

RoadRunners Evolution –Fs (Imager 2D) Programming Guide

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SUMMARY

SUMMARY	2
REVISION HISTORY	4
INTRODUCTION	5
1. GENERAL CONFIGURATION	6
1.1. GENERAL DEFAULT SETTINGS	6
1.2. BARACODA ADVANCED FEATURES	7
1.2.1. SWITCH ON DELAY	7
1.2.2. SHUTDOWN TIMERS	7
1.2.3. TURN SCANNER OFF	7
1.2.4. NO DATA LOSS MODE AND BARACODA HEADER	8
1.3. READING MODE	9
1.4. OPERATING MODE	10
1.4.1. REAL TIME MODE	11
1.4.2. NO DATA LOSS MODE - ENABLE "ACK" BEEP	11
1.4.3. NO DATA LOSS MODE - DISABLE "ACK" BEEP	11
1.4.4. REAL TIME - BUFFERED DATA OPTION	11
1.4.5. BATCH MODE	12
1.5. THE DIFFERENT CONNECTION METHODS	13
1.6. BUZZER AND LED SETTINGS	14
1.7. BLUETOOTH SETTINGS	15
1.7.1. BLUETOOTH NAME	15
1.7.2. SNIFF PERIOD SETTINGS	16
1.7.3. SECURITY (CODE PIN) SETTINGS	17
1.7.4. RF POWER EMISSION SETTINGS	17
1.8. DATA FORMAT	18
1.8.1. TIMESTAMP OPTION	18
1.8.2. DATA PREFIX/SUFFIX	20
1.8.3. BARCODE PREFIX/SUFFIX	21
1.8.4. AIM SYMBOLOGY IDENTIFIER	22
2. DECODER PARAMETERS	23
2.1. DECODER DEFAULT SETTINGS	23
2.2. ILLUMINATION LIGHTS	23
2.3. IMAGER TIME-OUT	23
2.4. AIMER DELAY	23
2.5. USER-SPECIFIED AIMER DELAY	24
2.6. AIMER MODES	24
2.7. ENABLE/DISABLE ALL SYMBOLOGIES	25
2.8. MESSAGE LENGTH DESCRIPTION	25
2.9. CODABAR	25
2.10. CODE 39	27
2.11. INTERLEAVED 2 OF 5	29
2.12. CODE 93	30
2.13. STRAIGHT 2 OF 5 INDUSTRIAL (THREE-BAR START/STOP)	31
2.14. STRAIGHT 2 OF 5 IATA (TWO-BAR START/STOP)	31
2.15. MATRIX 2 OF 5	32
2.16. CODE 11	32
2.17. CODE 128	33
2.18. TELEPEN	34
2.19. UPC-A	34
2.20. UPC-A/EAN-13 WITH EXTENDED COUPON CODE	36

2.21.	UPC-E0	36
2.22.	EAN/JAN-13	38
2.23.	EAN/JAN-8	39
2.24.	MSI	40
2.25.	PLESSEY CODE	41
2.26.	RSS-14	41
2.27.	RSS LIMITED	42
2.28.	RSS EXPANDED	42
2.29.	POSTCODE	42
2.30.	TRIOPTIC CODE	43
2.31.	CODABLOCK F	43
2.32.	CODE 16K	44
2.33.	CODE 49	44
2.34.	PDF417	45
2.35.	MICROPDF417	45
2.36.	EAN•UCC COMPOSITE CODES	46
2.37.	TCIF LINKED CODE 39 (TLC39)	47
	POSTAL CODES	47
2.38.	POSTNET	47
2.39.	PLANET CODE	47
2.40.	BRITISH POST	48
2.41.	CANADIAN POST	48
2.42.	KIX (NETHERLANDS) POST	48
2.43.	AUSTRALIAN POST	48
2.44.	JAPANESE POST	48
2.45.	CHINA POST	48
2.46.	KOREA POST	49
2.47.	QR CODE	49
2.48.	DATA MATRIX	50
2.49.	MAXICODE	50
2.50.	AZTEC CODE	51

<u>3.</u>	<u>APPENDIX 1: ASCII TABLE (A-Z, A-Z, 0-9, PUNCTUATION, CONTROL CHARACTERS)</u>	<u>52</u>
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<u>4.</u>	<u>APPENDIX 2: PROGRAMMING CHART</u>	<u>57</u>
-----------	--------------------------------------	-----------

<u>5.</u>	<u>APPENDIX 3: CODE PAGE MAPPING OF PRINTED BAR CODES</u>	<u>58</u>
-----------	---	-----------

<u>6.</u>	<u>APPENDIX 4: WORKING ORIENTATION</u>	<u>59</u>
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<u>7.</u>	<u>APPENDIX 5: SYMBOLOGY CHART (AIM IDENTIFIER)</u>	<u>60</u>
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Revision History

Changes to the original manual are listed below.

Document	Date	Description
1.0	21 Aug. 08	Initial release
1.1	26 Aug. 08	Update "Batch" section & add "The different connection method" section
1.2	11 Sept. 08	Add "Smart Autoscan" option
1.3	25 Nov. 08	Update "Reading mode" section
1.4	02 July 09	Modify "Operating Mode" section & Add "buffered data" section.
1.5	07 Dec 09	Modify 2D barcode of decoder configuration
1.6	10 feb 10	Precision on 'No duplicate scan' feature
1.7	28 Nov 10	1.3 : Add "Manual AutoScan" 1.5 : Complete "Master Mode" (ref to Master Connection Generator Software)

Introduction

The RoadRunners Evolution scanner can be programmed by scanning barcode labels which contain commands for the decoder.

