

CipherLab **User Guide**

1504B Barcode Scanner

Setup barcodes included.

Version 1.00



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IMPORTANT NOTICES

FOR USA

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▶ Reorient or relocate the receiving antenna.
- ▶ Increase the separation between the equipment and receiver.
- ▶ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▶ Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FOR CANADA

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 édictée par l'Industrie.

FOR PRODUCT WITH LASER



CAUTION

This laser component emits FDA / IEC Class 2 laser light at the exit port. Do not stare into beam.

SAFETY PRECAUTIONS

- ▶ DO NOT expose the scanner to any flammable sources.
- ▶ Under no circumstances, internal components are self-serviceable.
- ▶ For AC power adaptor, a socket outlet shall be installed near the equipment and shall be easily accessible. Make sure there is stable power supply for the scanner or its peripherals to operate properly.

CARE & MAINTENANCE

- ▶ Use a clean cloth to wipe dust off the scanning window and the body of the scanner. DO NOT use/mix any bleach or cleaner.
- ▶ Keep the scanner away from any magnets and magnetic fields to prevent the laser engine from malfunctioning.
- ▶ If finding the scanner malfunctioning, write down the specific scenario and consult the local sales representative.

RELEASE NOTES

Version	Date	Notes
1.00	Mar. 13, 2017	<ul style="list-style-type: none">▶ Modified: 1504B models added (based on 1504 Series User Guide)▶ Modified: Symbologies Supported – same 1D symbologies as 1500P▶ Modified: Symbology Supported – Code 11 added▶ Removed: 1.6.1 Test Modes▶ Modified: 1.9 – Three times redundancy read barcode added▶ Modified: 1.10 – Addon Security level 2~30; default 2▶ Modified: 1.11 – behavior of 1504B same as 1504A▶ Removed: 1.12 Negative Barcodes▶ Removed: 1.16 Illumination Brightness▶ Modified: 3.1 ~ 3.19 – same 1D symbologies as 1500P▶ Modified: 3.1.1 – set “Normal” (Codebar security level) to default▶ New: 3.1.5 Code Length Qualification – (Codebar)▶ Modified: 3.5.5 – set “Normal” (Code 39 security level) to default▶ New: 3.5.6 Asterisks as Data Characters▶ New: 3.5.7 Code Length Qualification – (Code 39)▶ New: 3.6.1 Code Length Qualification – (Code 93)▶ Modified: 3.7.1 – set “Normal” (Code 128 security level) to default▶ New: 3.9.1 EAN-13 Addon Modes▶ Modified: 3.9.4 – set “Normal” (EAN-13 security level) to default▶ Modified: 3.11.1 – ISBT concatenation default is disabled▶ Modified: 3.16.8 – set “Normal” (GS1 DataBar security level) to default▶ New: 3.20 Code 11▶ Modified: 3.21 – Maxicode, Aztec removed▶ Modified: 3.21.3 – GS1 formatting removed▶ Modified: 3.21.3 – Data Matrix Inverse added▶ Modified: 3.21.4 – GS1 formatting removed▶ Modified: 3.21.4 – QR Code Mirror/Inverse added▶ Modified: 3.21.5 – MicroQR default is disabled▶ Removed: 3.22 Macro PDF▶ Modified: 4.2.2 – same 1D symbologies as 1500P▶ Modified: 4.2.2 – Code 11 added▶ Modified: 4.4.1 – same 1D symbologies as 1500P▶ Modified: 4.4.1 Select Pre-defined Code ID – AIM Code ID added▶ Modified: 4.4.2 – same 1D symbologies as 1500P▶ Modified: 4.4.2 Change Code ID – Code 11 added

- ▶ Modified: **4.5 Length Code** – Code 11 added
- ▶ Modified: **4.5** – same 1D symbologies as 1500P
- ▶ Modified: **4.6.1** – same 1D symbologies as 1500P
- ▶ Modified: **4.6.1** – Code 11 added
- ▶ Modified: **5.3** – same 1D symbologies as 1500P
- ▶ Modified: **5.3.1 Applicable Code Type** – Code 11 added
- ▶ New: **Appendix VI Keyboard Type One-Scan Barcode**

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INTRODUCTION

The small-form-factor Barcode Scanners are capable of reading 2D barcodes. The tethered handheld scanners are designed to help accelerate productivity while lowering the total cost of ownership. Intensive data collection jobs are made easier with fast, accurate barcode scanning in various working environments, especially in small businesses. A new ordering option is provided for adapting a 2D scan engine to read both 1D and 2D barcodes.

Owing to the slim, ergonomic design, extremely low power consumption, and powerful decoding capability, CipherLab Barcode Scanners are the best choice for the following applications –

- ▶ Receiving in Retail
- ▶ Product labeling & Tracking
- ▶ Shelf Product Replenishment
- ▶ Mobile Point of Sale (POS)
- ▶ Mobile Inventory Management
- ▶ Order Picking & Staging
- ▶ Work-In-Process Tracking
- ▶ Material Flow Control
- ▶ Transportation & Distribution
- ▶ Warehousing
- ▶ Asset Management

This manual contains information on operating the scanner and using its features. It is better to keep one copy of the manual at hand for quick reference or maintenance purposes. To avoid any improper disposal or operation, please read the manual thoroughly before use.

Thank you for choosing CipherLab products!



INSIDE THE PACKAGE

The items included in the package may be different, depending on order. Rich choices of output interfaces are available to enhance the total performance of the scanner. Refer to product specifications.

Save the box and packaging material for future use in case it is need to store or ship the scanner.

