



Leitor Argox AS-9500 Imager

O novo Leitor de Código de Barras Manual Argox AS-9500g Imager 2D é pequeno, leve, portátil e fácil de usar. Além de fazer a leitura de todos os tipos de código de barra, ele também lê códigos bidimensionais, Maxi Code, Data Matrix, Aztec, Qr Code e vários outros.

www.bztech.com.br



NOTICE:

<p>FCC: This device complies with Part 15 of the FCC Rules, (1) This device may not cause harmful interface, and (2) This device must accept any interface received, including interface that may cause undesirable operation.</p> <p>CE: This product conforms to the following standards EMC:EN55022:2006+A1:2007, class B EN55024:1998+A1:2001+A2:2003</p> <p>BSMI: This device is compliant with requirement of BSMI and granted ID No. R3A078</p>

These limits are designed to provide a reasonable protection against harmful interface when the equipment is operated under a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interface to radio communications. Operation of this equipment in a residential area is likely to cause harmful interface in which case the user will be required to correct the interface at his /her own expenses.

Note: All brands and trademarks shall belong to their respective owner.

Note: Specification is subject to changes without notice.

Using the ArgoxScan 9500

The ArgoxScan automatically scan barcode at a distance.

Simply aim and pull the trigger. Code scanning is performed along the center of the light bar emitted from the reading window. This bar must cover the entire code.

Successful scanning shall be obtained by tilting the scanner with respect to the barcode to avoid direct reflections that impair the reading performance, especially for 2D barcode.

Recommended Steps

When the required settings have been configured, all settings are stored in non- volatile memory of scanner after reading configuration barcodes. Label. Recommended steps are as follows.

- 1) Set right host interface for your scanner.
- 2) Set interface to optimize protocol of scanner with your host in interface section.
- 3) Set system control of scanner, such as specific adjustments double confirm, power saving, indicator and scanning mode which you prefer usage in system control section.
- 4) Set code options of scanner for your usage in code option section. You must make sure to enable the symbology first, then Min./Max. code length, code ID checksum and truncate digits are also converted.
- 5) Set string format of the scanner, such as preamble, postamble Prefix, suffix, code ID and code name transmission for your application in string format section.

Note: If still not work properly. Please contact your dealer for further information.

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Introduction

Installation

RS-232

- 1) Disconnect power to the terminal/computer.
- 2) Connect the external power supply (DC adapter) to the serial interface cable of the scanner.
- 3) Plug the serial connector into the serial port on the back of your computer/terminal. Tighten the two screws to secure the connector to the port.
- 4) Plug the power pack into power source.
- 5) Once the scanner has been fully connected, turn the terminal / computer power back on.

USB (HID)

- 1) Connect the USB cable between scanner and PC.
- 2) Windows will automatically detect the USB device.

USB (Virtual-COM)

- 1) Install driver, USB Virtual COM Driver, from CD-ROM, The driver will use the next available COM port number
- 2) Connect the USB cable between scanner and PC.
- 3) Windows will automatically detect the USB device.

Note: If any of the above operation is incorrect, turn off the power immediately and check any improper connections. Go through all above steps again

Default Setting

For each barcode shown as below:

V = Enabled as default setting

- = Not supported

Empty space = Not enabled at default setting

Code Type	Read Enable	Checksum Verification Enable	Checksum Transmission Enable	Code ID
UPC-A	V	V	V	c
UPC-E0	V	V	V	E
UPC-E1				E
EAN-13	V	V	V	d
EAN-8	V	V	V	D
Code-32				<
Code-39	V			b
TCIF Linked Code 39				T
Code-49				I
Interleaved 2 of 5	V			e
Industrial 2 of 5		-	-	e
Straight 2 of 5 IATA				f
Straight 2 of 5 Industrial				f
Matrix 2 of 5				m
Codabar	V			a
Code-128	V			j
Code-93	V			i
Code-11		V two digits		h
Telepen				t
MSI				g
Plessey				n

GS1 DataBar Omnidirectional	V	-	-	y
GS1 DataBar Limited	V	-	-	y
GS1 DataBar Expanded	V	-	-	y
PosiCode A&B	V			W
Codablock F				q
Code 16K				o
Code 49	V			I
PDF 417	V			r
MicroPDF 417	V			R
EAN UCC Composite				y
Postnet				P
Planet Code				L
British Post				B
Canada Post				C
Kix Post (Netherlands)				K
Australian Post				A
Japanese Post				J
China Post				Q
Korea Post				?
QR Code	V			O
Data Matrix	V			w
MaxiCode	V			x
Aztec Code	V			z
Aztec Runes				z

AS-9500 Specification

ArgoScan 9500 series				
Specification	AS-9500g	AS-9500HD	AS-9500L	
Operational				
Light Source	626 nm \pm 30 nm Visible Red LED			
Aiming Source	526 nm \pm 30 nm Visible Green LED			
Optical System	752 x 480 CMOS sensor			
Motion Tolerance	4 inches / sec			
Depth of Scan Field (PCS=90%,10 mils, 1D : Code 39)	37~175 mm	33~102mm	67~176mm	
Depth of Scan Field (PCS=90%,10 mils, 2D : QR Code)	62~137 mm	34~101mm	85~168mm	
Resolution	1D	5mil	4mil	6.6mil
	2D	8.3mil	6.7mil	15mil
Print Contrast	25% or more			
Focal Point (from lens plate)	114 mm	114mm	114mm	
Scanning Angle	Pitch: \pm 40° Skew: \pm 40°			
Rotational Sensitivity	360°			
Decode Capability	Auto-discriminates all standard barcodes; Other symbologies can be ordered optionally			
Beeper Operation	Volume x 3 and Frequency x 3 or no beep			
Indicator	Blue led, vibrator, and adjustable beeper			
Mechanical				
Length	165.1 mm			

Width-handle	32 mm	
Width-head	72.8 mm	
Depth-handle	54.7 mm	
Depth-head	82.5 mm	
Weight	146 g	
Cable	Straight 2.0 m	
Connector type	RJ-45 phone jack connector	
Case material	ABS and Rubber	
Electrical		
Input Voltage	3.7 ~ 5.5 VDC	
Power	RS232	USB HID
Operating	Max 350mA @ 5V	
Standby	Max 65mA@ 5V	Max 60mA@ 5V
Low Power Mode	Max 40mA@5V	*
Agency listing	EMI: FCC, CE, BSMI Safety: UL, BSMI, CB	
Environmental		
Operating Temperature	0°C to 50°C (32°F to 122°F)	
Storage Temperature	-20°C to 60°C (-4°F to 140°F)	
Humidity	Up to 95% relative humidity, non-condensing @ 50°C	
Light Level	Dark to 100,000 Lux.	
Shock	24 drops from 1.8 m to concrete	
Resistance	IP 42	
Contaminants	Seals to resist airborne particulate contaminants	
Ventilation	None required	

Programming	
Programming method	1. Executing DOS Command by RS-232 or USB Virtual COM. 2. A scanner reads the programming codes.
Program upgrade	Enabled built-in flash memory
Programmable characteristics	Code type selection, check digit selection Decoding option Decoding option Transmitted character delay, Header selection, trailer selection, message suffix, good read beep tone and volume, scanner trigger selection Keyboard emulation type (intermessage delay, keyboard type and keyboard language) Serial interface type (ACK/NAK, Xon/Xoff, RTS/CTS, good read LED control, start/stop bits)

Reading Skills of AS-9500

The engine has a view finder that projects a bright red or green aiming beam that corresponds to the engine's horizontal field of view. The aiming beam should be centered over the bar code, but it can be positioned in any direction for a good read.