Programming labels must be Code128, with specific starting and ending characters. These labels will always be read, even if Code128 symbology is disabled.

The scanner will acknowledge a good and valid programming barcode label reading with two beeps and a green enlightening of the led. It will give two other beeps (lower tone) and a red enlightening of the led for either an invalid or bad reading.

Please do not read the programming barcodes while being connected to the BaracodaManager software.

Programmable options are divided into 2 groups. The first group includes the options that show the general behaviour of the scanner. The second group sets the decoding parameters for each barcode symbology.

This document concerns the Roadrunners 2D Evolution scanner, that is the BRR-Fs Evolution.

All our documentations can be downloaded from the Partners download section of Baracoda website (registration is required):

<http://www.baracoda.com>

1. General Configuration

1.1. General default settings

The reading of the "Reset to factory settings" label turns all the parameters of the scanner back to default settings and switches it off. Scan "RESET 1", then "RESET 2" barcodes.

Reset 1



Reset 2



1.2. Baracoda advanced features

1.2.1. Switch on delay

In order to switch on the scanner in its standard mode, you should just press the trigger. You can set up the scanner to be switched on only after keeping the trigger pressed for two (2) seconds by reading the appropriate barcode.

Switch on delay : 2 seconds



Switch on delay : 0 second (*)



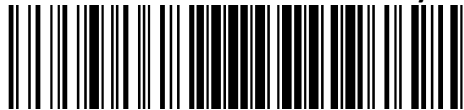
1.2.2. Shutdown timers

There are two different 'shutdown timers':

- When connected timer: delay between the last scanned barcode and the switch off when the scanner is connected to a host
- Not connected timer: delay between the last scanned barcode and the switch off when the scanner is not connected to any host

It is possible to set those timers to 'infinite'. In this case, the scanner will stay all the time ON.

Set shutdown timers to infinity



By default, timers value are:

- When connected timer = 20 minutes
- Not connected timer = 10 minutes

Set shutdown timers to defaults



1.2.3. Turn scanner OFF

To turn off the scanner, read the following barcode:

Turn off scanner



1.2.4. No data loss mode and Baracoda Header

Baracoda header:

It is a proprietary data encapsulation. It is necessary to activate it to use the Baracoda keyboard emulation (Kemul) and Terminal.

The Baracoda header is enabled in default settings

No data loss mode:

Baracoda has developed a proprietary communication protocol in order to enhance the security of the Bluetooth transmission.

Every barcode sent to the host must be acknowledged by the host (until then, the scanner will transmit it again and again).

This acknowledgment is disabled in default settings. It is strongly recommended to set this protocol acknowledgment on when using the scanner with the BaracodaManager.

Enable Baracoda header + “No Data loss mode” ON**Enable Baracoda header + “No Data loss mode” OFF (*)****Disable Baracoda header + “No data loss mode” OFF**

1.3. Reading Mode

In **Trigger mode**, pressing the trigger will activate the beam.

Trigger (*)



In **Autoscan mode**, the scan beam is continuously on. This mode enables to scan continuously.

Autoscan



In **Smart Autoscan mode**, for a battery power consumption optimisation issue, the scanner will be continuously flashing.

Smart Autoscan



Manual Autoscan mode

Scanner behavior: when this capture mode is selected, pressing the trigger will switch ON the capture module (beam & decoder) and keep it ON until the trigger is pressed again.

Note: in the case the trigger is not pressed the second time (to stop the manual autoscan) the beam will stay on until the shutdown timer expires. When the scanner is switched ON, pressing the trigger will switch the beam on continuously.

Enable Manual Autoscan



The **“No duplicate scan” option** has been developed for users who do not want to scan twice the same barcode consecutively.

« no duplicate scans » disabled (*)



« no duplicate scans » enabled + error signal

→ If the same barcode is scanned, an error signal is played (two beeps (lower tone) and a red enlightening of the led)



« no duplicate scans » enabled + no decoding

→ If the same barcode is trying to be scanned, it won't be. The laser beam will still be enlightening.



1.4. Operating Mode

Real Time mode

In real time mode, the barcode is decoded and transmitted to the remote host without any delay. If the scanner is not connected, the data is lost.

Real Time mode with No Data Loss option

If the No Data Loss option is activated and if the scanner is not connected or out of Bluetooth range, the scanner will store the data. It can memorise up to 10 000 barcodes (UPC format) and later automatically upload them to the remote host when a Bluetooth connection is established to the host.

Every barcode sent to the host must be acknowledged by the host. If the host fails to send an acknowledgement, the scanner will continue to transmit the barcode until the host does send an acknowledgement.

This acknowledgment is disabled in the default settings. It is strongly recommended to set the No Data Loss mode to ON. This configuration can be set with the BaracodaManager software or with the Programming Guide.

Additionally, this protocol acknowledgment allows an end user to set an audio acknowledgment indicating that the barcode has been successfully transmitted to the host.

Batch mode

Barcodes are always stored in the scanner. Once the batch mode is selected, the BCL led (right) emits an orange flash. In batch mode, the barcode can read up to 10 000 barcodes (UPC format) and store them into its non-volatile memory for later transmission to the host. When the internal memory is full, both Leds will be full orange (no blinking).

To upload barcodes from the scanner, connect it to the host computer via Bluetooth. The BaracodaManager software is used to configure the location where the barcodes are sent once the barcodes are extracted from the scanner.

