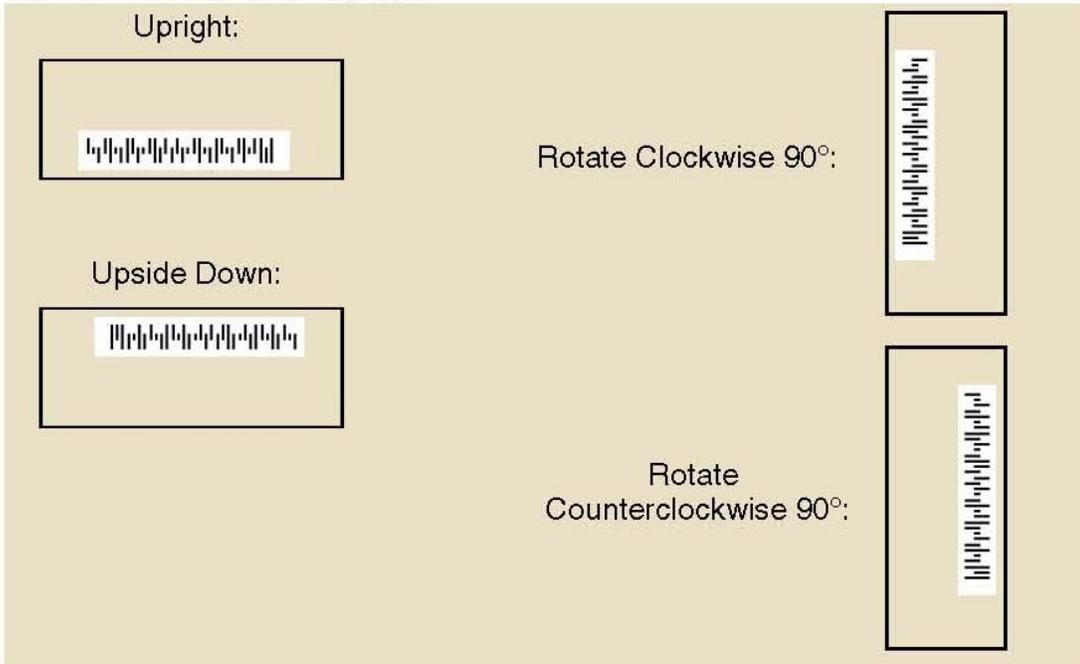
On



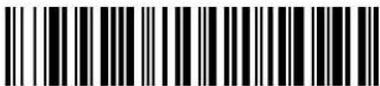
* Off

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



Rotate Clockwise 90°



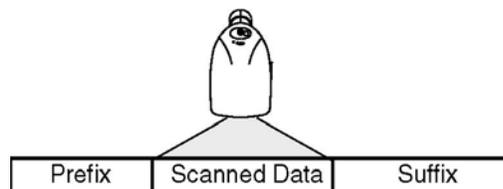
Rotate Counterclockwise 90°

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:



1-11 variable length 1-11 alpha numeric alpha numeric characters characters

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 \(Appendix B\)](#), 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.

To Add a Prefix or Suffix:

Step 1. Scan the **Add Prefix** or **Add Suffix** symbol

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in [Appendix A](#)) 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](#) (Appendix D) or scan **9, 9** for all symbologies.

Step 4. Determine the hex value from the [ASCII Conversion Chart \(Appendix B\)](#), for the prefix or suffix you wish to enter.

Step 5. Scan the 2 digit hex value from the [Programming Chart](#) (Appendix D)

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

Step 7. 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**.

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

Step 8. 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 Suffix to a specific symbology

To send a CR (carriage return) Suffix for UPC only: **Step 1.** Scan **Add Suffix**.
Step 2. Determine the 2 digit hex value from the Symbology Chart for UPC.
Step 3. Scan **6, 3** from the [Programming Chart](#) **Step 4.** Determine the hex value from the [ASCII Conversion Chart](#) , for the CR (carriage return). **Step 5.** Scan **0, D** from the [Programming Chart](#) **Step 6.** Scan **Save**, or scan **Discard** to exit without saving.

To Clear One or All Prefixes or Suffixes:

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. When you Clear One Prefix (Suffix), the specific character you select is deleted from the symbology you want. 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 [Appendix A](#)) 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](#) in Appendix D of this manual or scan **9, 9** for all symbologies.

Your change is automatically saved.

To Add a Carriage Return Suffix to all Symbologies

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



Add CR Suffix
All Symbologies

Prefix Selections



Add Prefix



Clear One Prefix



Clear All Prefixes

Suffix Selections



Add Suffix



Clear One Suffix



Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the imager transmits the function code to the terminal. Default = Enable.