Linear bar code



2D Symbol



The aiming beam is smaller when the engine 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 Linear bar code 2D Matrix symbol (on a page or on an object), hold the engine at an appropriate distance from the target, send a trigger command, and center the aiming beam on the symbol. If the code being scanned is highly reflective (e.g., laminated), it may be necessary to tilt the code $+5^\circ$ to prevent unwanted reflection.

Programming AS-9500 Series Scanner

To program the AS-9500, you must scan a series of programming barcodes in the correct order. Fold out the back cover of this manual. You will see a table of alphanumeric barcodes, which are used to program the various options presented.

To program each option, you must:

1. Scan the **Program** barcodes.
2. Enter the option mode by scanning the **option barcodes**
3. The necessary alphanumeric inputs are listed. Scan these alphanumeric entries from the **Program Chart**. To confirm above steps, you must scan the **Save** barcode.

Interface Selection

This decoder built-in scanner comes in one model and supports interfaces such as RS232 serial, USB virtual COM and USB HID. In most of the cases, simply selecting an appropriate cable and configure the proper interface by following interface selection.

Interface selection: You can change factory interface default (USB Virtual COM) for other type interface. By plugging different cables, setting right interface, then scan the interface barcode, power cycle the scanner will be changed to another interface. However, you must make sure which cable you need.



RS-232

Default Setting

Baud Rate 115200 bps

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

Baud Rate



300



600



1200



2400



4800



9600



19200



38400



57600



*115200

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.

Data Format



7 Data, 1 Stop, Parity Even



7 Data, 2 Stop, Parity Odd



7 Data, 1 Stop, Parity None



8 Data, 1 Stop, Parity Even



7 Data, 1 Stop, Parity Odd



8 Data, 1 Stop, Parity None



7 Data, 2 Stop, Parity Even



8 Data, 1 Stop, Parity Odd



7 Data, 2 Stop, Parity None

RS-232

RTS/CTS-If the scanner wants to send the barcode data to host computer, it will issue the RTS signal first, wait for the CTS signal from the host computer, and then perform the normal data communication. If there is no replied CTS signal from the host computer after the timeout (Response Delay) duration, the scanner halts transmission until it detects another active CTS signal.

Xon/Xoff- When the host computer is unable to accept data, it sends a Xoff code to inform the scanner to suspend data transmission, and Xon to continue.

ACK/NAK- When the ACK/NAK protocol is used, the scanner waits for an ACK (acknowledge) or (not acknowledge) from the host computer after data transmission, and will resend in response to a NAK.

Response Delay

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

Handshaking



RTS/CTS On



*RTS/CTS Off



XON/XOFF On



*XON/OFF Off



ACK/NAK On



*ACK/NAK Off



Response Delay

USB HID

Scan the following code to program the AS-9500 for USB HID bar code imagers.



USB HID (PC)



USB HID (MAC)

USB Virtual COM

Scan the following code to program the AS-9500 to emulate a regular RS-232-based COM port. If you are using a PC, you will need to download a driver from CD-ROM, The driver will use the next available COM port number



USB Virtual COM

CTS/RTS Emulation & ACK/NAK Mode



CTS/RTS On



ACK/NAK On

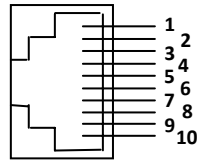


*CTS/RTS Off



*ACK/NAK Off

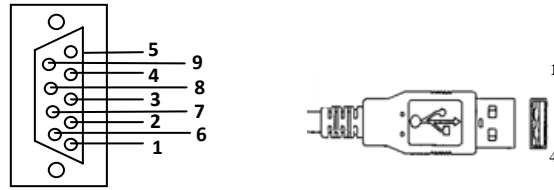
Pin Assignments



10-pin RJ-45 Connector to Scanner Side

Pin	RS-232	USB
1	NC	NC
2	VCC	VCC
3	TXD	TXD
4	NC	NC
5	NC	NC
6	CTS	D+
7	RXD	D-
8	RTS	RTS
9	GND	GND
10	GND	GND

Pin Assignments



Connector to Host Side:

Pin	RS-232	USB
1	NC	+5V
2	TXD	D-
3	RXD	D+
4	NC	GND
5	GND	*
6	NC	*
7	CTS	*
8	RTS	*
9	VCC	*

System Control

Scan

Scanning output:

You can set the image size to a VGA resolution to accommodate older applications that require a smaller image size. When Image VGA is set to On, the resultant image is 640x480 pixels. When Image VGA is Off, the image is 752x480 pixels.

Scanning mode:

Manual/Serial Trigger Mode

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 Trigger, Low Power (For RS-232 only)

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 time-out mode.

Scan

Auto-sense Mode

This programs the imager to work in Auto-sense 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. Auto-sense Mode uses ambient light to detect the bar codes. If the light level in the room is not high enough, Auto-sense Mode may not work properly.

Snap and Ship

Snap and Ship mode allows you to bypass the decoder and ship an image directly to the host. In this mode, an image is taken and shipped upon each trigger pull, instead of being sent to the decoder. Snap and Ship is useful when you are using your own decoder.

Note: Snap and Ship mode only works if the imager is connected via an RS-232 serial port or via a USB keyboard. If you use Snap and Ship when the imager is connected to another interface, it calls the decoder after each image ship, but only to look for menu codes.

Scanning Output



Scanning Mode



Scan

Read Time-Out

Use this selection to set a time-out (in milliseconds) of the imager's trigger if the imager is in manual trigger mode. Once the imager has timed out, you can activate the imager by pressing the trigger. After scanning the **Read Time-Out** bar code, set the time-out duration (from 0-300,000 milliseconds) by scanning digits from the inside back cover, then scanning **Save**. Default = 0 (infinite, or no time-out).

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 the inside back cover, 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.

Auto-sense LED Behavior after Decode

When an imager is in Auto-sense 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.

Auto-sense LED Time-Out

When using Auto-sense LED Behavior after Decode , you may want to set the time the LEDs remain off after a decode. To set the duration of this delay, scan the bar code below, then set the time-out by scanning digits (0 - 9,999 ms) , then scanning **Save**. Once the unit has completed this time-out, it will immediately resume scanning.

Auto-sense Sensitivity

Auto-sense Sensitivity is a numeric range that increases or decreases the imager's reaction time to bar code Auto-sense. 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.

Hands Free Time-Out

The Auto-sense Modes is referred to as “hands free” modes. If the hardware 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 the inside back cover, and **Save**. Default = 5,000 ms.

Read Time out



Auto-sense



LED Time-Out



Indication

Beeper

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.

Volume

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

Frequency

The beeper pitch codes modify the pitch of the beep the imager emits on a good read.

Duration

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

Beeper



*On



Off

Volume



Low



*Medium



High



Extreme Low

Frequency



Low



High



*Medium

Duration



*Normal Beep



Short Beep

LED

The LED indicator can not be programmed **On** or **Off** in response to a good read. If user turned off vibrator and beeper, then the LED indicator will be **Off**. But when either vibrator or beeper is **ON**, then the LED indicator will remain **On** all the time.

Vibrator

The vibrator provides a unique feature to AS-9500 that user can understand whether the data is well scanned and sent to Host PC under an adverse circumstance that the beep sound may not be heard, or a circumstance requiring extreme quiet that the beep sounds are not allowed.

Vibrator



Indication

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. The aiming light can be set using Aimer Modes.

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 the inside back cover, then scanning **Save**. Default = 1 ms.

Reread Delay

This sets the time period before the imager can read the same bar code a second time. Setting a reread delay protects against accidental rereads of the same barcode. Longer delays are effective in minimizing accidental rereads at POS (point of sale). Use shorter delays in applications where repetitive bar code scanning is required. Reread Delay only works when in Auto-sense Mode

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**.