Once connected, the scanner will wait for the appropriate command in order to start uploading the barcodes: this command can come from:

- The BaracodaManager: The user has to click on the button "Upload".
- A configuration scan barcode: the user has to read the appropriate configuration barcode.

Be aware that with BaracodaManager, two (2) different ways to upload barcodes are possible:

- To an application window: In this case always double check before starting the upload procedure that the cursor in your text window is active. Otherwise you will loose all the data saved into your scanner.
- To a .txt file (default option). The BaracodaManager gives you the possibility to modify the name of the file in which you may want to save the data.

1.4.1. Real Time mode

Erases all captured data stored in memory and forces the scanner in Real time mode. No other setting is changed.

Important reminder: if an ACK beep or buffer is needed, the scanner must be set in the “no data loss mode” first.

Enable Real Time with « No Data Loss » mode



Enable Real Time without « No Data Loss » mode



1.4.2. No Data Loss mode - Enable “ACK” beep

Forces the scanner in Real Time mode (with data acknowledgement); Erases all captured data stored in memory. The scanner should have been previously set in the “No data loss mode” ON (So scan the “Enable Real Time with No Data Loss mode” barcode before).

Enable ACK beep



1.4.3. No Data Loss mode - Disable “ACK” beep

Forces the scanner in Real Time mode (without data acknowledgement); Erases all captured data stored in memory. The scanner should have been previously set in the “No data loss mode” ON (So scan the “Enable Real Time with No Data Loss mode” barcode before).

Disable ACK beep



1.4.4. Real Time - Buffered data option

It's possible to set the scanner in “Real Time with No Data Loss mode” but with no bufferisation (buffer configured to 0) when it's not connected. In this particular situation the trigger will not activate the beam: so impossible to read barcodes in this mode, and Both LEDs blinks orange.

Max Buffered Barcodes = 0



Max Buffered Barcodes = MAX



1.4.5. Batch mode

BATCH MODE

Forces the RoadRunners Evolution in Batch mode. Erases all codes in memory



When in batch mode, the scanner will wait for the appropriate command in order to start uploading the barcodes: this command can come

- from the BaracodaManager
- from reading the “Upload batch data” barcode here after

If this barcode is read when the reader is in batch mode and connected, the reader will automatically upload to the host all the data in its memory. If not in batch mode or not connected, the scanner will ignore this barcode.

Upload batch data (with No Data Loss on)



When scanning this barcode, the scanner will send a message to the host, meaning that it wants to upload its data. Following this, the host will launch the upload process and grab the batch data.

If the host application has received all the expected data, it will acknowledge the upload to the scanner which will erase the data from its memory. If not, the host application will send a negative acknowledgment message to the scanner which will keep the data in memory, ready to retry an upload.

If the data transfer has been successful (the scanner has received the acknowledgment and erased its memory) and, for any reason, the user gets to realize that data has been lost at a higher level (keyboard emulation for example), it still has the possibility to recover the last batch data into the scanner’s memory, by scanning the below barcode.

Restore last batch data



Restore last batch + launch upload



Please note that the data recovering won’t be possible if other barcodes have been scanned or if the scanner has been shut down after the upload.

1.5. The different connection methods

There are two (2) different way to create a connection from a Host and a scanner:

- **Slave mode (by default)**

The Host (PC, BaracodaManager, ...) is creating the connection onto the scanner.

- **Master mode**

The scanner connects automatically to the *Bluetooth address recorded in its memory*. This connection attempt is launched after a scan of the connection barcode. The configuration of the host address (to which the scanner will connect) can be done:

- o Via the *BaracodaManager* software (v3.35 and newer).
- o Via a scan of configuration barcodes.
- o Via *Baracoda Master Connection Generator* software (for PC)

All usage mode (Real Time, No Data Loss, Batch) are obviously available on those two different ways of connection.



The configuration of the Host Bluetooth address (BDA) is made by scanning the 0-9, a-f, A-F labels (Appendix 1) as on a calculator; following the timestamp format shown above.

For example: to set the following BDA: 00:c3:EF:44:a2:B9, the user will scan:

- "Set Remote BDA" label,
- "0" label,
- "0" label,
- "c" label,
- "3" label,
- "E" label,
- "F" label,
- "4" label,
- "4" label,
- "a" label,
- "2" label,
- "B" label,
- "9" label,
- "End of Config" label.



1.6. Buzzer and Led Settings

You can use these options to enable or disable the buzzer and / or the Led.

LED ON (*)



LED OFF



Good read beep on (*)



Good read beep off



ACK beep on (*)



ACK beep off



Beep level volume = HIGH (*)



Beep level Volume = LOW



BUZZER ON (*)



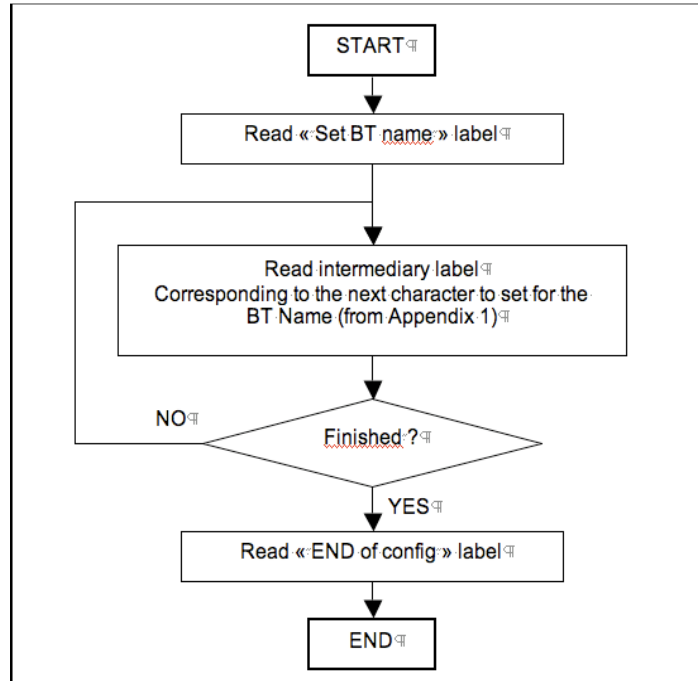
BUZZER OFF



1.7. Bluetooth settings

1.7.1. Bluetooth name

You can change the scanner Bluetooth name; name that you see during a search of Bluetooth peripheral.