* Enable



Disable

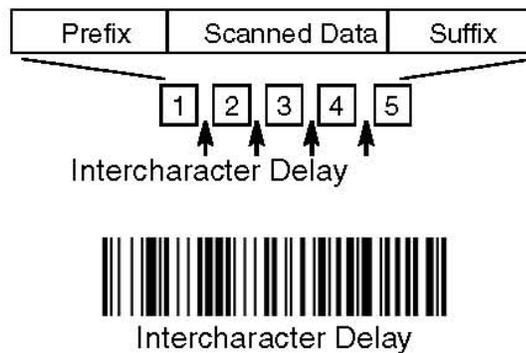
Intercharacter, Interfunction, and Intermassage Delays

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

Each delay is composed of a 5 millisecond step. You can program up to 99 steps (of 5 ms each) for a range of 0-495 ms.

Intercharacter Delay

An intercharacter delay of up to 495 milliseconds may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart \(Appendix D\)](#)



To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart \(Appendix D\)](#).

User Specified Intercharacter Delay

An intercharacter delay of up to 495 milliseconds 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 milliseconds and the **SAVE** bar code using the [Programming Chart \(Appendix D\)](#).

Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for the ASCII character that will trigger the delay [ASCII Conversion Chart \(Appendix B\)](#).



Delay Length

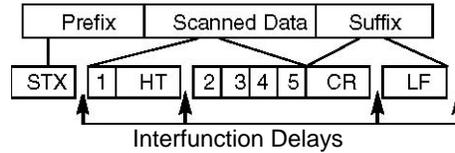


Character to Trigger Delay

To remove this delay, scan the **Delay Length** bar code, and set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart \(Appendix D\)](#).

Interfunction Delay

An interfunction delay of up to 495 milliseconds may be placed between the transmission of each segment of the message string. Scan the **Interfunction Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) (Appendix D)

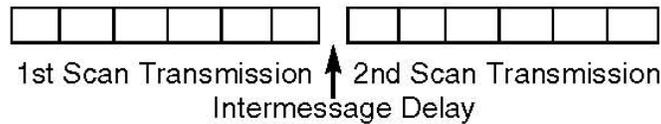


Interfunction Delay

To remove this delay, scan the **Interfunction Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) (Appendix D).

Intermessage Delay

An intermessage delay of up to 495 milliseconds may be placed between each scan transmission. Scan the **Intermessage Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the [Programming Chart](#) (Appendix D).



Intermesssage Delay

To remove this delay, scan the **Intermesssage Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the [Programming Chart](#) (Appendix D).

Data Formatting

Data Format Editor Introduction

You may use the Data Format Editor to change the imager'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 gets outputted automatically; however when you do a format, you must use a "send" command (see [Send Commands](#) on page 28) within the format program to output data.

Multiple formats may be programmed into the imager. 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 Term ID, Actual Code ID, Actual Length
2. Specific Term ID, Actual Code ID, Universal Length
3. Specific Term ID, Universal Code ID, Actual Length
4. Specific Term ID, Universal Code ID, Universal Length
5. Universal Term ID, Actual Code ID, Actual Length
6. Universal Term ID, Actual Code ID, Universal Length
7. Universal Term ID, Universal Code ID, Actual Length
8. Universal Term ID, Universal Code ID, Universal Length

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.

To Add a Data Format

Step 1. Scan the **Enter Data Format** symbol.

Step 2. Primary/Alternate Format

Determine if this will be your primary data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different data format. After the one bar code has been read, the imager reverts to the primary data format. If you are programming the primary format, scan **0** using the [Programming Chart](#) (Appendix D) If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

Step 3. Terminal Type

Scan three numeric bar codes from Appendix D for your terminal ID: **0 0 0** = RS232,
Note: The wildcard for all terminal types is **0 9 9**.

Step 4. Code I.D.

In [Appendix A](#), 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](#) (Appendix D).

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](#) (Appendix D). Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.

Step 6. Editor Commands

Refer to [Data Format Editor Commands](#). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

Step 7. Scan **Save** from the [Programming Chart](#) (Appendix D)

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](#) (Appendix D). If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type and Code I.D. and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.
- **Save** from the [Programming Chart](#). This exits, saving any Data Format changes.
- **Discard** from the [Programming Chart](#). This exits without saving any Data Format changes.

Data Format Editor Commands

Send Commands

- F1 Send all characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F1xx**(xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B).
- F2 Send “nn” characters followed by “xx” key or function code, starting from current cursor position. **Syntax = F2nnxx**(nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See [ASCII Conversion Chart](#) (Appendix B).
- F3 Send up to but not including “ss” character (Search and Send) starting from current cursor position, leaving cursor pointing to “ss” character followed by “xx” key or function code. **Syntax = F3ssxx**(ss and xx both stand for the hex values for ASCII codes, see [ASCII Conversion Chart](#) (Appendix B).
- F4 Send “xx” character “nn” times (Insert) leaving cursor in current cursor position. **Syntax = F4xxnn** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B) and nn is the numeric value (00-99) for the number of times it should be sent.)
- E9 Send all but the last “nn” characters, starting from the current cursor position. **Syntax = E9nn** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

Move Commands

- F5 Move the cursor ahead “nn” characters from current cursor position. **Syntax = F5nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)
- F6 Move the cursor back “nn” characters from current cursor position. **Syntax = F6nn** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)
- F7 Move the cursor to the beginning of the data string. **Syntax = F7**.
- EA Move the cursor to the end of the data string. **Syntax = EA**

Search Commands

- F8 Search ahead for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F8xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B))
- F9 Search back for “xx” character from current cursor position, leaving cursor pointing to “xx” character. **Syntax = F9xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B)).
- E6 Search ahead for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E6xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B)).
- E7 Search back for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. **Syntax = E7xx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart](#) (Appendix B)).