- ▶ Barcode Scanner: 1504B

PRODUCT HIGHLIGHTS

- ▶ Small-form-factor and built tough to survive drop test
- ▶ Extremely low power consumption
- ▶ Firmware upgradeable
- ▶ Supports most popular barcode symbologies, including GS1-128 (EAN-128), GS1 DataBar (RSS), etc.
- ▶ Supports a variety of 2D symbologies
- ▶ Supports different scan modes, including Aiming Mode and Multi-Barcode Mode^{Note}
- ▶ User feedback via LED indicator and beeper
- ▶ Beeping tone and duration programmable for Good Read
- ▶ Provides choices of output interfaces, including RS-232, Keyboard Wedge, and USB.
- ▶ Programmable parameters include data output format, editing format, symbologies, etc.

Note: In any scan mode other than Multi-Barcode Mode, a barcode acceptable to the scanner can only contain data of 7 KB at most.



SYMBOLOLOGIES SUPPORTED

Most of the popular barcode symbologies are supported, as listed below. Each can be individually enabled or disabled. The scanner will automatically discriminate and recognize all the symbologies that are enabled. Refer to [Chapter 3 Changing Symbology Settings](#) for details of each symbology.

Symbologies Supported: Enable/Disable		Default	
Codabar		Enabled	
Code 93		Enabled	
MSI			Disabled
Plessey			Disabled
Telepen			Disabled
Code 128	Code 128	Enabled	
	GS1-128 (EAN-128)	Enabled	
	ISBT 128	Enabled	
Code 2 of 5	Industrial 25	Enabled	
	Interleaved 25	Enabled	
	Matrix 25		Disabled
Code 3 of 9	Code 39	Enabled	
	Italian Pharmacode		Disabled
	French Pharmacode		Disabled
EAN/UPC	EAN-8	Enabled	
	EAN-8 Addon 2		Disabled
	EAN-8 Addon 5		Disabled
	EAN-13	Enabled	
	EAN-13 & UPC-A Addon 2		Disabled
	EAN-13 & UPC-A Addon 5		Disabled
	ISBN		Disabled
	UPC-E0	Enabled	
	UPC-E1		Disabled
	UPC-E Addon 2		Disabled
	UPC-E Addon 5		Disabled
	UPC-A	Enabled	
Code 11			Disabled
GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)		Disabled
	GS1 DataBar Truncated		Disabled



	GS1 DataBar Limited (RSS Limited)		Disabled
	GS1 DataBar Expanded (RSS Expanded)		Disabled
2D Symbologies	PDF417	Enabled	
	MicroPDF417		Disabled
	Data Matrix	Enabled	
	QR Code	Enabled	
	MicroQR		Disabled



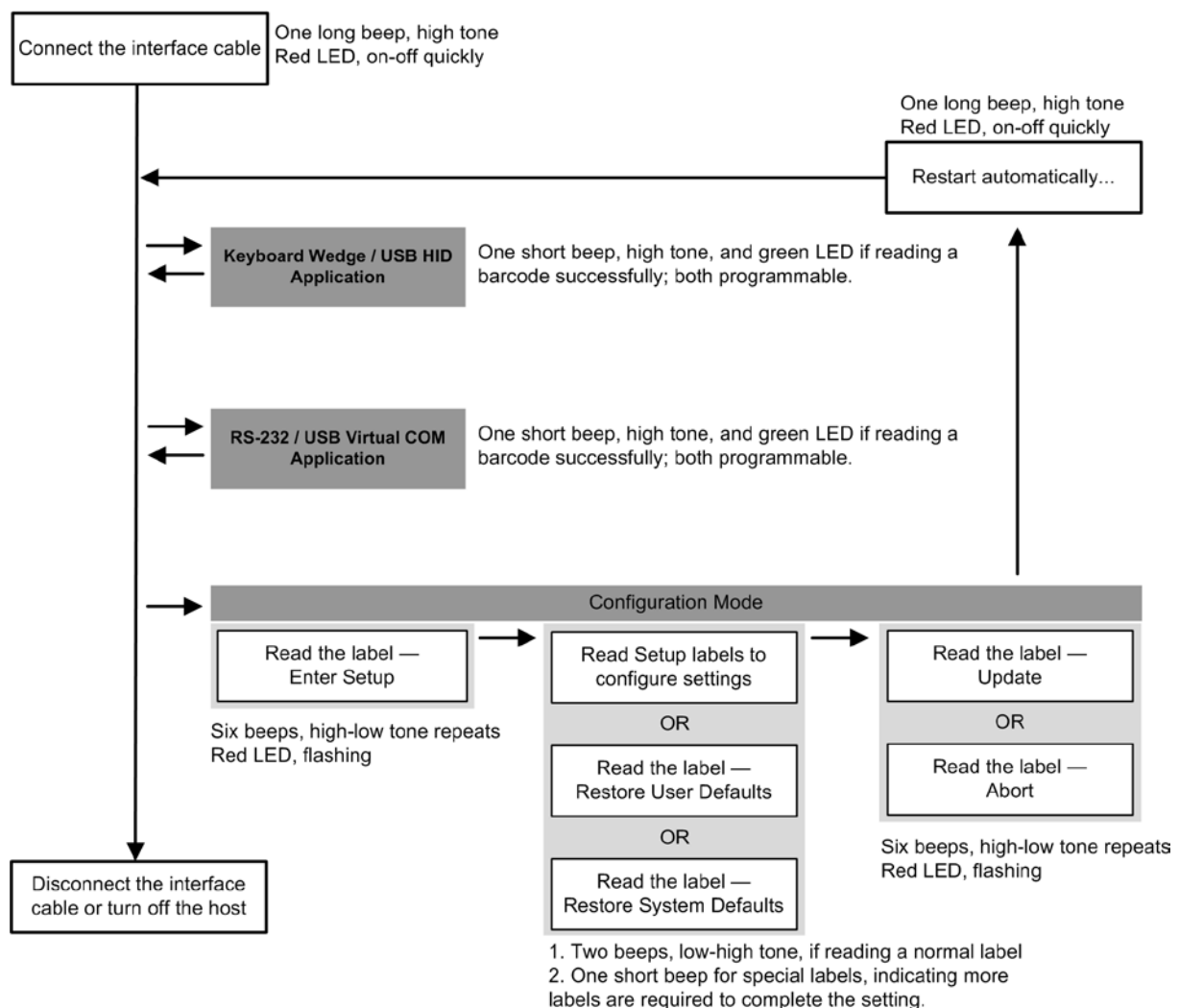
QUICK START

The configuration of the scanner can be done by reading the setup barcodes contained in this manual or via the *ScanMaster* software.