Programming procedure for “Set Bluetooth Name”

Set BT Name



End of config



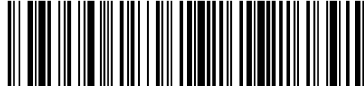
1.7.2. Sniff period settings

Change the Sniff period. If the higher is the latency and the smaller is the power consumption.
Default value is 150ms.

Sniff period = 150ms (*)



Sniff period = 100ms



Sniff period = 200ms



Sniff period = 300ms



Sniff period = 500ms



1.7.3. Security (code PIN) settings

Some Bluetooth device will not accept connections with devices that do not have a security code.

Disable BT security code



Enable BT security code (*)



1.7.4. RF Power emission settings

For regulation purposes, some countries may limit the RF power emission to 10dBm (Class2 device).

Set device to Class1 power emission (20dBm)(*)



Limit device to Class2 power emission (10dBm)



1.8. Data format

The barcode string can be added a timestamp, prefixes and/or suffixes. The symbology prefix/suffix can be added by BaracodaManager only.

These can come as described below:

Timestamp	Data prefix	Data (which type can be barcode or RFID)	Data suffix
12 chars	Max. 32 chars	-	Max. 32 chars

Barcode Data:		
If data type is barcode, it comes with this data frame format		
Barcode prefix	Barcode	Barcode suffix
Max. 32 chars	-	Max. 32 chars

Barcode:			
Depending on the barcode type (symbology), additional data can be added			
Symbology prefix	AIM identifier	Data (barcode)	Symbology suffix
Max. 4 chars	0, 2 or 3 chars	-	Max. 4 chars

1.8.1. Timestamp option

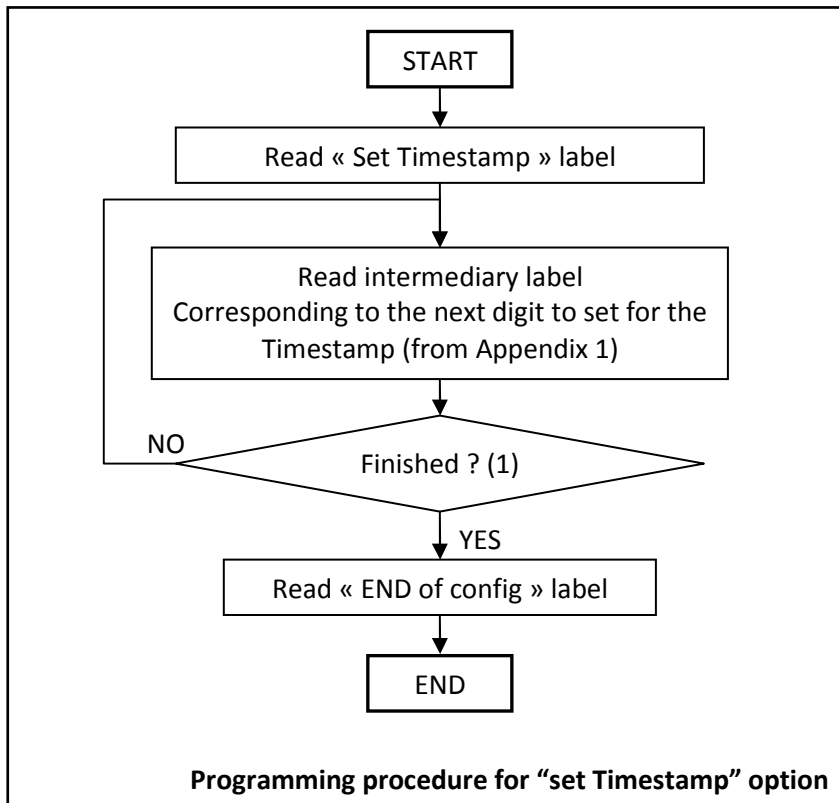
Timestamp can be configured (ON/OFF, set new date and new time) by the following configuration barcodes.

Timestamp on



Timestamp off (*)





Set Timestamp



END of configuration



Noted that the timestamp must fit the specific following format:
{YY}{MM}{DD}{HH}{MM}{SS}

The setting is made by scanning the 0-9 labels (Appendix 1) as on a calculator; following the timestamp format shown above.

For example: to set the current time at 16th May 2007, 3.25 pm, the user will scan:

- “Set Timestamp” label,
- “0” label,
- “7” label,
- “0” label,
- “5” label,
- “1” label,
- “6” label,
- “1” label,
- “5” label,
- “2” label,
- “5” label,
- “0” label,
- “0” label,
- “end of config” label.

1.8.2. Data Prefix/Suffix

You can add a data prefix and/or suffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device.

There is no data prefix or suffix in default settings.