Miscellaneous Commands

- 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. (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Appendix B\)](#))
FC Disables suppress filter and clear all suppressed characters. **Syntax = FC.**

E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. **Syntax = E4nnxx₁xx₂yy₁yy₂...zz₁zz₂** where nn is the total count of both characters to be replaced plus replacement characters; xx₁ defines characters to be replaced and xx₂ defines replacement characters, continuing through zz₁ and zz₂.

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

FE Compare character in current cursor position to the character "xx." If characters are equal, increment cursor. If characters are not equal, no format match. **Syntax = FExx** (xx stands for the hex value for an ASCII code, see [ASCII Conversion Chart \(Appendix B\)](#)).

EC Check to make sure there is an ASCII number at the current cursor position. If character is not numeric, format is aborted. **Syntax = EC.**

ED Check to make sure there is a non-numeric ASCII character at the current cursor position. If character is numeric, format is aborted. **Syntax = ED.**

Data Format Editor



Enter Data Format



Clear One Data Format



Save



* Default Data Format



Clear All Data Formats



Discard

Data Formatter

When Data Formatter is turned off, the bar code data is output to the host as read (including prefixes and suffixes). Choose one of the following options. *Default = Data Formatter On, but Not Required.*



* Data Formatter On,
but Not Required



Data Formatter Off

When Data Formatter is required, all input data must conform to an edited format or the imager does not transmit the input data to the host device.



Data Format On, Format Required

Symbologies

This programming section contains the following menu selections.

- All Symbologies
- Australian Post
- Aztec Code
- British Post
- Canadian Post
- China Post
- Codabar
- Codablock F
- Code 11
- Code 128
- Code 16K
- Code 2 of 5
- Code 39
- Code 49
- Code 93
- Data Matrix
- EAN/JAN-13
- EAN/JAN-8
- EAN•UCC Composite Codes
- IATA Code 2 of 5
- Interleaved 2 of 5
- Japanese Post
- Kix (Netherlands) Post
- Korea Post
- Matrix 2 of 5
- MaxiCode
- MicroPDF417
- MSI
- PDF417
- Planet Code
- Plessey Code
- PosiCode A and B
- Postnet
- QR Code
- RSS Expanded
- RSS Limited
- RSS-14
- TCIF Linked Code 39 (TLC39)
- Telepen
- UPC-A
- UPC-A/EAN-13 with Extended Coupon Code

All Symbologies

If you want to decode all the symbologies allowable for your imager, 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.



All Symbologies On



All Symbologies Off

Message Length Description

You are able to set the valid reading length of some of the bar code symbologies. If the data length of the scanned bar code doesn't match the valid reading length, the imager will issue an error beep. You may wish to set the same value for minimum and maximum length to force the imager 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 = 09
Max. length = 20 **EXAMPLE:** Decode only those bar codes with a count of 15
characters. Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the 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 \(Appendix D\)](#). The minimum and maximum lengths and the defaults are included with the respective symbologies.

Codabar

<Default All Codabar Settings>



Codabar



* On



Off

Codabar Start/Stop Characters

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



Transmit



* Don't Transmit

Codabar Check Character

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

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

When Check Character is set to **Validate and Transmit**, the imager 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.



* No Check Character



Validate Modulo 16, but
Don't Transmit



Validate Modulo 16
and Transmit

Codabar Concatenation

Codabar supports symbol concatenation. When you enable concatenation, the imager 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. Default = On.

Character Start Stop Start Stop

Codabar



A12D

D34A

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



* On



Off



Require

Codabar Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 2-60.
Minimum Default = 4, Maximum Default = 60.



Minimum Message Length



Maximum Message Length

Code 39

< Default All Code 39 Settings >



Code 39



* On



Off

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.*



Transmit



* Don't Transmit

Code 39 Check Character

No Check Character indicates that the imager 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 imager 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.*



* No Check Character



Validate, but Don't Transmit



Validate and Transmit

Code 39 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Code 39 Append

This function allows the imager to append the data from several Code 39 bar codes together before transmitting them to the host computer. When this function is enabled, the imager stores those Code 39 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The imager stores the data in the order in which the bar codes are read, deleting the first space from each. The imager transmits the appended data when it reads a Code 39 bar code that starts with a character other than a space. Default = Off.



On



* Off

Code 32 Pharmaceutical (PARAF)

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

Note: Trioptic Code must be turned off while scanning Code 32 Pharmaceutical codes.



On



* Off

FULL ASCII

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 = On.

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

Interleaved 2 of 5 (or I 2 of 5)

< Default All Interleaved 2 of 5 Settings >



Interleaved 2 of 5



* On



Off

Check Digit

No Check Digit indicates that the imager 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 imager 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.