Illumination Light



*Lights On



Lights Off

Imager Time-Out



Imager Time-Out

Reread Delay



Short (500 ms)



*Medium (750ms)



Long (1000 ms)



Extra Long (2000 ms)

User-Specified Reread Delay



User-Specified Reread Delay

Indication

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 activated 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.

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 back cover of this manual, then scan **Save**.

Aimer Modes

Interlaced, the illumination and aiming timing is automatically synchronized to the imager exposure period by the Image Engine. The engine turns illumination on while the image is being exposed, and it turns the aiming off at all other times. The interlaced mode provides the lowest overall current draw and is recommended for most applications. It also provides the brightest aimer in most applications. The Image Engine software automatically maintains an approximate 25% aimer duty cycle, even when the imager exposure time is at its maximum in dark operating environments.

Concurrent is provided for backwards compatibility with the 4X00 Image Engine series, and is not recommended for most applications. In concurrent mode, the illumination LEDs are on continuously, while the aimer LEDs turn off during the imager exposure period, and on while the imager is not exposing. Concurrent mode is used to eliminate any flicker of the illumination LEDs that may be objectionable to the user, especially when running the engine at 12 MHz. The illumination LED current is reduced compared to interlaced mode to limit engine peak current. The image engine software automatically maintains an approximate 25% aimer duty cycle, even when the imager exposure time is at its maximum in dark operating

environments. Concurrent mode provides the brightest appearance of the illumination LEDs of any of the imager operating modes. This mode may be useful for applications when an operator is using the illumination LEDs for aiming, such as in fixed mount, kiosk, or auto trigger applications. Select **Off** if you don't want to use either aimer mode.

Aimer Delay



200Milliseconds



400Milliseconds



*Off (no delay)



Delay Duration

Aimer Modes



Concurrent



*Interlaced



Off

Indication

Number of Beeps

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.

Good Read Delay

This sets the minimum amount of time before the imager can read another bar code. Default = No Delay.

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**.

Number of Beep



Number of Pulses

Good Read Delay



*No Delay



Short Delay (500 ms)



Medium Delay (1,000 ms)



Long Delay (1,500 ms)

User-Specified Good Read Delay



User-Specified Good Read Delay

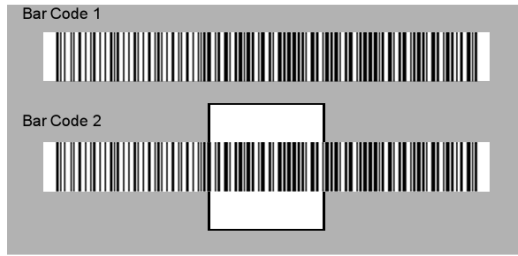
Thermal and Centering

Thermal Considerations

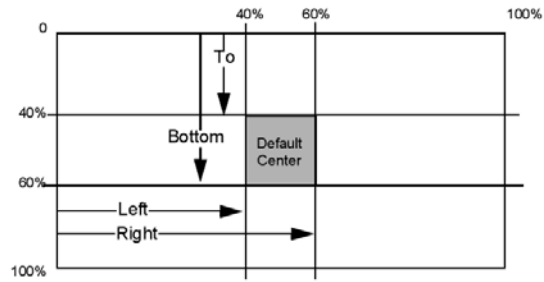
Care must be taken when designing the Image Engine into any system. Internal heating of the Image Engine can occur in high duty cycle scanning applications in several ways. The high visibility aimer dissipates a significant amount of power as heat. The illumination and aiming LEDs also release heat, and are a major contributor to thermal increases in high use or in Auto-sense mode. An increase in temperature around an Image Engine can cause noise levels on the imager, degrading image quality. The thermal rise can also affect the laser diode. In a continuous scanning or high use environment, the Image Engine temperature can rise 15° to 20°C. Under high ambient temperature conditions, the laser diode is at risk of thermal breakdown and possible failure. The image quality and decode performance will also degrade. The Power Control PWM can be used to reduce the effect of the Illumination LEDs on thermal rise, however, this also reduces the intensity of the illumination. Reducing the intensity of the illumination reduces total power used but can also reduce the depth of field in low light environments.

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. (Centering can be used in conjunction with [Aimer Delay](#), for the most error-free operation in applications where multiple codes are spaced closely together. Using the Aimer Delay and Centering features, the imager can emulate the operation of older systems, such as linear laser bar code imagers. 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 128x96 pixel area (640x480 default image size) 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.



Thermal and Centering

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 on the inside back cover of this manual. Scan **Save**. Default Centering = 40% for Top and Left, 60% for Bottom and Right.



Decode Search Mode

There are three selectable decode (scanning) modes:

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

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.

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



Note: This search mode is the default setting for the 2D AS-9500 series Engines.



Note: This search mode is the default setting for the point-and-shoot AS-9500

Output Sequence

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 matches your application requires. Use the Alphanumeric symbols (inside back cover) to read these options.

Note: You must hold the trigger while reading each bar code in the sequence.

To Add an Output Sequence

1. Scan the **Enter Sequence** symbol
2. **Code I.D.**

On the Product Code ID, 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 Chart , 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

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:

SEQBLKsequence 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. **SEQBLK62001241FF6A001342FF69001243FF**

The breakdown of the command line is shown below:

SEQBLK sequence editor start command

62 code identifier for **Code 39**

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

41 start character match for Code 39, 41h = "A"

FF termination string for first code

6A code identifier for **Code 128**

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

42 start character match for Code 128, 42h = "B"

FF termination string for second code

69 code identifier for **Code 93**

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

43 start character match for Code 93, 43h = "C"

FF termination string for third code

Output Sequence

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.

Output Sequence Editor



Enter Sequence



Default Sequence

Require Output Sequence



Required



On/Not Required



*Off

Multiple Symbols

When this programming selection is turned **On**, it allows you to read multiple symbols when the trigger is activated. 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 activated. When this programming selection is turned **Off**, the Imager will only read the symbol closest to the aiming beam.

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.

Multiple Symbols



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



No Read



Print Contrast

Print Contrast 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 Contrast of 6 may improve the reading performance. For consistently light printing, a Print Contrast of 2 may help. After scanning the **Set Print Contrast** bar code, set the Print Contrast (from 1-7) by scanning digits from the inside back cover, then scanning **Save**. Default = 4.

Print Contrast



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.

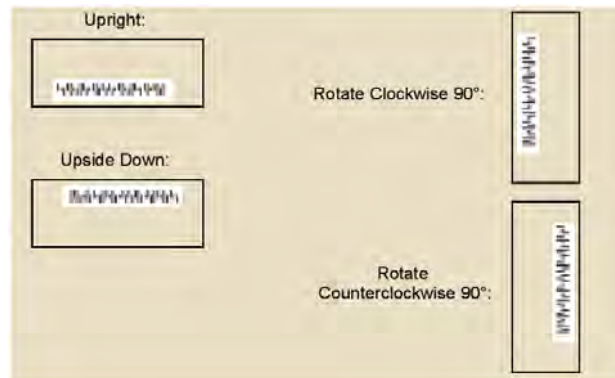
Note: Images downloaded from the unit will not be reversed. This is a setting for decoding only.

Video Reverse



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.



Working Orientation



*Upright



Rotate Clockwise 90



Upside Down



Rotate Counterclockwise 90

Code Option

If you want to decode all the symbologies allowable for your imager, scan the **All Symbologies On** code. 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



All Symbologies On



All Symbologies Off

Message Length Description

You may 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 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. The minimum and maximum lengths and the defaults are included with the respective symbologies


Start/Stop Characters








Start/Stop characters identify the leading and trailing ends of the bar code.

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. **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.