Enable data prefix



Disable data prefix (*)



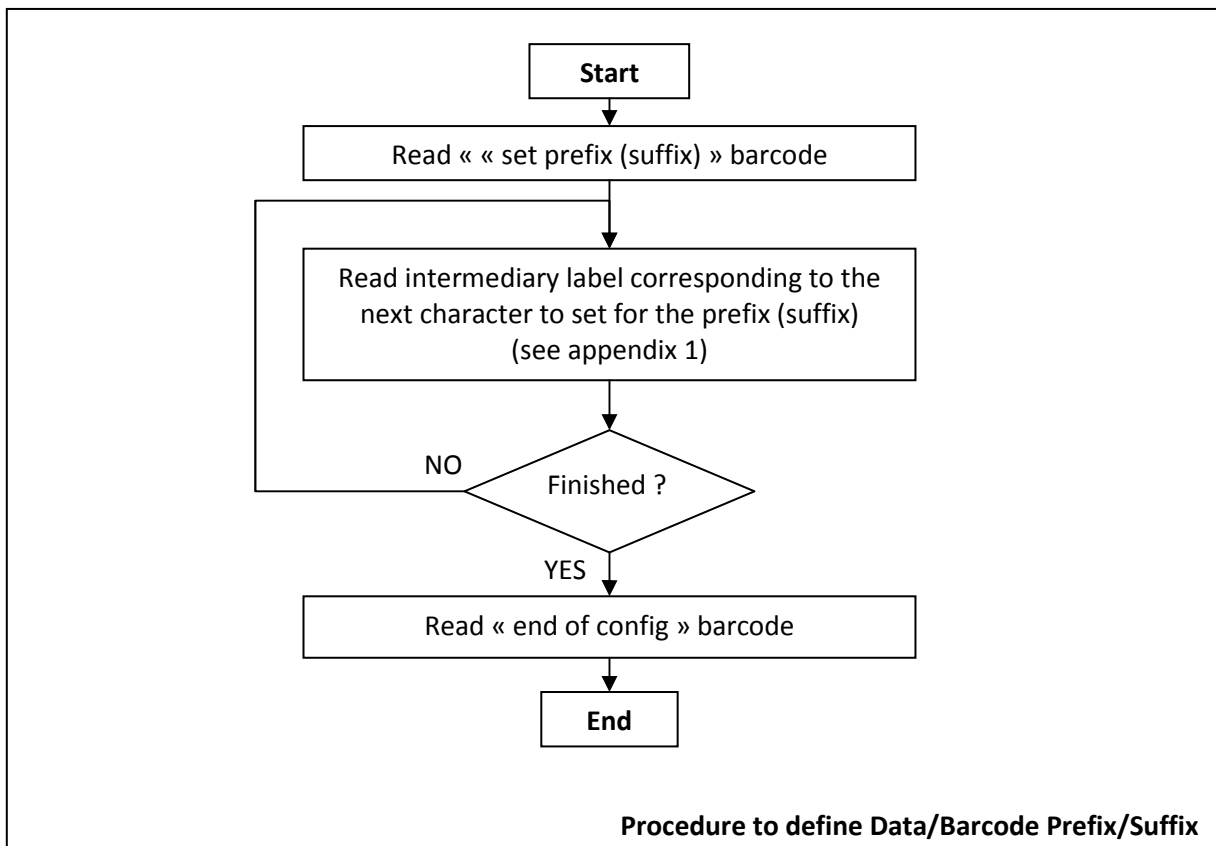
Enable data suffix



Disable data suffix (*)



If enabled, a data prefix/suffix can be set as following:



Set Data prefix



Set Data suffix



End of configuration



1.8.3. Barcode Prefix/Suffix

You can add a barcode prefix and/or suffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device.

There is no barcode prefix or suffix in default settings.

Enable barcode prefix



Disable barcode prefix (*)



Enable barcode suffix



Disable barcode suffix (*)



If enabled, a Barcode prefix/suffix can be set in the same manner as the Data prefix/suffix can be set:

Set Barcode prefix



Set Barcode suffix



End of configuration



1.8.4. AIM Symbology Identifier

More information about the AIM Identifier is available in Appendix5.

The following programming barcode below will add the AIM ID to all barcodes as a prefix



The programming barcode below will clear all prefixes



2. Decoder Parameters

2.1. Decoder default settings

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

Standard Product Default Settings



2.2. 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 (2.6).

*Light ON



SCNLED1.

Light OFF



SCNLEDO.

2.3. 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 Programming Chart (Appendix.2), then scanning **Save**.

Default = 1 ms.

Imager Time-Out



SDRTIM.

2.4. 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.

200 milliseconds



SCNDLY200.

400 milliseconds



SCNDLY400.

*Off (no delay)



SCNLEDO.

2.5. User-Specified Aimer Delay

If you want to set your own length for the duration of the delay, scan the bar code below, then set the time-out by scanning digits (0 - 4,000 ms) from the Programming Chart (Appendix.2), then scan **Save**.



2.6. Aimer Modes

Interlaced: In interlaced mode, 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: Concurrent mode 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 autotrigger applications.

Select Off if you don't want to use either aimer mode.



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 presentation 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.

2.7. Enable/Disable All Symbologies

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



2.8. Message Length Description

You are able to set the valid reading length of some of the bar code symbologies. If the data length of the scanned bar code doesn't match the valid reading length, the imager will issue an error beep. You may wish to set the same value for minimum and maximum length to force the imager to read fixed length bar code data. This helps reduce the chances of a misread.