* No Check Digit



Validate, but Don't Transmit



Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 93

< Default All Code 93 Settings >



Code 93



* On



Off

Code 93 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 2 of 5

<Default All Code 2 of 5 Settings>



Code 2 of 5



On



* Off

Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

IATA Code 2 of 5

<Default All Code IATA 2 of 5 Settings>



IATA Code 2 of 5



On



* Off

IATA Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>



Matrix 2 of 5



On



* Off

Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-80.
Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 11

<Default All Code 11 Settings>



Code 11



On



* Off

Check Digits Required

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



One Check Digit



* Two Check Digits

Code 11 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-80.
Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Code 128

<Default All Code 128 Settings>



Code 128



* On



Off

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. Minimum and Maximum lengths = 0-80.
Minimum Default = 0, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Telepen



* AIM Telepen Output



Original Telepen Output

Telepen Output

Using AIM Telepen Output, the imager 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 imager reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2). Default = AIM Telepen Output.



* AIM Telepen Output



Original Telepen Output

Telepen Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-60.
Minimum Default = 1, Maximum Default = 60.



Minimum Message Length



Maximum Message Length

UPC-A

<Default All UPC-A Settings>



UPC-A



* On



Off

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.



* On



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.



* On



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.



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

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.



* On



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. Default = On.



* On



Off

UPC-E0

<Default All UPC-E Settings>



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



* UPC-E0 On



UPC-E0 Off

UPC-E0 Expand

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



On



* Off

UPC-E0 Addenda Required

When Addenda Required is set to on, the imager will only read UPC-E bar codes that have addenda. Default = Not Required.



Required



* 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

EAN/JAN-13

<Default All EAN/JAN Settings>



EAN/JAN-13



* On



Off

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 Addenda 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 Addenda Required is set to on, the imager will only read EAN/JAN-13 bar codes that have addenda. *Default = Not Required.*



Required



* 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.



* On



Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code

ISBN Translate

This selection causes EAN-13 Bookland symbols to be translated into their equivalent ISBN number format.
Default = Off.



On



* Off

EAN/JAN-8

<Default All EAN/JAN-8 Settings>



EAN/JAN-8



* On



Off

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.*



* On



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.



2 Digit Addenda On



* 2 Digit Addenda Off



5 Digit Addenda On



* 5 Digit Addenda Off

EAN/JAN-8 Addenda Required

When Addenda Required is set to on, the imager will only read EAN/JAN-8 bar codes that have addenda. *Default = Not Required.*



Required



* 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.



* On



Off

RSS-14

< Default All RSS-14 Settings >



RSS-14



* On



Off

RSS Limited

< Default All RSS Limited Settings >



RSS Limited



* On



Off

RSS Expanded

< Default All RSS Expanded Settings >



RSS Expanded



* On



Off

RSS Expanded Message Length

Scan the bar codes below to change the message length.
Minimum and Maximum lengths = 0-80. Minimum Default = 4,
Maximum Default = 74.



Minimum Message Length



Maximum Message Length

PosiCode

<Default All PosiCode Settings>



PosiCode A and B



* On



Off

You have to have PosiCode A and B on to read any of the PosiCode symbologies.



A and B On
(No Limited)



A and B and Limited A On
(Limited B Off)



* A and B and Limited B On
(Limited A Off)

PosiCode Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes (page 8-8), Trioptic Code must be off.

Trioptic Code is used for labeling magnetic storage media.



On



* Off

Codablock F

<Default All Codablock F Settings>



Codablock F



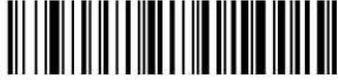
On



* Off

Codablock F Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.



Minimum Message Length



Maximum Message Length

Code 16K

<Default All Code 16K Settings>



Code 16K



On



* Off

Code 16K Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 0-160. Minimum Default = 1, Maximum Default = 160.



Minimum Message Length



Maximum Message Length

Code 49

<Default All Code 49 Settings>



Code 49



* On



Off

Code 49 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-81. Minimum Default = 1, Maximum Default = 81.



Minimum Message Length



Maximum Message Length

PDF417

< Default All PDF417 Settings >



PDF417



* On



Off

PDF417 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-2750.
Minimum Default = 1, Maximum Default = 2750.



Minimum Message Length



Maximum Message Length

MicroPDF417

< Default All MicroPDF417 Settings >



MicroPDF417



* On



Off

MicroPDF417 Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.



Minimum Message Length



Maximum Message Length

EAN•UCC Composite Codes

Linear codes are combined with a unique 2D composite component to form a new class called EAN•UCC Composite symbology. EAN•UCC Composite symbologies allow for the co-existence of symbologies already in use.



On



* Off

UPC/EAN Version

Scan the **UPC/EAN Version On** bar code to decode EAN•UCC Composite symbols that have a UPC or EAN linear component. (This does not affect EAN•UCC Composite symbols with a UCC/EAN-128 or RSS linear component.)



UPC/EAN Version On



* UPC/EAN Version Off

EAN•UCC Composite Code Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.