This section describes the procedure of configuring the scanner by reading the setup barcodes and provides some examples for demonstration.

Note: If RS-232 or USB Virtual COM is selected for output interface, the host can directly send serial commands to configure the scanner.

For example, run HyperTerminal.exe and type the 6-digit command located under each setup barcode. Refer to [Appendix II Host Serial Commands](#).



ENTER CONFIGURATION MODE

For the scanner to enter the configuration mode, have it read the "Enter Setup" barcode located at the bottom of almost every even page of this manual.

- ▶ The scanner will respond with six beeps and its LED indicator will become flashing red after reading the barcode.

Enter Setup



For configuring scanner parameters, see "Read a Setup Barcode" below.

EXIT CONFIGURATION MODE

For the scanner to save settings and exit the configuration mode, have it read the "Update" barcode located at the bottom of almost every odd page of this manual. To exit the configuration mode without saving any changes, have the scanner read the "Abort" barcode instead.

- ▶ Just like reading the "Enter Setup" barcode, the scanner will respond with six beeps and its LED indicator will become flashing red after reading the barcode. Wait for a few seconds for the scanner to restart itself.

Update



109999

Abort



109998



Enter Setup

DEFAULT SETTINGS

SAVE USER SETTINGS AS DEFAULTS

For the scanner to keep the customized settings as user defaults, have it read the “Save as User Defaults” barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone).

- ▶ After reading the “Update” barcode, the current settings will be saved as user defaults.

Save as User
Defaults



109986

RESTORE USER DEFAULTS

For the scanner to restore the user defaults saved earlier, have it read the “Restore User Defaults” barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone).

- ▶ After reading the “Update” barcode, all the parameters of the scanner will return to their customized values.

Restore User
Defaults



109987

RESTORE SYSTEM DEFAULTS

For the scanner to restore the factory defaults, have it read the “Restore System Defaults” barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone).

- ▶ After reading the “Update” barcode, all the parameters of the scanner will return to their default values.

Restore System
Defaults



109993

Note: The system default value (if there is) for each setting is indicated by an asterisk “*”.



READ A SETUP BARCODE

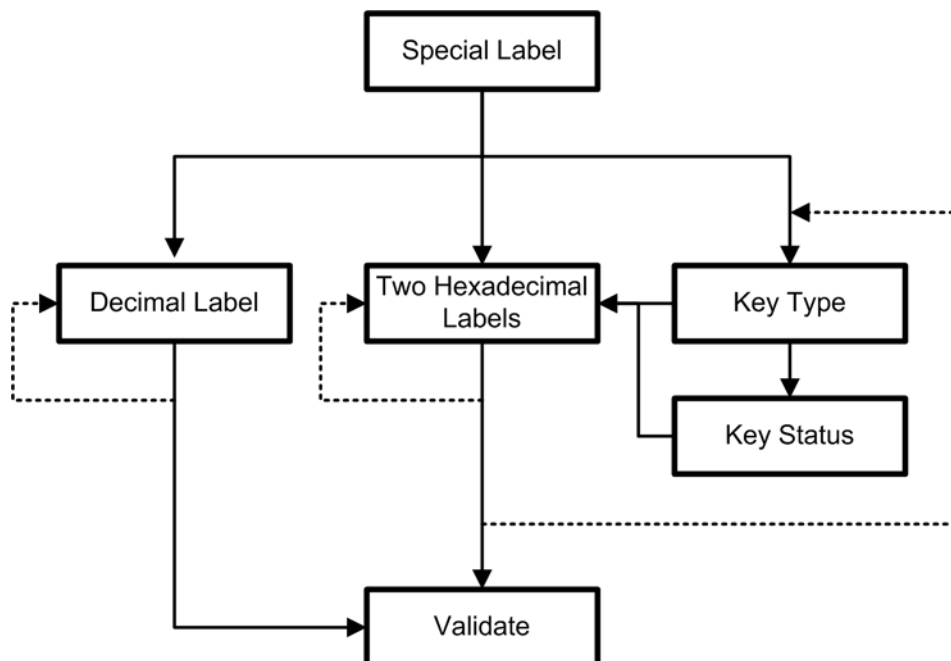
CONFIGURE PARAMETERS

For most of the scanner parameters, only one read is required to set them to new values. The scanner will respond with two beeps (low-high tone) when each parameter is set successfully.

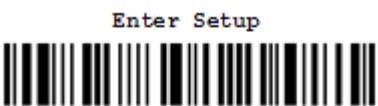




But for a number of special parameters, multiple reads are required to complete the setting. In this case, the scanner will respond with a short beep to indicate it needs to read more setup barcodes. These special parameters may require reading one or more setup barcodes, such as

- ▶ Numeric barcodes, say, for keyboard type, inter-character delay, length qualification
- ▶ Hexadecimal barcodes, say, for character strings as prefix, suffix, etc.
- ▶ When “Keyboard Wedge” or “USB HID” is configured for interface, Key Type and Key Status will then become applicable. Decide whether or not to change key status when “Normal Key” is selected for Key Type.

To complete the configuration of these special parameters, it requires reading the “Validate” barcode, and the scanner will respond with two beeps (low-high tone) to indicate the input values are validated.