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

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

For a value other than the minimum and maximum message length defaults, scan the bar codes included in the explanation of the symbology, then scan the digit value of the message length and **Save** bar codes on the Programming Chart (Appendix.2). The minimum and maximum lengths and the defaults are included with the respective symbologies.

2.9. Codabar



Codabar ON / OFF



Codabar Start/Stop Characters

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



Codabar Check Character

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

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

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

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



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.



Off



Require



Codabar Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.

Minimum Message Length



Maximum Message Length



2.10. Code 39

Default All Code 39 Settings



Code 39 ON / OFF

***On**



Off



Code 39 Start/Stop Characters

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

Transmit



***Don't Transmit**



Code 39 Check Character

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

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

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

***No Check Character**



Validate, but Don't Transmit



Validate and Transmit



Code 39 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.

Minimum Message Length



Maximum Message Length



Code 39 Append

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

On



***Off**



Code 32 Pharmaceutical (PARAF)

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

Note: Trioptic Code (2.30) must be turned off while scanning Code 32 Pharmaceutical codes.

On



***Off**



Full ASCII

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

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

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



Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see Code Page Mapping of Printed Bar Codes – Appendix 3), and scan the value and the **Save** bar code from the Programming Chart (Appendix.2). The data characters should then appear properly.



2.11. Interleaved 2 of 5



Interleaved 2 of 5 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. Default = No Check Digit.



Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



2.12. Code 93



Code 93 ON / OFF



Code 93 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

Minimum Message Length



C93MIN.

Maximum Message Length



C93MAX.

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see Code Page Mapping of Printed Bar Codes – Appendix 3), and scan the value and the **Save** bar code from the Programming Chart (Appendix.2). The data characters should then appear properly.

Code 93 Code Page



C93DCP.

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

Default All Straight 2 of 5 Industrial Settings



R25DFT.

Straight 2 of 5 Industrial ON / OFF

On



R25ENA1.

***Off**



R25ENA0.

Straight 2 of 5 Industrial Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length



R25MIN.

Maximum Message Length



R25MAX.

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

Default All Straight 2 of 5 IATA Settings



A25DFT.

Straight 2 of 5 IATA ON / OFF

On



A25ENA1.

***Off**



A25ENA0.

Straight 2 of 5 IATA Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length



Maximum Message Length



2.15. Matrix 2 of 5

Default All Matrix 2 of 5 Settings



Matrix 2 of 5 ON / OFF

On



***Off**



Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length



Maximum Message Length



2.16. Code 11

Default All Code 11 Settings



Code 11 ON / OFF

On



***Off**



Check Digits Required

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

One Check Digit



***Two Check Digits**



Code 11 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length



Maximum Message Length



2.17. Code 128

Default All Code 128 Settings



Code 128 ON / OFF

***On**



Off



ISBT 128 Concatenation

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

On



***Off**



Code 128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

Minimum Message Length



Maximum Message Length



Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created (see Code Page Mapping of Printed Bar Codes – Appendix 3), and scan the value and the **Save** bar code from the Programming Chart (Appendix.2). The data characters should then appear properly. Default = 2.

Code 128 Code Page



2.18. Telepen

Default All Telepen Settings



Telepen ON / OFF

On



***Off**



Telepen Output

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

*AIM Telepen Output



Original Telepen Output



Telepen Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.

Minimum Message Length



Maximum Message Length



2.19. UPC-A

Default All UPC-A Settings



UPC-A ON / OFF

***On**



Off



UPC-A Check Digit

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

***On**



Off



UPC-A Number System

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



UPC-A Addenda

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



UPC-A Addenda Required

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



UPC-A Addenda Separator

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



2.20. 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.



2.21. UPC-E0

Default All UPC-E Settings



UPC-E0 ON / OFF

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



UPC-E0 Expand

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



UPC-E0 Addenda Required

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



UPC-E0 Addenda Separator

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



UPC-E0 Check Digit

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



UPC-E0 Number System

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



UPC-E0 Addenda

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



UPC-E1

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



2.22. EAN/JAN-13

Default All EAN/JAN Settings



EAN/JAN-13 ON / OFF



EAN/JAN-13 Check Digit

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



EAN/JAN-13 Addenda

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



EAN/JAN-13 Addenda Required

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



EAN/JAN-13 Addenda Separator

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



Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code (2.20).

ISBN Translate

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



2.23. EAN/JAN-8

Default All EAN/JAN-8 Settings



EAN/JAN-8 ON / OFF



EAN/JAN-8 Check Digit

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



EAN/JAN-8 Addenda

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

2 Digit Addenda On



***2 Digit Addenda Off**



5 Digit Addenda On



E8AD51.

***5 Digit Addenda Off**



E8AD50.

EAN/JAN-8 Addenda Required

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

Required



E8ARQ1.

***Not required**



E8ARQ0.

EAN/JAN-8 Addenda Separator

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

***On**



E8ADS1.

Off



E8ADS0.

2.24. MSI

Default All MSI Settings



MSIDFT.

MSI ON / OFF

On



MSIENA1.

***Off**



MSIENA0.

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. Default = Validate Type 10, but Don't Transmit.

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.

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



MSICHK0.

Validate Type 10 and Transmit



MSI Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length



Maximum Message Length



2.25. Plessey Code

Default All Plessey Code Settings



Plessey Code ON / OFF

On



***Off**



Plessey Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length



Maximum Message Length



2.26. RSS-14

Default All RSS-14 Settings



RSS-14 ON / OFF

*** On**



Off



2.27. RSS Limited

Default All RSS Limited Settings



RSS Limited ON / OFF

*** On**



Off



2.28. RSS Expanded

Default All RSS Expanded Settings



RSS Expanded ON / OFF

***On**



Off



RSS Expanded Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.