Minimum Message Length



Maximum Message Length

EAN•UCC Emulation

The imager can automatically format the output from any EAN•UCC data carrier to emulate what would be encoded in an equivalent UCC/EAN-128 or RSS and Composite symbol. EAN•UCC data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, UCC/EAN-128, and EAN•UCC RSS and Composites. Data from 2D symbols such as Aztec Code, Data Matrix, or QR Code, which encode a leading FNC1, also invoke EAN•UCC emulation. If UCC/EAN-128 Emulation is selected, the AIM Symbology Identifier is reported as “jC1”. If RSS Emulation is selected, the AIM Symbology Identifier is reported as “je0.” Any application that accepts EAN•UCC data can be simplified since it only needs to recognize one data carrier type. Default = No Emulation.



RSS Emulation



128 Emulation



* EAN•UCC 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.



On



* Off

Postal Symbolologies

Postal Codes

Note: For best performance when reading a postal symbology, all other postal symbologies should be turned off.

Postnet



On



* Off

Planet Code



On



* Off

British Post



On



* Off

Canadian Post



On



* Off

Kix (Netherlands) Post

Note: Kix code can misread when scanned sideways or upside down. Use Working Orientation, if your Kix codes will not usually be presented upright to the scanner.



On



* Off

Australian Post



On



* Off

Japanese Post



On



* Off

China Post

<Default All China Post Settings>



China Post



On



* Off

China Post Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 0-80.
Minimum Default = 4, Maximum Default = 80.



Minimum Message Length



Maximum Message Length

Korea Post

<Default All Korea Post Settings>



Korea Post



On



* Off

Korea Post Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 2-80.
Minimum Default = 4, Maximum Default = 48.



Minimum Message Length



Maximum Message Length

2D Matrix Symbologies

QR Code

< Default All QR Code Settings >



QR Code



On



* Off

QR Code Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-3500. Minimum Default = 1, Maximum Default = 3500.



Minimum Message Length



Maximum Message Length

Data Matrix

< Default All Data Matrix Settings >



Data Matrix



* On



Off

Data Matrix Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-1500.
Minimum Default = 1, Maximum Default = 1500.



Minimum Message Length



Maximum Message Length

MaxiCode

< *Default All MaxiCode Settings* >



MaxiCode



On



* Off

MaxiCode Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-150.
Minimum Default = 1, Maximum Default = 150.



Minimum Message Length



Maximum Message Length

Aztec Code

< Default All Aztec Code Settings >



Aztec Code



* On



Off

Aztec Code Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-3750.
Minimum Default = 1, Maximum Default = 3750.



Minimum Message Length



Maximum Message Length

Aztec Runes

Select **Enable Runes** if you are scanning Aztec runes, which are the smallest type of Aztec Code symbol with the ability to encode a very short license plate message.



Enable Runes



* Disable Runes

OCR Programming

Use this section to program the Imager for optical character recognition (OCR). The 2D OEM Engine reads 6 to 60 point OCR typeface.

Note: OCR is not as secure as bar codes. To enhance security in OCR applications, create an OCR template to match the data, and print an OCR check character.

The 2D OEM Engine will read the following fonts:

- OCR-A

0123456789 ABCDEFGHIJKLMNOPQRSTUVWXYZ
() < > / \ + - * \$

- OCR-B

0123456789 ABCDEFGHIJKLMNOPQRSTUVWXYZ
() < > ^ + - * \$

- U.S. Currency Serial Number (Money)

I 07700277 F
*

- MICR E 13 B

0 1 2 3 4 5 6 7 8 9 ! : ; ' " #

- SEMI Font

ABCDEFGHIJKLMNOPQRSTUVWXYZ - . 0123456789

OCR

Default All OCR Settings turns off all OCR capability in the imager, so the imager will be able to scan linear, stacked, matrix, and composite bar codes, but not OCR fonts. In addition, any OCR templates you have created are erased. The 8 digit default templates are reinstated for any future use of the **OCR On** codes listed below.

< *Default All OCR Settings* >



OCR

Note: OCR symbols can misread when scanned sideways or upside down. Use [Working Orientation](#) if your OCR symbols will not usually be presented upright to the scanner.

Only one OCR symbology can be read at a time.

OCR-A On allows you to scan characters in the OCR-A font. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 82).



OCR-A On

OCR-B On allows you to scan characters in the OCR-B font. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned (see [Creating an OCR Template](#), page 82).



OCR-B On

U.S. Currency

U.S. Currency On allows you to scan characters in the font used on U.S. currency. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned.



U.S. Currency On

MICR E13 B

MICR E13 B On allows you to scan MICR characters on a bank check. The default setting allows you to scan any 8 digit combination. If you have created an OCR template, character combinations that fit the template can be scanned.



MICR E 13 B On

SEMI Font

SEMI Font On allows you to scan the SEMI font used in the semiconductor industry.



SEMI Font On

All OCR Off turns off all OCR capability in the imager, so the imager will be able to scan linear, stacked, matrix, and composite bar codes, but not OCR fonts. However, any OCR templates you have created will be retained in memory.