The example below shows how to save settings as “User Default” so that to restore user defaults later:

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... 	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will be flashing red.
3	Read a Setup barcode... For example,  	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.
4	Exit the Configuration Mode...  OR 	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .
*	When any configuration error occurs...	The scanner will respond with one long beep (low tone).

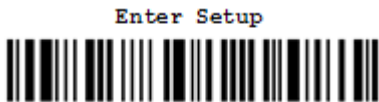












The example below shows how to set numeric parameters:

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode...	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode...	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.
	For example,	
	<div>Normal setup barcode</div> <div>*Enable Interleaved 25</div>  <div>100309</div>	
	<div>Normal setup barcode</div> <div>Enable Fixed Length(s) ...</div>  <div>100604</div>	
	<div>Special setup barcode</div> <div>Max. Length (*126) Or Fixed Length 1</div>  <div>100606</div>	The scanner will respond with one short beep if reading a special setup barcode such as "Max. Length", indicating the setup requires reading more barcodes.
	<div>Decimal barcodes</div> <div>1</div>  <div>109901</div> <div>5</div>  <div>109905</div> <div>Validate</div>  <div>109994</div>	<p>Read the "Decimal Value" barcode(s).</p> <p>► Refer to Appendix IV "Decimal System"</p>
4	Exit the Configuration Mode...	The scanner will respond with two beeps (low-high tone) when the input values are validated.
	<div>Update</div>  <div>109999</div> <div>OR</div> <div>Abort</div>  <div>109998</div>	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .



The example below shows how to set string parameters:

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... 	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode... For example, <div>Special setup barcodes</div>    <div>Hexadecimal barcodes</div>   	The scanner will respond with one short beep if reading a special setup barcode such as "Prefix Code", indicating the setup requires reading more barcodes. When "Keyboard Wedge" or "USB HID" is configured for interface, Key Type and Key Status will then become applicable. Decide whether or not to change key status when "Normal Key" is selected for Key Type. ▶ Refer to Appendix III Read the "Hexadecimal Value" barcodes for the desired character string. For example, read "2" and "B" for the scanner to prefix the character "+". ▶ Refer to Appendix IV "Hexadecimal System" The scanner will respond with two beeps (low-high tone) when the input values are validated.
4	Exit the Configuration Mode...   OR  	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .



LIST THE CURRENT SETTINGS

The current settings of all scanner parameters can be sent to the host computer for user inspection. The listing includes pages as shown below. Select the page of interest by having the scanner read the "List Page x" barcode. The scanner will respond with two beeps (low-high tone) and send the selected page to the host immediately.

Lists settings regarding Firmware Version, Serial Number, Interface, Buzzer, and Other Scanner Parameters

List Page 1



Lists settings regarding Prefix, Suffix, and Length Code Setting (1/2)

List Page 2



Lists settings regarding Prefix, Suffix, and Length Code Setting (2/2)

List Page 3



Lists settings regarding Code ID

List Page 4



Lists settings regarding: Readable Symbologies (1/2)

List Page 5



Lists settings regarding: Readable Symbologies (2/2)

List Page 6



Lists settings regarding Symbology Parameters (1/3)

List Page 7



Lists settings regarding Symbology Parameters (2/3)

List Page 8



Lists settings regarding Symbology Parameters (3/3)

List Page 9



Reserved

List Page 10



Lists settings regarding Editing Format 1
(1/2)

List Page 11



109937

Lists settings regarding Editing Format 1
(2/2)

List Page 12



109938

Lists settings regarding Editing Format 2
(1/2)

List Page 13



109939

Lists settings regarding Editing Format 2
(2/2)

List Page 14



109940

Lists settings regarding Editing Format 3
(1/2)

List Page 15



109941

Lists settings regarding Editing Format 3
(2/2)

List Page 16



109942

Lists settings regarding Editing Format 4
(1/2)

List Page 17



109943

Lists settings regarding Editing Format 4
(2/2)

List Page 18



109944

Lists settings regarding Editing Format 5
(1/2)

List Page 19



109945

Lists settings regarding Editing Format 5
(2/2)

List Page 20



109946

Lists settings of Driver License parsing

List Page 22



109948



CREATE ONE-SCAN SETUP BARCODES

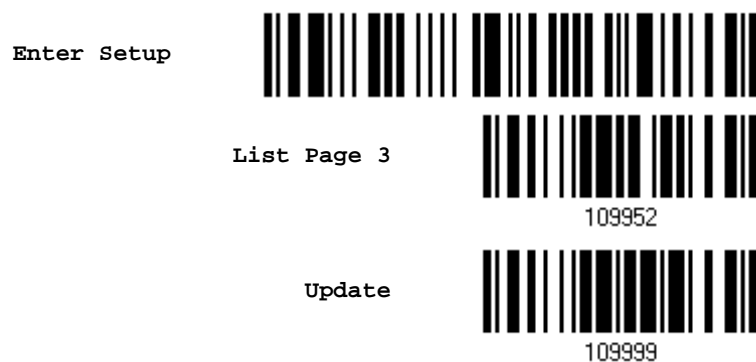
The fact is most of the scanner parameters require only one read for setting new values. To facilitate configuring the scanner, create One-Scan setup barcodes for use.

1D ONE-SCAN BARCODE

The requirements of a One-Scan setup barcode are:

- ▶ a prefix of the “#@” characters
- ▶ the six digits of command parameters
- ▶ a suffix of the “#” character

For example, the scanner needs reading three setup barcodes for the command parameter “109952” to take effect:



Now, it requires only one read:

One-Scan Setup Barcode
for 109952



Note: The scanner will restart automatically upon reading the One-Scan setup barcode for changing the interface. It will respond with a long beep and its LED will come on-off shortly.