Minimum Message Length



Maximum Message Length



2.29. PosiCode

Default All PosiCode Settings



PosiCode A and B ON / OFF

*** On**



Off



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

A and B On (No Limited)



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



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



PosiCode Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length



Maximum Message Length



2.30. Trioptic Code

Note: If you are going to scan Code 32 Pharmaceutical codes (2.10), Trioptic Code must be off. Trioptic Code is used for labeling magnetic storage media.

Trioptic Code ON / OFF

On



***Off**



2.31. Codablock F

Default All Codablock F Settings



Codablock F ON / OFF

On



***Off**



Codablock F Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.

Minimum Message Length



CBFMIN.

Maximum Message Length



CBFMAX.

2.32. Code 16K

Default All Code 16K Settings



16KDFT.

Code 16K ON / OFF

On



16KENA1.

***Off**



16KENA0.

Code 16K Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 0-160. Minimum Default = 1, Maximum Default = 160.

Minimum Message Length



16KMIN.

Maximum Message Length



16KMAX.

2.33. Code 49

Default All Code 49 Settings



C49DFT.

Code 49 ON / OFF

***On**



C49ENA1.

Off



C49ENA0.

Code 49 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-81. Minimum Default = 1, Maximum Default = 81.

Minimum Message Length



C49MIN.

Maximum Message Length



C49MAX.

2.34. PDF417

Default All PDF417 Settings



PDF417 ON / OFF

***On**



Off



PDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-2750. Minimum Default = 1, Maximum Default = 2750.

Minimum Message Length



Maximum Message Length



2.35. MicroPDF417

Default All MicroPDF417 Settings



MicroPDF417 ON / OFF

***On**



Off



MicroPDF417 Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-366. Minimum Default = 1, Maximum Default = 366.

Minimum Message Length



Maximum Message Length



2.36. 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 RSS linear component.)



EAN•UCC Composite Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-2435. Minimum Default = 1, Maximum Default = 2435.



EAN•UCC Emulation

The imager can automatically format the output from any EAN•UCC data carrier to emulate what would be encoded in an equivalent UCC/EAN-128 or RSS and Composite symbol. EAN•UCC data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, UCC/EAN-128, and EAN•UCC RSS and Composites. Data from 2D symbols such as Aztec Code, Data Matrix, or QR Code, which encode a leading FNC1, also invoke EAN•UCC emulation. If UCC/EAN-128 Emulation is selected, the AIM Symbology Identifier is reported as “[C1”. If RSS Emulation is selected, the AIM Symbology Identifier is reported as “[e0.” Any application that accepts EAN•UCC data can be simplified since it only needs to recognize one data carrier type. Default = No Emulation.



2.37. 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.



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 OEM Engine.

2.38. Postnet

Postnet ON / OFF



Postnet Check Digit

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



2.39. Planet Code

Planet Code ON / OFF



Planet Code Check Digit

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



2.40. British Post

British Post ON / OFF



2.41. Canadian Post

Canadian Post ON / OFF



2.42. Kix (Netherlands) Post

Note: Kix code can misread when scanned sideways or upside down. Use Working Orientation (Appendix.4), if your Kix codes will not usually be presented upright to the scanner.

Kix (Netherlands) Post ON / OFF



2.43. Australian Post

Australian Post ON / OFF



2.44. Japanese Post

Japanese Post ON / OFF



2.45. China Post

Default All China Post Settings



China Post ON / OFF



China Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.



2.46. Korea Post

Default All Korea Post Settings



Korea Post ON / OFF



Korea Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.



2.47. QR Code

Note: QR Code can only be read by a 2D OEM Engine.

Default All QR Code Settings



QR Code ON / OFF

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



QR Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-3500. Minimum Default = 1, Maximum Default = 3500.

Minimum Message Length



Maximum Message Length



2.48. Data Matrix

Note: Data Matrix can only be read by a 2D OEM Engine.

Default All Data Matrix Settings



Data Matrix ON / OFF

***On**



Off



Data Matrix Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-1500. Minimum Default = 1, Maximum Default = 1500.

Minimum Message Length



Maximum Message Length



2.49. MaxiCode

Note: MaxiCode can only be read by a 2D OEM Engine.

Default All MaxiCode Settings



MaxiCode ON / OFF

***On**



Off



MaxiCode Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-150. Minimum Default = 1, Maximum Default = 150.

Minimum Message Length



Maximum Message Length



2.50. Aztec Code

Note: Aztec Code can only be read by a 2D OEM Engine.

Default All Aztec Code Settings



Aztec Code ON / OFF

***On**



Off



Aztec Code Message Length

Scan the bar codes below to change the message length. Refer to Message Length Description (2.8) for additional information. Minimum and Maximum lengths = 1-3750. Minimum Default = 1, Maximum Default = 3750.