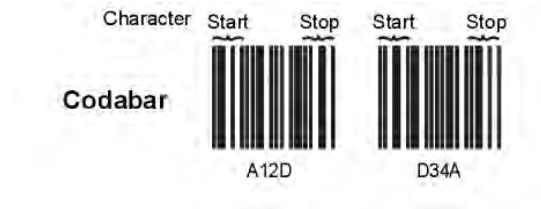

<Default All Codabar Settings>

 *On	 Off
Start /Stop Character  Transmit	 *Don't Transmit
Check Character  *No Check Character	
Validate and Transmit  Validate Modulo 16 and Transmit	 Validate Modulo 16 ,but Don't 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.



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.

Message Length

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

Message Length



On



Off



Require



Minimum Message Length



Maximum Message Length

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.

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.



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.

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.

Code 39



Minimum Message Length



Maximum Message Length



Append On



*Append 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 #.

NUL %U	DLE \$P	\$P	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.

Code 39

Code Page

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



Full ASCII On



*Full ASCII Off



Code 39 Code Page

Code 32

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.

Code 32



On



*Off

Interleaved 2 of 5

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.

Message Length

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



<Default All Interleaved 2 of 5 Settings>



*On



Off



*No Check Digit



Validate , but Don't Transmit



Validate and Transmit



Minimum Message Length



Maximum Message Length

Code 93

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.

Code Page

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



<Default All Code 93 Settings>



*On



Off



Minimum Message Length



Maximum Message Length



Code 93 Code Page

Straight 2 of 5 Industrial

Message Length

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



<Default All Straight 2 of 5 Industrial Settings>



On



*Off



Minimum Message Length



Maximum Message Length

Straight 2 of 5 IATA

Message Length

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



<Default All Straight 2 of 5 IATA Settings>



On



*Off



Maximum Message Length



Minimum Message Length

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.



<Default All Matrix 2 of 5 Settings>



On



Minimum Message Length



*Off



Maximum Message Length

Code 11

Check Digits Required

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

Message Length

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



<Default All Code 11 Settings>



On



*Off



One Check Digit



*Two Check Digits



Minimum Message Length



Maximum Message Length

Code 128

ISBT 128 Concatenation

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.

Message Length

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

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, and scan the value and the **Save**. The data characters should then appear properly. Default = 2.



<Default All Code 128 Settings>



*On



Off



ISBT 128 On



* ISBT 128 Off



Minimum Message Length



Maximum Message Length

Code Page



Code 128 Code Page

Telepen

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.

Message Length

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



<Default All Telepen Settings>



On



*Off



*AIM Telepen Output



Original Telepen Output



Minimum Message Length



Maximum Message Length

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.

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.



<Default All UPC-A Settings>



*On



Off

Check Digit



*On



Off

Number System



*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.

Addenda Required

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

Addenda Separator

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

UPC-A/EAN-13 with Extended Coupon Code

Use the following codes to enable or disable UPC-A **and** EAN-13 with Extended Coupon Code. Default = On.

Addenda



2 Digit Addenda On



*2 Digit Addenda Off



5 Digit Addenda On



*5 Digit Addenda Off

Addenda Required



Required



*Not Required

Addenda Separator



*On



Off

UPC-A/EAN-13 with Extended

Coupon Code



*On



Off

UPC-E0

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. Default = On.

UPC-E0 Expand

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

Addenda Required

When Addenda Required is set to on, the imager will only read UPC-E bar codes that have addenda.

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.

Check Digit

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

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.



<Default All UPC-E Settings>



*UPC-E0 On



UPC-E0 Off

UPC-E0 Expand



On



*Off

Addenda Required



Required



*Not Required

Addenda Separator



*On



Off

Check Digit



*On



Off

Number System



*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

UPC-E1

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

Addenda



2 Digit Addenda On



*2 Digit Addenda Off



5 Digit Addenda On



*5 Digit Addenda Off

UPC-E1



UPC-E1 On



*UPC-E1 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.

ISBN Translate

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



<Default All EAN/JAN Settings>



*On



Off

Check Digit



*On



Off

ISBN Translate



On



*Off

EAN/JAN-13

Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN-13 data.

Addenda Required

When Addenda required is set to on, the imager will only read EAN/JAN-13 bar codes that have addenda.

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.

Addenda



2 Digit Addenda On



*2 Digit Addenda Off



5 Digit Addenda On



*5 Digit Addenda Off



Required



*No Required

Addenda Separator



*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.

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.



<Default All EAN/JAN-8 Settings>



*On



Off

Check Digit



*On



Off

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.

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.

Addenda Required



Addenda Separator



MSI

MSI Check Character

Different types of check characters are used with MSI bar codes. You can program the imager to read MSI bar codes with Type 10 check characters.

When Check Character is set to **Validate and Transmit**, the imager will only read MSI bar codes printed with the specified type 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 MSI bar codes printed with the specified type check character, but will not transmit the check character with the scanned data.

Message Length

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



<Default All MSI Settings>



On



*Off



*Validate Type 10, but Don't
Transmit



Validate Type 10 and Transmit



Minimum Message Length



Maximum Message Length

Plessey Code

Message Length

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



<Default All Plessey Code Settings>



On



*Off



Minimum Message Length



Maximum Message Length

GS1 DataBar Omnidirectional



<Default All GS1 DataBar Omnidirectional Settings>



*On



Off

GS1 DataBar Limited



<Default All GS1 DataBar Limited Settings>



*On



Off

GS1 DataBar Expanded

Message Length

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



<Default All GS1 DataBar Expanded Settings>



*On



Off



Minimum Message Length



Maximum Message Length

PosiCode

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

Message Length

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

Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes, Trioptic Code must be off. Trioptic Code is used for labeling magnetic storage media



<Default All PosiCode Settings>



* On



Off



A and B On (No Limited)



A and B and Limited On
(Limited B Off)



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

Message Length



Minimum Message Length



Maximum Message Length

Trioptic Code



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



<Default All Codablock F Settings>



On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All Code 16K Settings>



On



*Off



Minimum Message Length



Maximum Message Length

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.



<Default All Code 49 Settings>



*On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All PDF417 Settings>



*On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All Micro PDF417 Settings>



* On



Off



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.

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 GS1 DataBar linear component.)

Message Length

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

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 GS1 DataBar 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 GS1 DataBar 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 GS1 DataBar 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.

EAN•UCC Composite Codes

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.

EAN•UCC Composite Codes



On



*Off

UPC/EAN Version



UPC / EAN Version On



*UPC / EAN Version Off

Message Length



Minimum Message Length



Maximum Message Length

Emulation



GS1 DataBar Emulation



128 Emulation



*EAN.UCC Emulation Off

TCIF Link Code 39



TLC39 On



*TLC39 Off

Postal Codes

Note: For best performance when reading a postal symbology, all other postal symbologies should be turned off. The following postal codes can only be read by a 2D AS-9500 series Engine.

Postnet

Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data.



On



*Off



Transmit Check Digit



*Don't Transmit Check Digit

Planet Code

Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data.



On



*Off



Transmit Check Digit



*Don't Transmit Check Digit

Postal Codes

British Post



Canadian Post



Kix (Netherlands) Post

Note: Kix code can misread when scanned sideways or upside down.



Australian Post



Japanese Post



China Post

Message Length

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



<Default All China Post Settings>



On



*Off



Minimum Message Length



Maximum Message Length

Postal Codes

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.



<Default All Korea Post Settings>



On



*Off



Minimum Message Length



Maximum Message Length

QR Code

This selection applies to both QR Code and Micro 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.



<Default All QR Code Settings>



*On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All Data Matrix Settings>



*On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All MaxiCode Settings>



*On



Off



Minimum Message Length



Maximum Message Length

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.



<Default All Aztec Code Settings>



*On



Off



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

Chinese Sensible (Han Xin) Code

Message Length

Scan the bar codes below to change the message length. Minimum and Maximum lengths = 1-7833. Minimum Default = 1, Maximum Default = 7833.