* All OCR Off

Creating OCR Templates

You can create a custom “template,” or character string that defines the length and content of OCR strings that will be read with your imager. There are several choices when creating a custom template for your application. You can create a template for a single format, you can string together several formats, and you can create a template for a user-defined variable. These choices are described in detail below.

Creating an OCR Template

A single template allows you to program the imager to read any combination of characters in the order you specify. Refer to examples that follow the Template Characters table below.

Template Characters

a	represents any alphanumeric character (digit or letter)
c	represents a check character position
d	represents any digit
e	represents any available OCR character
g	represents character from user-defined variable “g”
h	represents character from user-defined variable “h”
l	represents any uppercase letter
t	marks the start of a new template
r	multi row indicator
All other characters represent themselves. Spaces can be used.	

To Add an OCR Template

1. Begin building the template. Scan the **Enter OCR Template** symbol.
2. Scan the characters for the string. Use the Template Characters chart above to determine what characters you need to create your format. Use the OCR Programming Chart (after the Sample Codes in Appendix D) to scan the characters for your template.

Example A: You need to read any combination of 8 digits. The template would be:

ddddddd

To create this template, you would scan the **Enter OCR Template** symbol, then scan the **d** from the OCR Programming Chart after the Sample Codes (in Appendix D) 8 times. Scan **Save OCR Template**. This would let you read any string of 8 digits, for example:

37680981

3. Character Match Sequences On the [ASCII Conversion Chart \(Appendix B\)](#), find the Hex value that represents the character(s) you want to match. Use the Programming Chart (Appendix D) to scan the numbers that represent these characters.

Example B: You need to read 3 digits, 3 specific characters (ABC), 3 digits. The template would be:

ddd414243ddd



hex codes for
letters A, B, and C

To create this template, you would scan the **Enter OCR Template** symbol, scan the **d** from the [Sample Symbols](#) (see Appendix D) 3 times, scan **414243** from Appendix D (the hex characters for “A,” “B,” and “C”), then scan the **d** from Appendix D 3 more times. Scan **Save OCR Template**. This would let you read any string of 3 digits, “ABC,” then any string of 3 digits, for example:

551ABC983

4. Adding Spaces You may also need to put spaces in your template.

Example C: You need to read 3 digits, space, 3 specific characters (ABC), space, 3 digits. The template would be:

ddd2041424320ddd
↓ ↓
hex code for a space

To create this template, you would scan the **Enter OCR Template** symbol, scan the **d** from the OCR Programming Chart after the Sample Codes in the back of this manual 3 times, scan **2041424320** from the Programming Chart in Appendix D (the hex characters for “space,” “A,” “B,” “C,” “space”), then scan the **d** from Appendix D 3 more times. Scan **Save OCR Template** (page 80). This would let you read any string of 3 digits, space, “ABC,” space, then any string of 3 digits, for example:

551 ABC 983

Note: If using Quick*View to program, use the space bar to designate a space and not the hex value of 20.

5. Exit OCR Template Editor Scan **Save OCR Template** to save your entries. **Discard OCR Template** exits without saving any OCR Template changes.

Stringing Together Multiple Formats (Creating “Or” Statements)

You may want to program the imager to accept many OCR formats. To do this, you would string together each format with a “t.” This tells the imager to read optical characters that match any one of the formats in the template.

Example D: You need to read any combination of 8 digits, ora combination of 4 digits, 2 uppercase letters, and 2 digits. The template would be:

dddddddtdddlldd

To create this template, you would scan the **Enter OCR Template** symbol (page 80), scan the **d** from the OCR Programming Chart after the Sample Codes in the back of this manual 8 times, then scan the **t** to create the “or” statement. Then you would scan the characters for the 2nd template. Scan the **d** 4 times, scan **l** 2 times, then scan **d** 2 more times. Scan **Save OCR Template** (page 80). This would let you read either type of format, for example:

99028650

or

9902XZ50

You can string together as many templates as you need.

Creating a User-Defined Variable

You can create up to two of your own user variables for an OCR template. These variables will represent any OCR readable characters. The user-defined variables are stored under the letters "g" and "h." Creating a user variable follows the same steps as creating a template, but instead of scanning the **Enter OCR Template** symbol, you scan the **Enter User-Defined Variable** symbol. The letters g and h can then be used in an OCR template to define the variable you specified.

Example E: You need a variable to represent the letters "A," "B," or "C." The template for this variable would be:

414243

To create the template, you would scan the **Enter User-Defined Variable g** symbol. Scan **414243** from Appendix D (the hex characters for "A," "B," and "C"). Scan **Save OCR Template**. This will let you read either A or B or C in any position where you place the g. For example, you could create the following template:

ddddddggg

This template would then let you read data that began with 6 digits, and had an A, B, or C trailing. So you would be able to read:

654321ABC

or

654321BAC

or

654321CCC

Reading Multi-Row OCR

The OEM Engine is capable of decoding multi-row OCR text. Consider the following example. This example shows serial commands as would be entered using Quick*View.