2D ONE-SCAN BARCODE

Users can also scan a single 2D barcode combining with a series of serial commands to configure the scanner. For example, if you want to change the suffix character to '#', you will need to input the serial commands in sequence as follows (underlining the digits is to make them more readable):

#@CipherLab101231109902109903109994

2D One-Scan Setup Barcode for configuring suffix



Command	Purpose
#@CipherLab	Enter Setup
101231	Configure suffix
109902	Give the first hexadecimal digit of 0x23
109903	Give the second hexadecimal digit of 0x23 for taking '#' as the suffix
109994	Validate the settings





UNDERSTANDING THE BARCODE SCANNER

This chapter explains the features and usage of the barcode scanner.

IN THIS CHAPTER

1.1 Power-On.....	18
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1.1 POWER-ON

Connect the interface cable between the scanner and computer.

- ▶ If using the RS-232 cable, it must join the power supply cord to power up the scanner.
- ▶ The scanner will respond with one long beep (high tone) and its LED indicator will become solid red and go off quickly.

1.2 TRANSMIT BUFFER

The scanner is designed to send any collected data to a host computer one by one via the transmit buffer (SRAM). Upon reading a barcode successfully, the scanner responds with one short beep (high tone) and its LED indicator becomes solid green and goes off quickly. However, the host computer may not receive the data immediately if using a low baud rate or waiting for handshake signal (flow control). With the 10 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full. A warning is given when the transmit buffer is full — the scanner will respond with one long beep (low tone) and its LED indicator will become solid red and go off quickly.

Note: The 10 KB transmit buffer on the scanner can hold as many as 640 scans based on EAN-13 barcodes. Data will be cleared out once the power adaptor to the RS-232 cable is removed or other interface cable is disconnected!

By default the transmit buffer is enabled. Users can decide whether to use the transmit buffer function by reading the Enable/Disable barcode below.

***Enable**



101015

Disable



101016

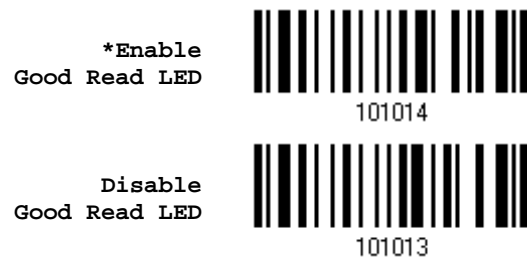


1.3 LED INDICATOR

The dual-color LED on top of the scanner is used to provide user feedback. For example, the LED becomes solid red and goes off quickly upon powering on or running out of transmit buffer. Tell the difference by the beeps – for example, it will hear a long beep of high tone when powering on the scanner, and a long beep of low tone when the transmit buffer becomes full.

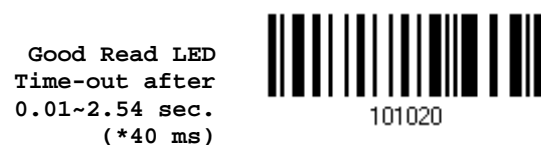
Scanner LED		Meaning
Red, on-off	---	<ul style="list-style-type: none"> ▶ Power on, with one long beep (high tone, LED on for 1 second) ▶ Transmit buffer full, with one long beep (low tone) ▶ RS-232/USB Virtual COM connection fails, with two beeps (high-low tone)
---	Green, on-off	Good Read, with one short beep (high tone) and beeper pitch and duration programmable
Red, flashing	---	Configuration Mode (On/Off ratio 0.5 s: 0.5 s)

1.3.1 GOOD READ LED



1.3.2 GOOD READ LED DURATION

By default, the Good Read LED stays on for 40 milliseconds. Specify a value, ranging from 1 to 254 in units of 10 milliseconds.



- 1) Read the barcode above to specify the time interval before the Good Read LED goes off.
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "5" for the LED to go off after 150 milliseconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.




1.4 BEEPER

The scanner has a buzzer to provide user feedback in various operating conditions.

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone ▶ Programmable, default to 4 KHz	Good Read, with green LED on-off quickly
Six short beeps ▶ High-low tone repeats three times	▶ Enter Configuration Mode, with red LED flashing ▶ Exit Configuration Mode
Two beeps, low-high tone	▶ Setup barcode read successfully
Two beeps, high-low tone	RS-232/USB Virtual COM connection fails (data saved in Transmit Buffer), with red LED on-off quickly
One short beep, high tone	More setup barcode required
One short beep, low tone	More barcodes required to complete the "output sequence" requirements of Multi-Barcode Editor, with green LED on-off quickly (Upon completion, same as Good Read.)
One long beep, low tone	▶ Transmit buffer full, with red LED on-off quickly ▶ Configuration error (Wrong barcode...)
Two long beeps, high-low tone	Multi-Barcode Mode – Buffer full

1.4.1 BEEPER VOLUME

Mute	 101009
Minimum Volume	 101010
Medium Volume	 101011
*Maximum Volume	 101012

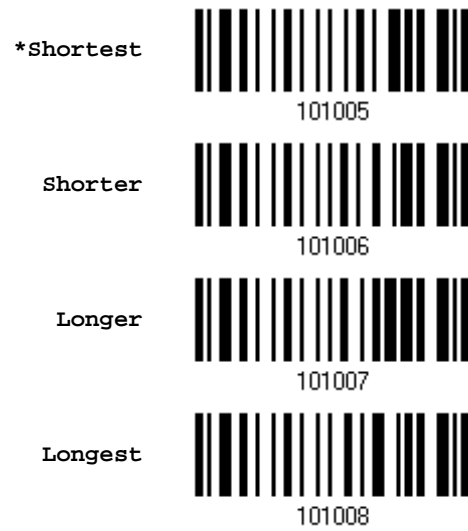


1.4.2 GOOD READ BEEP

Frequency



Duration



1.5 SEND "NR" TO HOST

This feature only works when Keyboard Wedge or RS-232 is selected for output interface. Have the scanner send the "NR" string to the host to notify the No Read event.