<Default All Han Xin Settings >



On



Off



Minimum Message Length



Maximum Message Length

String Format

Prefix/Suffix

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:

Prefix / Suffix characters setting: Characters defined as prefix or suffix characters will be transmitted immediately with the scanned data for all symbologies. Up to 11 ASCII characters can be defined for both Prefix and Suffix.

Tips

- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix f, 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, instead of All Symbologies, the symbology ID value counts as an added prefix or suffix character. Prefix Scanned Data Suffix

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 or 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 or scan **9, 9** for all symbologies.

Step 4. Determine the hex value from the for the prefix or suffix you wish to enter.

Step 5. Scan the 2 digit hex value.

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 for UPC.

Step 3. Scan **6, 3**.

Step 4. Scan **0, D** (carriage return).from the

Step 5. 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 for the symbology from which you want to clear the prefix or suffix.

Step 3. Scan the 2 digit hex value 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.

Prefix Selections



Suffix Selections



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.

Function Code Transmit



*Enable



Disable

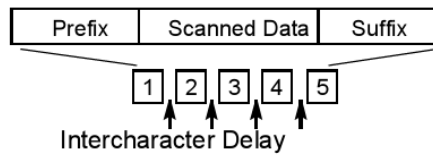
Intercharacter, Interfunction, and Intermassage

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



To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code.
Note: Intercharacter delays are not supported in USB serial emulation.

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. Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for the ASCII character that will trigger the delay

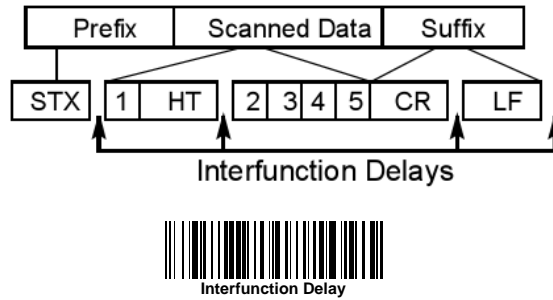
User Specified Intercharacter Delay



To remove this delay, scan the **Delay Length** bar code, and set the number of steps to 0. Scan the **SAVE** bar code

Interfunction Delay

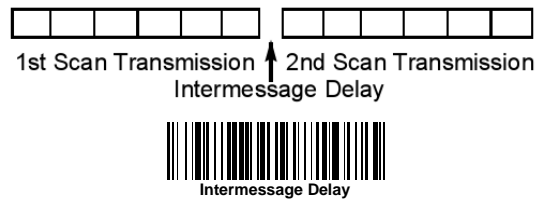
An interfunction delay of up to 495 milliseconds may be placed between the transmission of each segment of the message string. Scan the **Interfunction Delay** bar code below, then scan the number of milliseconds and the **SAVE**



To remove this delay, scan the **Interfunction Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code.

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



To remove this delay, scan the **Intermessage Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code.

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 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**

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 inside the back cover of this manual. If you are programming an alternate format, scan **1, 2, or 3**, depending on the alternate format you are programming.

Step 3. Interface Type

Select the Interface ID number for your PC. Scan three numeric bar codes on the inside back cover to program the imager for your Interface ID (you must enter 3 digits). For example, scan **0 0 0** for RS-232.

Note: The wildcard for all terminal types is 099.

Step 4. Code I.D.

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.

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 the back cover of this manual. (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** to save your entries.

• **Clear One Data Format**

This deletes one data format for one symbology. If you are clearing the primary format, scan **0** . If you are clearing an alternate format, scan **1, 2, or 3**, depending on the alternate format you are clearing. Scan the Interface 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:** This exits, saving any Data Format changes.

• **Discard :** 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.

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.

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.

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, 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 a head “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.

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.

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.

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,

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,

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.

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 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 Formatter On, Format Required

Alternate Data Formats

Alternate formats allow you “single shot” capability to scan one bar code using a different data format than your primary format. When data formats are programmed, you must input whether you are programming the primary format, or an alternate format numbered 1, 2, or 3. An alternate format is initiated by scanning one of the 3 alternate format bar codes below. The imager will scan the next bar code, formatting the data with the selected alternate format, then revert immediately to the primary format.



Imaging Commands

Imaging Commands with their modifiers send imaging commands to the imager on a single-use basis, and take effect for the next subsequent image capture. Once that capture is complete, the imager reverts to its imaging default settings. If you wish to change a default setting, you must use the serial default command. When the serial default command is used, that selection becomes the new default setting for the imager.

Image Snap - IMG SNP

An image is taken whenever a trigger command is sent, or when the Image Snap (IMG SNP) command is processed. Image Snap is the command processor for image capture, or taking a picture. The image snap command has many different modifiers that can be used to change the look of the image in memory. Modifiers always begin with numbers and end with a letter (case insensitive). Any number of modifiers may be appended to the IMG SNP 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:

IMG SNP2G1B

IMG SNP Modifiers

P - Imaging Style: Sets the Image Snap style.

0P Decoding Style: This is similar to the current format for decoding, however, this processing allows a few frames to be taken until the exposure parameters are met. Then the last frame is available for further use.

1P Photo Style (default): This attempts to mimic a simple digital camera, and results in a visually optimized image.

2P Manual Style: This is an advanced style, and should not normally be used. It allows you the most freedom to set up the imager, 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, notifying the user that the imager can be moved.

E - Exposure: This allows you to set the exposure time. Units are 127microseconds. For example, an exposure setting of 50 x .000127ms = 6.35ms exposure time. Exposure is used in Manual Style only. (Default = 7874)
nE Range: 0 - 7874

G - Gain: This modifier boosts the signal and multiplies the pixel value. The range is 1-8.
1G No gain (default)
2G Medium gain
4G Heavy gain
8G Maximum gain

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. (Default = 25)
nD Range: 0 - 255

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 imager is in a stand. LED illumination (1L) is preferred when the imager is handheld. LED State is not available when using Decoding Style.
0L LEDs off (default)
1L LEDs on

T - Wait for Trigger: Waits for a hardware trigger pull before taking the image.
0T Takes image immediately (default)
1T Waits for a trigger pull, then takes the image

U - Update Tries: The maximum number of frames the imager should take to reach the Delta for Acceptance. Update Tries is only available when using Photo Style. (Default = 6)
nU Range: 0 - 10

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. (Default = 125)

nW Range: 0 - 255

% - Target Set Point Percentage: Sets the target point for the light and dark values in the captured image. 1 indicates that more pixels at the light end of a range should be used, and 99 indicates that more pixels at the dark end should be used. We do not recommend altering this setting from the default. To alter grayscale values, Target White Value should be used.

(Default = 50) n% Range: 1 – 99

Image Ship - IMGSHIP

An image is taken whenever the Image Snap (IMGSNP) command is processed. The last image is always stored in memory. You may “ship” the image by using the IMGSHIP command.

The image ship command has many different modifiers that can be used to change the look of the image output by the scanner.

Modifiers affect the image that is transmitted, but do not affect the image in memory. Modifiers always begin with numbers and end with a letter (case insensitive). Any number of modifiers may be appended to the IMGSHIP command. For example, you can use the following command to ship a bitmap image with gamma correction and document image filtering:

IMGSHIP8F75K26U

IMGSHIP Modifiers

A - Infinity Filter: Enhances pictures taken from very long distances (greater than 10 feet or 3 m).

0A Infinity filter off (default)

1A Infinity filter on

C - Compensation: Flattens the image to account for variations in illumination across the image.

0C Compensation disabled (default)

1C Compensation enabled

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: Causes the transmitted image to be convolved with an edge sharpening filter. Entering a 23E gives the sharpest edges, but also increases noise in the image.

0E Don't sharpen image (default)

14E Apply edge sharpen for typical image

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

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)

H - Histogram Stretch: Increases the contrast of the transmitted image. Not available with some image formats.