Example G: You need to read multiple rows of OCR data as shown below:

12345678 ABCDEFGH

To read the first row of OCR data, you would menu the following template:

OCRTMP"ddddddd".

This template is the default OCR template. If you wanted to read the second line of data, you would use the following template:

OCRTMP"IIIIIIII".

To read both lines of OCR at one time, use the variable **rto** to indicate the start of a new row. All of the other templating variables for the individual rows work the same as previously described. For instance, in the above example, you would use the following template to read both rows:

OCRTMP"dddddddrIIIIIIII".

To read the three rows below, you would use the template command "OCRTMP"dddddddrIIIIIIIIrIIIIIIII".

12345678
ABCDEFGH
ABCD1234

Adding an OCR Check Character

You may want to print and verify a check character in order to enhance the security of your OCR application. The OEM Engine can be programmed for almost any type of check character. A number of presets are provided for common check character uses (e.g., modulo 10 and modulo 36).

Scan the **OCR Modulo 10** or **OCR Modulo 36 Check Character** bar code to specify the type of check character used in the OCR strings you're scanning. The imager will then only read OCR character strings with a valid check character. The OEM Engine transmits the OCR data without the check character data. You must specify the location of the check character in the template with a **c**.

Example F: You need to read any combination of 7 digits, with a modulo 10 check character in the 8th position. The template would be:

dddddddc

To create this template, you would scan the **Modulo 10 Check Character** symbol. Then scan the **Enter OCR Template** symbol, scan the **d** from Appendix D 7 times, and scan the **c** once. Scan **Save OCR Template**. This template will let you read any combination of 6 digits with a correct check character after. (If the check character is invalid, the imager will issue an error beep.) For example, the following string could be scanned:

01234569

and the output would be: 0123456

OCR Modulo 10 Check Character

Scan this symbol to program the OCR template for a simple modulo 10 checksum of the digits 0 through 9.



OCR Modulo 10 Check Character

OCR Modulo 36 Character Set

Scan this symbol to program the OCR template for a simple modulo 36 checksum of the digits 0 through 9 and the letters A through Z.



OCR Modulo 36 Check Character

OCR Template Codes

Note: Reading more than three rows of OCR is not recommended. Contact the factory if you have an application that requires reading 4 or more rows of OCR.



Enter OCR Template †



Enter User-Defined
Variable "g" †



Enter User-Defined
Variable "h" †

† One or more two-digit numbers and **Save** are required after reading this programming symbol. Refer to the [Programming Chart](#) in Appendix D of this manual.

Exit Selections



Save OCR Template



Discard OCR Template

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

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



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

Show Software Revision

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



Show Revision

Show Data Format

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



Data Format Settings

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your imager, or you've changed some options and want the standard product default settings restored, scan the **Standard Product Default Settings** bar code below.



Standard Product Default Settings

Test Menu

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



On



* Off

Quick*View

Quick*View is a Microsoft Windows program that displays decoded symbol messages and captures images (for instance, ID photographs) from the OEM Engine. Bar code information and images are displayed in the Quick*View window.

Temporary Quick*View Configuration

For a quick download communication configuration, scan the Quick*View bar code and the imager will be temporarily configured for Quick*View settings.

Note: Scan the bar code below and the unit will communicate in RS-232 mode, allowing it to work with Quick*View. To convert the imager back to the original settings, cycle the power.



Visual Menu 2003

APPENDIX A: Symbology Chart

Symbology	AIM ID	Possible AIM ID Modifiers (m)	HHP Code ID (hex)
All Symbologies			(0x99)
Australian Post	JX0		A (0x41)
Aztec Code	jzm	0-9, A-C	z (0x7A)
British Post	JX0		B (0x42)
Canadian Post	JX0		C (0x43)
China Post	JX0		Q (0x51)
Codabar	JFm	0-1	a (0x61)
Codablock F	JOm	0, 1, 4, 5, 6	q (0x71)
Code 11	JH3		h (0x68)
Code 128	JCm	0, 1, 2, 4	j (0x6A)
Code 16K	JKm	0, 1, 2, 4	o (0x6F)
Code 32 Pharmaceutical (PARAF)	JX0		< (0x3C)
Code 39	JAm	0, 1, 3, 4, 5, 7	b (0x62)
Code 49	JTm	0, 1, 2, 4	l (0x6C)
Code 93 and 93i	JGm	0-9, A-Z, a-m	i (0x69)
Data Matrix	jdm	0-6	w (0x77)
EAN- 13	JE0		d (0x64)
EAN- 8	JE4		D (0x44)
EAN•UCC Composite	Jem	0-3	y (0x79)
EAN-13 with Extended Coupon Code	JE3		d (0x64)
Interleaved 2 of 5	JIm	0, 1, 3	e (0x65)
Japanese Post	JX0		J (0x4A)
KIX (Netherlands) Post	JX0		K (0x4B)
Korea Post	JX0		? (0x3F)
Matrix 2 of 5	JX0		m (0x6D)
MaxiCode	JUm	0-3	x (0x78)