Enable



100267

*Disable



100266



1.6 SCAN MODES

Different scan modes are supported – select the scan mode that best suits the requirements of a specific application. Refer to the comparison table below.

- ▶ In any scan mode other than Multi-Barcode Mode, a barcode acceptable to the scanner can only contain data of 7 KB at most.

Scan Mode	Start to Scan				Stop Scanning			
	Always	Press trigger once	Hold trigger	Press trigger twice	Release trigger	Press trigger once	Barcode being read	Timeout
Laser mode			✓		✓		✓	✓
Auto Off mode		✓					✓	✓
Auto Power Off mode		✓						✓
Aiming mode				✓			✓	✓
Multi-Barcode mode			✓		✓			
Presentation mode	✓							

Note: By default, the scan mode is set to Laser mode.



1.6.1 LASER MODE

The scanner will start scanning once the trigger is held down.

- ▶ The scanning won't stop until (1) a barcode is decoded, (2) the pre-set timeout expires, or (3) release the trigger.

Note: Refer to "Scanning Timeout".

*Laser Mode



1.6.2 AUTO OFF MODE

The scanner will start scanning once the trigger is pressed.

- ▶ The scanning won't stop until (1) a barcode is decoded, and (2) the pre-set timeout expires.

Note: Refer to "Scanning Timeout".

Auto Off Mode



1.6.3 AUTO POWER OFF MODE

The scanner will start scanning once the trigger is pressed.

- ▶ The scanning won't stop until the pre-set timeout expires, and, the pre-set timeout period re-counts after each successful decoding.

Note: Refer to "Delay between Re-read" and "Scanning Timeout".

Auto Power Off Mode



1.6.4 AIMING MODE

The scanner will aim at a barcode once the trigger is pressed, and start scanning when the trigger is pressed again within one second.

- ▶ The scanning won't stop until (1) a barcode is decoded, and (2) the pre-set timeout expires.

Aiming Mode



Aiming Timeout

Limit the aiming time interval (1~15). By default, the scanner time-out is set to 1 second.

Aiming Time-out
after 1~15 sec.
(*1)



1. Read the barcode above to specify the time interval before aiming ends. (It is set to 1 by default.)
2. Read the ["Decimal Value"](#) barcode on page 183. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.

1.6.5 MULTI-BARCODE MODE

The scanner will be scanning as long as the trigger is held down, capable of decoding one single barcode, as well as multiple unique barcodes one at a time. While decoding a bunch of unique barcodes, if a barcode is decoded twice, its subsequent decoding will be ignored and the scanner is expecting another unique barcode.

For multiple unique barcodes, the maximum output data length of all the barcodes is 10 KB after configuration. When the output length exceeds 10 KB, Multi-Barcode Mode will not take effect.

- ▶ The scanning won't stop until you release the trigger.

Multi-Barcode Mode



Note: (1) A barcode is considered unique when its Code Type or data is different from others.
(2) Multi-Barcode Mode has nothing to do with the [Multi-Barcode Editor](#).



1.6.6 PRESENTATION MODE

The scanner will be expecting barcodes. Whenever a barcode is brought within range, the scanner will be able to decode it. It is suggested to seat the scanner in the Auto-Sense Stand for hands-free operation.

Presentation Mode



Low Light Enhancement

Enable Low Light Enhancement will cause the illumination to remain on at a low power in low lighting conditions.

Enable



*Disable



1.7 SCANNING TIMEOUT

Specify the scanning time interval (1~254 sec.; 0= Disable) when the scan mode is set to any of the following –

- ▶ Laser mode
- ▶ Auto Off mode
- ▶ Auto Power Off mode
- ▶ Aiming mode

Scanner Time-out
after 0~254 sec.
(*10)



- 1) Read the barcode above to specify the time interval before the scan engine times out.
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "5" for the scanner to automatically shut down after being idle for 15 seconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.



1.8 DELAY BETWEEN RE-READ

This is also referred to as the “Blocking Time”, which is used to prevent the scanner from accidentally reading the same barcode twice when the scan mode is set to any of the following –

- ▶ Auto Power Off mode
- ▶ Presentation mode

100 ms	
	100216
200 ms	
	100217
*400 ms	
	100218
800 ms	
	100219
1 sec	
	100220
2 sec	
	100221
3 sec	
	100222
5 sec	
	100223

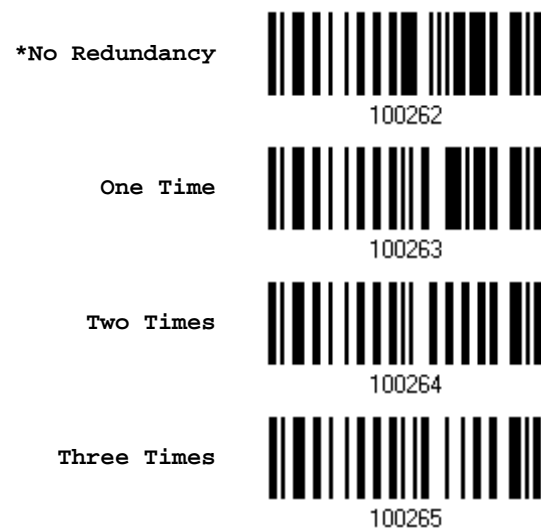


1.9 READ REDUNDANCY (1D)

Select the level of reading security. For example,

- ▶ If "No Redundancy" is selected, one successful decoding will make the reading valid and induce the "READER Event".
- ▶ If "Two Times" is selected, it will take a total of three consecutive successful decoding of the same barcode to make the reading valid. The higher the reading security is (that is, the more redundancy the user selects), the slower the reading speed gets.