0H No stretch (default)

1H Histogram stretch

I - Invert Image: Used to rotate the image around the X or Y axis in fixed mount applications where the imager is mounted upside down.

1IX Invert around the X axis (flips picture upside down)

1IY Invert around the Y axis (flips picture left to right)

IF - Fly Spec (Noise Reduction): Used to reduce salt and pepper

noise in the image.

0IF No fly spec noise reduction

1IF Apply fly spec noise reduction

IR - Image Rotate:

1IR Rotate image 90 degrees to the right

2IR Rotate image 180 degrees (upside down)

3IR Rotate image 90 degrees to the left

J - JPEG Image Quality: Sets the desired quality when the JPEG image format is selected. Higher numbers result in higher quality.

Smaller numbers result in greater amounts of lossy compression, faster transmission times, and lower quality. (Default = 50)

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

0J worst quality

100J best quality

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. A setting of 100 results in no adjustment to the image. The optimal setting is 50K. (This selection should only be used for text images.)

0K Gamma correction off (default)

60K Apply gamma correction for brightening typical document

image nK Apply gamma correction factor n (n = 1-255)

L, R, T, B, M - Image Cropping: Ship a window of the image by specifying the left, right, top, and bottom pixel coordinates. Device columns are numbered 0 through 640 or 752, depending on the Image VGA setting (see [Image VGA](#) on). Device rows are numbered 0 through 480. nL The left edge of the shipped image corresponds to column n of the image in memory. Range: 000 - 640 when Image VGA is On, 000- 752 when Image VGA is Off. (Default = 0)

nR The right edge of the shipped image corresponds to column n - 1 of the image in memory. Range: 000 - 640 when Image VGA is On, 000 - 752 when Image VGA is Off. (Default = all columns)

nT The top edge of the shipped image corresponds to row n of the image in memory. Range: 000 - 480. (Default = 0)

nB The bottom edge of the shipped image corresponds to row n - 1 of the image in memory. Range: 000 - 480. (Default = all rows)

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

nM Margin: cut n columns from the left, n + 1 columns from the right, n rows from the top, and n + 1 rows from the bottom of the image. Ship the remaining center pixels. Range: 1 - 238.

(Default = 0, or full image)

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 RS-232)

4P Hmodem

S - Pixel Ship: Can be used to decimate 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 (default)

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

U - Document Image Filter: Sharpens the edges and smoothes the area between the edges of the transmitted text image. The Document Image Filter enhances images of documents such as ID cards and prescriptions. This filter should be used with gamma correction (see page 8-4), with the imager in a stand, and the image captured using the command:

IMGSNP1P0L168W90%32D

better JPEG compression than the standard E -Edge Sharpen command. This filter also works well when shipping pure black

and white images (1 bit per pixel). The optimal setting is 26U.

0U Document image filter off (default)

26U Apply document image filter for typical document image

nU Apply document image filter using grayscale threshold n. Use lower numbers when the image contrast is lower. 1U will have a similar effect to 22e. Range: 0-255.

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

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

Intelligent Signature Capture - IMGBOX

IMGBOX commands can only be used with PDF417, Code 39, Code 128, Aztec, Codabar, and Interleaved 2 of 5 symbologies.

Intelligent signature capture ships only part of an image to the host application. This method reduces transfer time and file size, while simplifying signature capture. Below is an example of an intelligent signature capture application. In this example, the operator reads the bar code, which is then transmitted to the host application. Upon the receipt of the bar code data, the host application sends the IMGBOX command, which tells the scanner to output only the area of the image corresponding to the signature capture box. The scanner also automatically adjusts for aspect ratio and distortion, issues that arise due to scanner skew with respect to the bar code. Align the aimers with the signature area (not with the bar code), then activate the trigger. Send the IMGBOX command string after the trigger command.



An important aspect of intelligent signature capture is that all dimensions used in the application are measured as multiples of the minimum element size of the bar code. Using this method, intelligent signature capture always outputs the correct image size and resolution, no matter the distance at which the scanner is held from the bar code, assuming that the entire signature capture area is within the scanner's field of view. The intelligent signature capture command string for this application is:

IMGBOX40S0X70Y190W100H1R0F

IMGBOX Modifiers

D - Pixel Depth: Indicates the number of bits per pixel in the transmitted image.

8D 8 bits per pixel, grayscale image

1D 1 bit per pixel, black and white image negative positive

F - File Format: 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:** In the

example, the height of the area to be captured is 1 inch, resulting in a value of $H = 1/0.01 = 100$. The value for H is slightly larger, to accommodate some extra image capture area outside of the signature capture box.

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. A setting of 100 results in no adjustment to the image. (Default = 50K)

0K Gamma correction off

50K Apply gamma correction for brightening typical document image

nK Apply gamma correction factor n (n = 1-255)

R - Resolution of Signature Capture Area: The number of pixels that the imager 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.

S - Bar Code Aspect Ratio: 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: In the example, the width of the area to be captured is 1.90 inches, resulting in a value of $W = 1.9/0.01 = 190$. The value for W is slightly larger, to accommodate some extra image capture area outside of the signature capture box.

X - Horizontal Bar Code Offset: The horizontal ratio offset of the center of the signature capture area, in multiples of the minimum bar width. In the example, the horizontal offset is 0.

Y - Vertical Bar Code Offset: The vertical offset of the center of the signature capture area, in multiples of the minimum bar width. Negative numbers indicate that the signature capture is above the bar code, and positive numbers indicate that the area is below the bar code. In the example, the horizontal offset is 0.70 inches, resulting in a value for $Y = 0.7/0.01 = 70$.

OCR Programming

Use this section to program the Imager for optical character recognition (OCR). The 2D AS-9500 series 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 AS-9500 series Engine will read OCR-A, OCR-B, U.S. Currency Serial Number (Money), MICR E-13B, and SEMI fonts. You can either select an OCR default, or create your own custom template for the type of OCR format you intend to read. See "OCR" on page 9-1 for programming codes that will enable your imager to read OCR-A, OCR-B, U.S.

Currency, MICR E-13B, or SEMI fonts. See "OCR Templates" on page 9-3 if you want to create a custom "template," or character string that defines the length and content of OCR strings that will be read with your imager.

Note: Setting the template and check character options are essential for OCR reading.

OCR Fonts

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 eight digit default templates are reinstated for any future use of the **OCR On** codes listed below.

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 eight digit combination. If you have created an OCR template, character combinations that fit the template can be scanned. **OCR-B On** allows you to scan characters in the OCR-B font. The default setting allows you to scan any eight digit combination. If you have created an OCR template, character combinations that fit the template can be scanned.



<Default All OCR Settings>



OCR-A On



OCR-B On

U.S. Currency Font

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 eight digit combination. If you have created an OCR template, character combinations that fit the template can be scanned







MICR E-13B Font

MICR E-13B On allows you to scan MICR characters on a bank check. The default setting allows you to scan any eight digit combination. If you have created an OCR template, character combinations that fit the template can be scanned



Note: TOAD characters (Transit, On Us, Amount and Dash) are output in the following manner:

-  the transit character is output as **T**
-  the amount character is output as **A**
-  the on us character is output as **O**
-  the dash character is output as **D**

SEMI Font

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



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.



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.	
Note: In MICR E-13B templates, TOAD characters (capital letters T, O, A, and D), represent Transit, On Us, Amount, and Dash.	

Note: OCR templates default to eight digits, no check character.

To Add an OCR Template

1. Turn on the OCR font you want to read .
2. Begin building the template.

Scan the **Enter OCR Template** symbol

3. 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 to scan the characters for your template.