Symbology	AIM ID	Possible AIM ID Modifiers (m)	HHP Code ID (hex)
MICR E 13 B	JZE		" (0x22)
MicroPDF417	JLm	3-5	R (0x52)
MSI	JMm	0	g (0x67)
OCR-A	Jo1		O (0x4F)
OCR-B	Jo2		O (0x4F)
OCR US Money Font	Jo3		O (0x4F)
SEMI Font	Jo3		O (0x4F)
PDF417	JLm	0-2	r (0x72)
Planet Code	JX0		L (0x4C)

Plessey Code	JP0		n (0x6E)
PosiCode	jpm	0, 1, 2	W (0x57)
Postnet	JX0		P (0x50)
QR Code	JQm	0-6	s (0x73)
Reduced Space Symbology (RSS-14, RSS Limited, RSS Expanded)	Jem	0	y (0x79)
Straight 2 of 5 IATA (two-bar start/stop)	JRm	0, 1, 3	f (0x66)
TCIF Linked Code 39 (TLC39)	JL2		T (0x54)
Telepen	JBm	0, 1, 2, 4	t (0x74)
Trioptic Code	JX0		= (0x3D)
UCC/EAN-128	JC1		l (0x49)
UPC-A	JE0		c (0x63)
UPC-A with Extended Coupon Code	JE3		c (0x63)
UPC-E	JE0		E (0x45)
VeriCode	JX0		v (0x76)

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

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

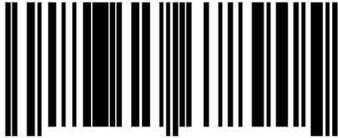
Refer to [Data Editing](#) and [Data Formatting](#) for information about using Code ID and AIM ID.

APPENDIX B: ASCII Conversion Chart

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20		64	40	@	96	60	'
		SOH	33	21	!	65	41	A	97	61	a
		STX	34	22	"	66	42	B	98	62	b
		ETX	35	23	#	67	43	C	99	63	c
		EOT	36	24	\$	68	44	D	100	64	d
		ENQ	37	25	%	69	45	E	101	65	e
		ACK	38	26	&	70	46	F	102	66	f
		BEL	39	27	'	71	47	G	103	67	g
		BS	40	28	(	72	48	H	104	68	h
		HT	41	29	)	73	49	I	105	69	i
	0A	LF	42	2A	*	74	4A	J	106	6A	j
	0B	VT	43	2B	+	75	4B	K	107	6B	k
	0C	FF	44	2C	,	76	4C	L	108	6C	l
	0D	CR	45	2D	-	77	4D	M	109	6D	m
	0E	SO	46	2E	.	78	4E	N	110	6E	n
	0F	SI	47	2F	/	79	4F	O	111	6F	o
	10	DLE	48	30	0	80	50	P	112	70	p
	11	DC1	49	31		81	51	Q	113	71	q
	12	DC2	50	32		82	52	R	114	72	r
	13	DC3	51	33		83	53	S	115	73	s
	14	DC4	52	34		84	54	T	116	74	t
	15	NAK	53	35		85	55	U	117	75	u
	16	SYN	54	36		86	56	V	118	76	v
	17	ETB	55	37		87	57	W	119	77	w
	18	CAN	56	38		88	58	X	120	78	x
	19	EM	57	39		89	59	Y	121	79	y
	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
	1B	ESC	59	3B	;	91	5B	[	123	7B	{
	1C	FS	60	3C	<	92	5C	\	124	7C	|
	1D	GS	61	3D	=	93	5D	]	125	7D	}
	1E	RS	62	3E	>	94	5E	^	126	7E	~
	1F	US	63	3F	?	95	5F	_	127	7F	

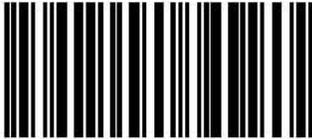
APPENDIX C – Sample Symbols

UPC-A



0 123456 7890

Interleaved 2 of 5



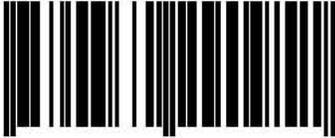
1234567890

Code 128



Code 128

EAN-13



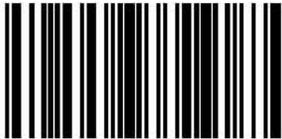
9 780330 290951

Code 39



BC321

Codabar



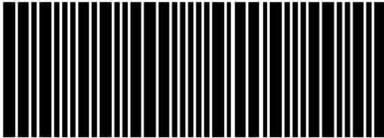
A13579B

Code 93



123456-9\$

Code 2 of 5



123456



6543210

PDF417



Car Registration

Code 49



1234567890

QR Code



Numbers

RSS-14



(01)00123456789012

Postnet



Zip Code

Data Matrix



Test Symbol

OCR-A Sample

55836540

OCR-B Sample

55836540

APPENDIX D – Programming Charts

OCR Programming Chart



a



c



d



e



g



h



l



r



t

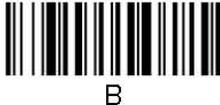


Save



Discard

APPENDIX D – Programming Charts



APPENDIX D – Programming Charts



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