It is obvious that the more redundancy selected, the higher the reading security is, and thus, the slower the reading speed becomes. It will have to compromise between reading security and decoding speed.



1.10 ADDON SECURITY FOR UPC/EAN BARCODES

The scanner is capable of decoding a mix of UPC/EAN barcodes with or without addons. The read redundancy (2~30 times; default is set to 2) allows changing the number of times to decode a UPC/EAN barcode before transmission. The more redundancy selected, the higher the reading security is, and thus, the slower the reading speed becomes. It will have to compromise between reading security and decoding speed.

Note: UPC/EAN Addon 2 and Addon 5 must be enabled individually for this setting to take effect.

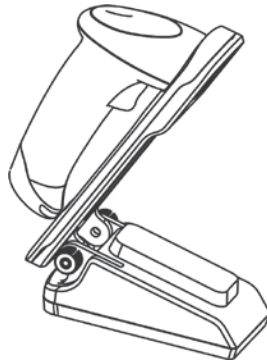
Addon Security Level
(*2~30)



- 1) Read the barcode above to specify the read redundancy for UPC/EAN barcodes. (It is set to 2 by default.)
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.
- 3) Read the "Validate" barcode on the same page to complete this setting.



1.11 AUTO-SENSE MODE



Auto-sense is only available when the scanner is working in [Laser Mode](#). The scanner will be expecting barcodes as long as it is seated in the Auto-sense stand. Whenever a barcode is brought within range, the scanner will be able to decode it.

To stop this mode, just remove the scanner from the stand.

***Enable Auto-sense**



Disable Auto-sense



1.12 CABLE AUTO-DETECTION

Find the interface cable provided inside the package. Connect it to the scanner. The scanner will detect the interface automatically. Refer to [Chapter 2 — Selecting Output Interface](#).

Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

Note: If “USB Virtual COM” is desired, have the scanner read the setup barcodes.

***Enable**



Disable



1.13 PICKLIST MODE

Picklist mode enables the decoder to decode only the barcodes aligned at the center under the laser aiming pattern.

Enable



102201

*Disable



102200



1.14 MOBILE PHONE/DISPLAY MODE

By default this mode is disabled. There is a big improvement in reading barcodes displayed on mobile phones and electronic displays when this mode is enabled.

***Disable**



102267

Enable



102268



SELECTING OUTPUT INTERFACE

In order to establish a proper connection between computer and the scanner, we suggest following these instructions –

- 1) Connect the scanner and computer with the provided interface cable. The scanner is capable of detecting the interface.

- ▶ If using the RS-232 cable, join the power supply cord.
- ▶ If using the USB cable, it is set to USB HID by default.

If “USB Virtual COM” is desired, have the scanner read the setup barcodes.

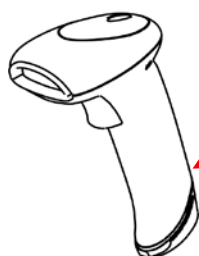
Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

Note: Please make sure the wired cable supports auto-detection. Check whether there is a sticker on the cable, stating “Cable Detection Supported”.

- 2) Have the scanner read the “Enter Setup” barcode to enter the configuration mode.
- 3) Have the scanner read the associated barcodes to activate the desired interface.

See the following sections for output interfaces supported.

- 4) Have the scanner read the barcodes for related settings.
- 5) Have the scanner read the “Update” barcode to apply the settings and quit the configuration mode.



Insert a pin and press it hard to release the interface cable.

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2.2 RS-232	46
2.3 Direct USB HID	51
2.4 Direct USB VCOM	60
2.5 Direct USB VCOM_CDC	62



2.1 KEYBOARD WEDGE

The Y cable allows connecting the scanner to the keyboard input port of PC and joining the keyboard as well. The scanned data will be transmitted to the host keyboard port as if it is manually entered via the keyboard.

Keyboard Wedge Settings	Defaults
Keyboard Type	PCAT (US)
Alphabets Layout	Normal
Digits Layout	Normal
Capital Lock Type	Normal
Capital Lock State	Off
Alphabets Transmission	Case-sensitive
Digits Transmission	Alphanumeric keypad
Kanji Transmission	Disable
Alternate Composing	No
Laptop Support	Disable
Inter-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)



2.1.1 ACTIVATE KEYBOARD WEDGE & SELECT KEYBOARD TYPE

When Keyboard Wedge interface is activated, it will have to select a keyboard type to complete this setting.

Activate Keyboard
Wedge & Select
Keyboard Type...



- 1) Read this barcode above to activate Keyboard Wedge and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 183. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

Keyboard Type

By default, the keyboard type is set to PCAT (US). The following keyboard types are supported –

No.	Keyboard Type	No.	Keyboard Type
1	PCAT (US)	18	PS55 001-3
2	PCAT (French)	19	PS55 001-8A
3	PCAT (German)	20	PS55 002-1, 003-1
4	PCAT (Italian)	21	PS55 002-81, 003-81
5	PCAT (Swedish)	22	PS55 002-2, 003-2
6	PCAT (Norwegian)	23	PS55 002-82, 003-82
7	PCAT (UK)	24	PS55 002-3, 003-3
8	PCAT (Belgium)	25	PS55 002-8A, 003-8A
9	PCAT (Spanish)	26	IBM 3477 Type 4 (Japanese)
10	PCAT (Portuguese)	27	PS2-30
11	PS55 A01-1	28	IBM 34XX/319X, Memorex Telex 122 Keys
12	PS55 A01-2 (Japanese)	29	User-defined table
13	PS55 A01-3	30	PCAT (Turkish)
14	PS55 001-1	31	PCAT (Hungarian)
15	PS55 001-81	32	PCAT (Swiss German)
16	PS55 001-2	33	PCAT (Danish)
17	PS55 001-82		



2.1.2 KEYBOARD SETTINGS

- ▶ Alphabets Layout
- ▶ Digits Layout
- ▶ Capital Lock Type
- ▶ Capital Lock Setting
- ▶ Alphabets Transmission
- ▶ Digits Transmission
- ▶ Kanji Transmission
- ▶ Alternate Composing
- ▶ Laptop Support

Alphabets Layout

By default, the alphabets layout is set to normal mode, also known as the standard English layout. Select French or German keyboard layout if necessary. The scanner will make adjustments when sending the "A", "Q", "W", "Z", "Y", and "M" characters according to this setting.