Example: You need to read any combination of eight digits. The template would be: dddddd

To create this template, you would enable the OCR-A font. Scan the **Enter OCR Template** symbol , then scan the **d** from the OCR Programming Chart in the back of this manual eight times. Scan **Save OCR Template** This would let you read any string of eight digits, for example:


37680981

Character Match Sequences

On the ASCII Chart, find the Hex value that represents the character(s) you want to match.

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

ddd414243ddd


hex codes for
letters A, B, and C

To create this template, you would enable the OCR-A font. Scan the **Enter OCR Template** symbol. Scan the **d** from the [OCR Programming Chart](#) in the back of this manual three times. Then scan **414243** from the inside back cover (the hex characters for “A,” “B,” and “C”), and scan the **d** three more times. Scan **Save OCR Template**. This would let you read any string of three digits, “ABC,” then any string of three digits, for example:

551ABC983

Adding Spaces

You may also need to put spaces in your template.

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

ddd2041424320ddd



hex code for a space

To create this template, you would enable the OCR-A font. Scan the **Enter OCR Template** symbol. Scan the **d** from the [OCR Programming Chart](#) in the back of this manual three times, then scan **2041424320** from the inside back cover (the hex characters for “space,” “A,” “B,” “C,” “space”). Scan the **d** three more times, then scan **Save OCR Template**. This would let you read any string of three digits space, “ABC,” space, then any string of three 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 20.4. 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: You need to read any combination of eight digits, or a combination of four digits, two uppercase letters, and two digits. The template would be: dddddddtdddlldd

To create this template, you would enable the OCR-A font. Scan the **Enter OCR Template** symbol. Scan the **d** from the OCR Programming Chart in the back of this manual eight times, then scan the **t** to create the “or” statement. Then you would scan the characters for the second template. Scan **d** four times, scan **l** two times, then scan **d** two more times. Scan **Save OCR Template**. This would let you read either type of format, for example:

99028650

or

9902XZ50

You can string together as many templates as you need.

OCR User-Defined Variables

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

414243 To create this template, you would enable the OCR-A font. Scan the **Enter User-Defined Variable g** symbol. Scan **414243** (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 six 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 AS-9500 is capable of decoding multi-row OCR text.

Note: Reading rows longer than sixteen characters is not recommended. **Example:** You need to read multiple rows of OCR-A data as shown below:

12345678

ABCDEFGH

First, enable the OCR-A font. To read the first row of OCR data, you would program 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"lllllll". To read both lines of OCR at one time, use the variable **r** to indicate the start of a new row. All 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"ddddddrlllllll".

To read the three rows below, you would use the template command

"OCRTMP"ddddddrllllllrlllddd".

12345678

ABCDEFGH

ABCD1234.

OCR Check Character

You may want to print and verify a check character in order to enhance the security of your OCR application. The AS-9500 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 AS-9500 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: You need to read any combination of seven digits, with a modulo 10 check character in the eighth position. The template would be: ddddddc

To create this template, you would enable the OCR-A font. Scan the **Modulo 10 Check Character** symbol. Then scan the **Enter OCR Template** symbol, and scan the **d** from the OCR Programming Chart seven times, and scan the **c** once. Scan **Save OCR Template**. This template will let you read any combination of six 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 Check Character

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 User-Defined Check Character

You can customize the check character calculation to suit your application. Each character of the check character alphabet can be programmed in its proper order. The number of characters you enter determines the modulo value for the calculation. By default, the check character computation is unweighted, but the imager also supports two weighted modulo 10 checking schemes.

Example: To program a modulo 11 check character, you would enter the following 11 characters in order:

0123456789X

Also enter the OCR template: **dddddddc**

Enable the OCR-A font, then scan the following string:

6512351X

The imager performs the following check character computation:

$(6 + 5 + 1 + 2 + 3 + 5 + 1 + X) \text{ modulo } 11 = 0$

Since the result is zero, the message is considered to be valid, so the reader outputs the message: 6512351

Programming a User-Defined Check Character

1. Scan the **Enter OCR Check Character** bar code, below:



OCR Modulo 36 Check Character Enter OCR Check Character

2. Enter the characters in order. For each character, look up the corresponding hex value from the [ASCII Chart](#).

3. Scan the **Save** bar code on the inside back cover.

Example: To program the modulo 11 check character from

example #8 , enable the OCR-A font. Scan the **Enter OCR Check Character** bar code, then scan the following hex values in order:
3031323334353637383958

After you enter all the desired hex values, scan the **Save** bar code on the inside back cover of this manual.

Weighting Options

By default, the check character computation is unweighted. It is possible to use one of two weighted modulo 10 schemes.

Weighting is often used to detect if two neighboring characters are transposed, a common error when an operator keys in data.

Weighted Modulo 10 Check Character

Starting with the check character and working backward through the message, the imager applies a multiplier of 1, then 3, then 1, then 3, and so on. This is the checking scheme used in many EAN•UCC symbologies, including U.P.C. and Interleaved 2 of 5 (when a check digit is invoked). To apply this weighting scheme, set the OCR check character to “**0123456789x3x1**” or scan the following symbol:



a **Weighted Modulo 10 Check Character**

Example: Scan the Weighted Modulo 10 Check Character symbol.

Also enter the OCR template: dddddd

Then scan the string below:

01234565

The reader performs the check character computation below:

$$(0 \times 3 + 1 \times 1 + 2 \times 3 + 3 \times 1 + 4 \times 3 + 5 \times 1 + 6 \times 3 + 5 \times 1)$$

$$\text{modulo } 10 = 0$$

a. Weighted Modulo 10 Check Character

Since the result is zero, the message is considered to be valid, so the reader outputs the message: 0123456

b. Weighted Modulo 10 Check Character

Starting with the check character and working backward through the message, the imager applies a multiplier of 1, then 2, then 1, then 2, and so on. When the result of the multiplication is greater than 9, add both digits to the running sum. This is often referred to as the LUHN formula. One common application of the LUHN formula is validate credit card numbers. This is the modulo 10 checking scheme used in MSI Code and in Code 32

Pharmaceutical (PARAF). To apply this weighting scheme, set the OCR check character to "0123456789x2x1" or scan the following symbol:



**b. Weighted Modulo 10
Check Character**

Example: Scan the Weighted Modulo 10 Check Character symbol.

Also enter the OCR template: dddddd

Then scan the string below:

0128454

The reader performs the check character computation below:

$$\begin{aligned} & (0 \times 1 + 1 \times 2 + 2 \times 1 + 8 \times 2 + 4 \times 1 + 5 \times 2 + 4 \times 1) \text{ modulo } 10 \\ & = (0 + 2 + 2 + (1 + 6) + 4 + (1 + 0) + 4) \text{ modulo } 10 \\ & = 0 \end{aligned}$$

Since the result is zero, the message is considered to be valid, so the reader outputs the message: 012845

OCR ISBN Application Example

One application of OCR is to read the ISBN characters typically encoded using the OCR-A or OCR-B font. This is especially useful when the ISBN number is not encoded in an EAN-13 bar code. The following example shows how to configure the imager to read the ISBN strings on books in Japan. After you have followed the steps below, you will be able to scan the following ISBN number or the additional data below it, depending on the line of text at which the imager is aimed.

ISBN4-594-03019-X

C0097 ¥838E

1. Scan the OCR-B On bar code
2. Program the user-defined variable "g" to comprise the ten digits plus the dash: 0123456789-
3. In Japan, it is common for two fields to follow the ISBN number, the three digit price field, and the four digit price field. The first field typically starts with a "C" (uppercase c), followed by four digits. The second field typically starts with a "P" or a yen symbol, followed by three or four digits, followed by an "E." Program the user-defined variable "h" to comprise the "P" and the yen symbol (represented by a backslash).
P\

4. Scan the symbol below to set up three templates to handle the ISBN number, the three digit price field, and the four digit price field.