Minimum Message Length



Maximum Message Length



Aztec Runes

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

Enable Runes





























***Disable Runes**





























3. APPENDIX 1: ASCII Table (A-Z, a-z, 0-9, punctuation, Control characters)
































Capital letters (A-Z):

Name	Programming label	Name	Programming label
A		N	
B		O	
C		P	
D		Q	
E		R	
F		S	
G		T	
H		U	
I		V	
J		W	
K		X	
L		Y	
M		Z	











Small letters (a-z):

Name	Programming label	Name	Programming label
a		n	
b		o	
c		p	
d		q	
e		r	
f		s	
g		t	
h		u	
i		v	
j		w	
k		x	
l		y	
m		z	









Ponctuation:

Name	Programming label	Name	Programming label
Space		<	
!		=	
"		>	
#		?	
\$		@	
%		[
&	]	
'		^	
(	_	
)		{	
*			
+		}	
,		~	
-		:	
.		;	
/			

Decimal numbers (0-9):

Name	Programming label
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

Control Characters:

Name	Programming label
CR	
EOT	
ETX	
LF	
NUL	
SOH	
STX	
TAB	

4. APPENDIX 2: Programming Chart



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

5. APPENDIX 3: Code Page Mapping of Printed Bar Codes

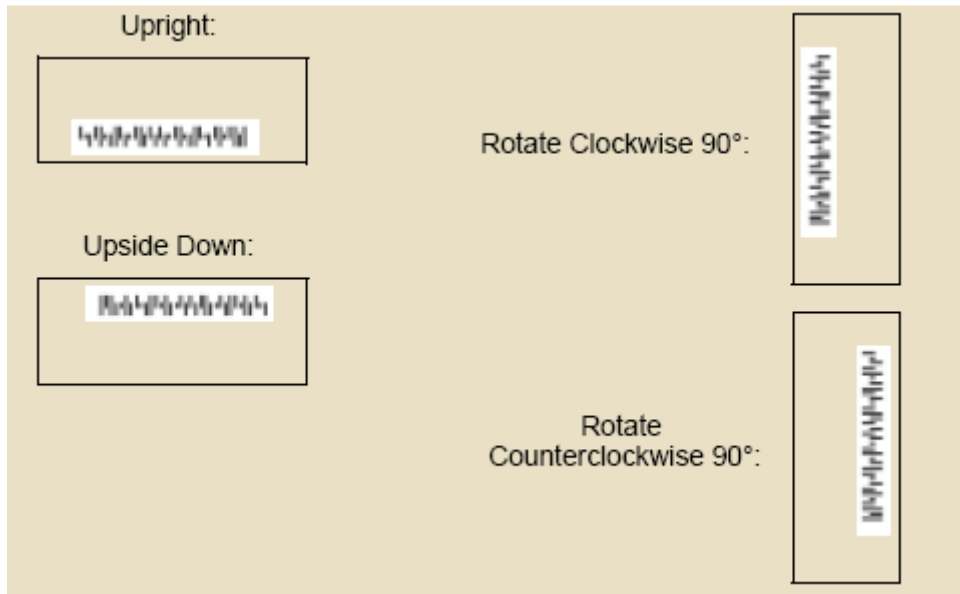
Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code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

Note: The Code Page option is available for Code 39, Code 93, and Code 128.

Code Page	Standard	Description
1	CP ISO646	
2 (Default)	ISO 2022	Automatic National Replacement Characters
3	CP Binary	
82	ISO 2022 11 Swe	Swedish Replacement Characters
83	ISO 2022 69 Fra	French/Belgium Replacement Characters
81	ISO 2022 25 Fra	French/Belgium Replacement Characters
84	ISO 2022 11 Ger	German Replacement Characters
85	ISO 2022 11 Ita	Italian Replacement Characters
86	ISO 2022 11 Swi	Swiss Replacement Characters
87	ISO 2022 11 UK	British Replacement Characters
88	ISO 2022 11 Dan	Danish Replacement Characters
89	ISO 2022 11 Nor	Norwegian Replacement Characters
90	ISO 2022 11 Spa	Spanish Replacement Characters

6. APPENDIX 4: 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.



7. APPENDIX 5: Symbology Chart (AIM identifier)

Symbology	AIM ID	Possible AIM ID Modifiers (m)
Australian Post	]X0	
Aztec Code	]zm	0-9, A-C
British Post	]X0	
Canadian Post	]X0	
China Post	]X0	
Codabar	]Fm	0-1
Codablock F	]Om	0, 1, 4, 5, 6
Code 11	]H3	
Code 128	]Cm	0, 1, 2, 4
Code 16K	]Km	0, 1, 2, 4
Code 32 Pharmaceutical (PARAF)	]X0	
Code 39	]Am	0, 1, 3, 4, 5, 7
Code 49	]Tm	0, 1, 2, 4
Code 93 and 93i	]Gm	0-9, A-Z, a-m
Data Matrix	]dm	0-6
EAN-13	]E0	
EAN-8	]E4	
EAN•UCC Composite	]em	0-3
EAN-13 with Extended Coupon Code	]E3	
Interleaved 2 of 5	]lm	0, 1, 3
Japanese Post	]X0	
KIX (Netherlands) Post	]X0	
Korea Post	]X0	
Matrix 2 of 5	]X0	
MaxiCode	]Um	0-3
MicroPDF417	]Lm	3-5
MSI	]Mm	0
OCR-A	]o1	
OCR-B	]o2	
OCR MICR E-13B	]ZE	
OCR US Money Font	]o3	
SEMI Font	]o3	
PDF417	]Lm	0-2
Planet Code	]X0	
Plessey Code	]P0	
PosiCode	]pm	0, 1, 2
Postnet	]X0	
QR/Micro QR Code	]Qm	0-6
Reduced Space Symbology (RSS- 14, RSS Limited, RSS Expanded)	]em	0
Straight 2 of 5 IATA (two-bar start/stop)	]Rm	0, 1, 3
TCIF Linked Code 39 (TLC39)	]L2	
Telepen	]Bm	0, 1, 2, 4
Trioptic Code	]X0	
UCC/EAN-128	]C1	
UPC-A	]E0	
UPC-A with Extended Coupon Code	]E3	
UPC-E	]E0	
VeriCode	]X0	