5. Finally, set up the ISBN check digit, which is a special position-weighted modulo 11 checksum. The imager automatically invokes the ISBN checksum for template rows that are:

- 1.) at least fourteen characters long,
- 2.) whose first four characters are the letters "ISBN,"
- 3.) whose last character is a check character, and
- 4.) when the modulo 11 check character "0123456789X" is programmed.

OCRENA2,TMP"ISBNggggggggggctCddd hdddEtCddd
hdddE",GPG"0123456789-",GPH"P\","CHK"0123456789X".
These commands can be encoded into the following Aztec Code
symbol:



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
four or more rows of OCR.

OCR Template Codes



On



Enter User-Defined
Variable *g*†



Enter User-Defined
Variable *h*†

Exit Selections



Save OCR Template



Discard OCR Template

Utilities

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. 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.

Show Data Format

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

Show Serial Number

Scan the bar code below to show the scanner's serial number.

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.

The Menu Commands lists the standard product default settings for each of the commands

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.

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



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

Show Data Format



Data Format Settings

Show Serial Number



Serial Number

Standard Product Default Settings



Standard Product Default Settings

Test Menu



On



*Off

Test Chart

(Bar code samples marked with symbol “*” are not enabled initially.)

CODABAR



a89121121a

CODE-11 *



0289121121

CODE-128



258963

CODE-39



741258

CODE-93



951263

EAN-13



PDF-417



STANDRAD-25 *



CODE-16K *



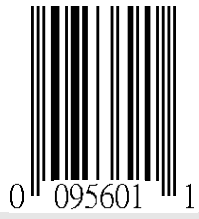
EAN-8



INDUSTRIAL-25 *



UPCE



INTERLEAVED-25



MATRIX 25 *



MSI/PLESSEY *



UPCA



UK/PLESSEY PARA *



GS1 DataBar



Micro-PDF



QR Code



DataMatrix

Data Matrix



Test Symbol

Aztet



MaxiCode



OCRA

12345678

Interface ID

If you want to change the pre-programmed interface of your image engine, below. For example, a USB Virtual COM device has a Interface ID of 130. You would scan the **Interface ID** bar code, then **1, 3, 1**, then **Save**. If you make an error while scanning the digits (before scanning Save), scan the **Discard** code.

Interface	Interface ID
RS-232	000
USB HID (PC)	124
USB HID (Mac)	125
USB Virtual COM	130



Product Code ID

Symbology	AIM ID	Code ID	Code ID (HEX)
All Symbologies			0x99
Australian Post	]x0	'A	0x41
Aztec Code	]zm	'z	0x7A
British Post	]X0	'B	0x42
Canadian Post	]X0	'C	0x43
China Post	]X0	'Q	0x51
Codabar	]Fm	'a	0x61
Codablock F	]Om	'q	0x71
Code 11	]H3	'h	0x68
Code 128	]Cm	'j	0x6A
Code 16K	]Km	'o	0x6F
Code 32	]X0	'<	0x3C
Code 39	]Am	'b	0x62
Code 49	]Tm	'I	0x6C
Code 93	]Gm	'i	0x69
Data Matrix	]dm	'w	0x77
EAN-13	]E0	'd	0x64
EAN-8	]E4	'D	0x44
EAN UCC Composite	]em	'y	0x79
EAN-13 w Extended Coupon Code	]E3	'd	0x64
Interleaved 2 of 5	]Lm	'e	0x65
Japanese Post	]X0	'J	0x4A
KIX Post	]X0	'K	0x4B
Korea Post	]X0	'?	0x3F
Matrix 2 of 5	]X0	'm	0x6D
MaxiCode	]Um	,x	0x78
MicriPDF417	]Lm	'R	0x52
MSI	]Mm	'g	0x67
No Read			0x9C
OCR-A	]o1	'O	0x4F

Symbology	AIM ID	Code ID	Code ID (HEX)
OCR-B	]o2	‘O	0x4F
OCR MICR E-13B	]ZE	‘O	0x4F
OCR US Money Font	]o3	‘O	0x4F
SEMI Font	]o3	‘O	0x4F
PDF 417	]Lm	‘r	0x72
Planet Code	]X0	‘L	0x4C
Plessey Code	]P0	‘n	0x6E
PosiCode	]pm	‘W	0x57
Postnet	]X0	‘P	0x50
QR Code	]Qm	‘s	0x73
GS1 DataBar Family	]em	‘y	0x79
Straight of 2 of IATA	]Rm	‘f	0x66
TCIF Linked Code 39	]L2	‘T	0x54
Telepen	]Bm	‘t	0x74
Trioptic Code	]X0		0x3D
UCC/EAN-128	]C1	‘I	0x49
UPC-A	]E0	‘c	0x63
UPC-A w Extended Coupon Code	]E3	‘c	0x63
UPC-E	]E0	‘E	0x45
VeriCode	]X0	‘v	0x76

ASCII Code Table

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20		64	40	@	96	60	'
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	\$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	'	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
128	80	€	160	A0		192	C0	À	224	E0	à
129	81	☐	161	A1	ı	193	C1	Á	225	E1	á
130	82	„	162	A2	ş	194	C2	Â	226	E2	â
131	83	Ÿ	163	A3	Ë	195	C3	Ã	227	E3	ã
132	84	…	164	A4	ı	196	C4	Ä	228	E4	ä
133	85	…	165	A5	ı	197	C5	Å	229	E5	å
134	86	†	166	A6	ı	198	C6	Æ	230	E6	æ
135	87	‡	167	A7	§	199	C7	Ç	231	E7	ç
136	88	ˆ	168	A8	ˆ	200	C8	È	232	E8	è
137	89	‰	169	A9	©	201	C9	É	233	E9	é
138	8A	Š	170	AA	±	202	CA	Ê	234	EA	ê
139	8B	ı	171	AB	ı	203	CB	Ë	235	EB	ë
140	8C	œ	172	AC	˜	204	CC	Ì	236	EC	ì
141	8D	☐	173	AD	-	205	CD	Í	237	ED	í
142	8E	Ž	174	AE	©	206	CE	Ï	238	EE	ï
143	8F	☐	175	AF	ˆ	207	CF	Ĭ	239	EF	ĭ
144	90	☐	176	B0	*	208	D0	Ð	240	F0	ð
145	91	ˆ	177	B1	±	209	D1	Ñ	241	F1	ñ
146	92	ˆ	178	B2	*	210	D2	Ò	242	F2	ó
147	93	ˆ	179	B3	*	211	D3	Ó	243	F3	ó
148	94	ˆ	180	B4	ˆ	212	D4	Ô	244	F4	ô
149	95	ˆ	181	B5	µ	213	D5	Õ	245	F5	õ
150	96	-	182	B6	¶	214	D6	Ö	246	F6	ö
151	97	-	183	B7	ˆ	215	D7	×	247	F7	×
152	98	ˆ	184	B8	ı	216	D8	Ø	248	F8	ø
153	99	™	185	B9	*	217	D9	Ù	249	F9	ù
154	9A	§	186	BA	-	218	DA	Ú	250	FA	ú
155	9B	ˆ	187	BB	ı	219	DB	Û	251	FB	û
156	9C	œ	188	BC	¼	220	DC	Ü	252	FC	ü
157	9D	☐	189	BD	½	221	DD	Ý	253	FD	ý
158	9E	ž	190	BE	¾	222	DE	Þ	254	FE	þ
159	9F	Ÿ	191	BF	↓	223	DF	ß	255	FF	ÿ

OCR Programming Chart



a



d



g



l



t



Save OCR Template



c



e



h



r



Discard OCR Template

Program Chart



0



1



2



3



4



5



6



7



8



9



A



B



C



D



E



F



Save



Discard



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