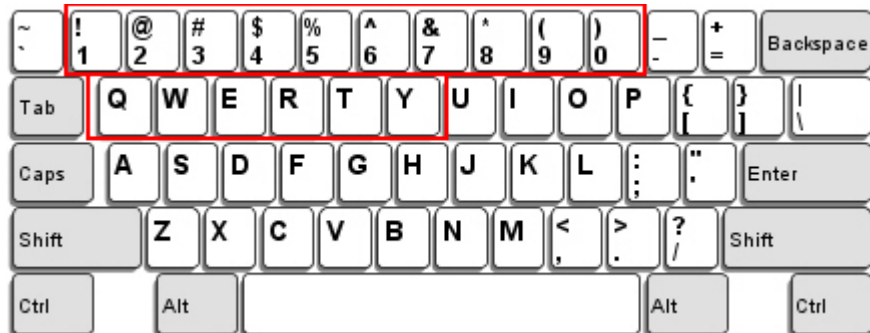


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match the keyboard.



US Keyboard Style – Normal

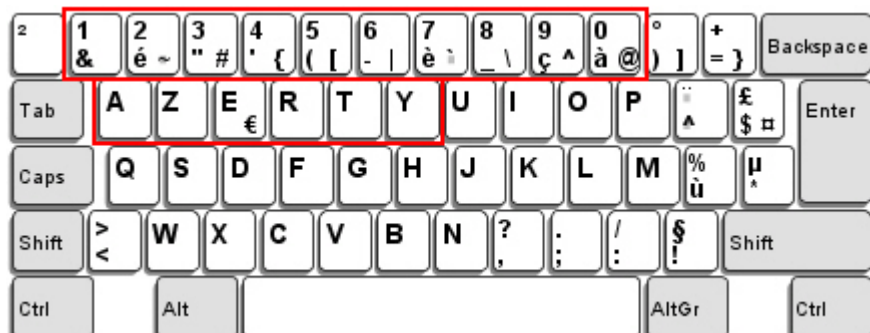
QWERTY layout, which is normally used in western countries.



- ▶ Select “Lower Row” for the “Digits Layout” setting for the upper row is for special characters.

French Keyboard Style – AZERTY

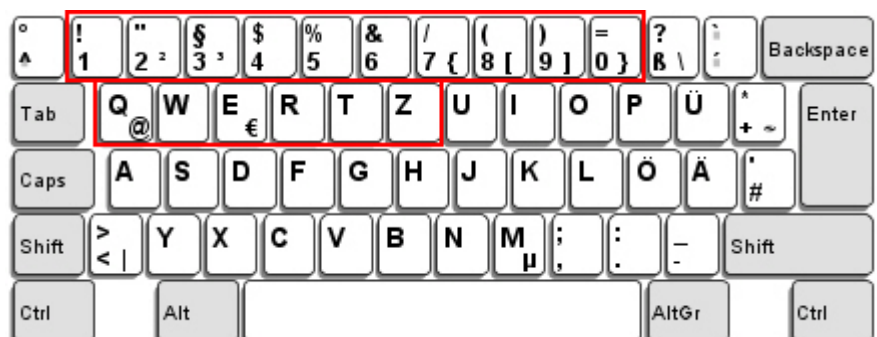
French layout; see below for French Keyboard Style.



- ▶ Select “Upper Row” for the “Digits Layout” setting for the lower row is for special characters.

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



- ▶ Select “Lower Row” for the “Digits Layout” setting for the upper row is for special characters.



Digits Layout

Select a proper layout that matches the alphabets layout. The scanner will make adjustments according to this setting.

Options	Description
Normal	Depends on the [Shift] key or [Shift Lock] setting
Lower Row	For QWERTY or QWERTZ keyboard
Upper Row	For AZERTY keyboard

***Normal**

100046

Upper Row

100049

Lower Row

100048

Note: This setting is meant to be used with the Alphabets Layout; and perhaps with the Character Substitution setting when support to certain keyboard types (languages) is unavailable but required.



Capital Lock Type & Setting

In order to send the alphabets with correct case, the scanner needs to know the status of Caps Lock on the keyboard. Incorrect settings may result in reversed case of the alphabets being transmitted.

Cap Lock Type	Description
Normal	Normal type
Capital Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. However, this does not affect the number or punctuation keys.
Shift Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. In addition, this affects the number or punctuation keys.

*Normal



100042

Shift Lock



100045

Capital Lock



100044

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▶ Refer to the Capital Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).

Auto Detect



100054

Capital Lock ON



100053



*Capital Lock OFF



Alphabets Transmission

By default, the alphabets transmission is case-sensitive, meaning that the alphabets will be transmitted according to their original case, the status of Caps Lock on the keyboard, as well as the Capital Lock setting. Select [Ignore Case] to have alphabets transmitted according to the status of Caps Lock on the keyboard only.

Ignore Case

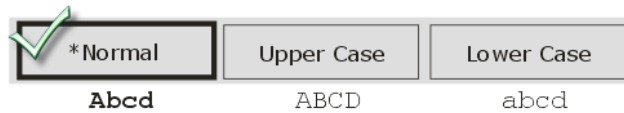


*Case-sensitive



1. Letter Case for Output Format

Refer to 4.1 Letter Case.



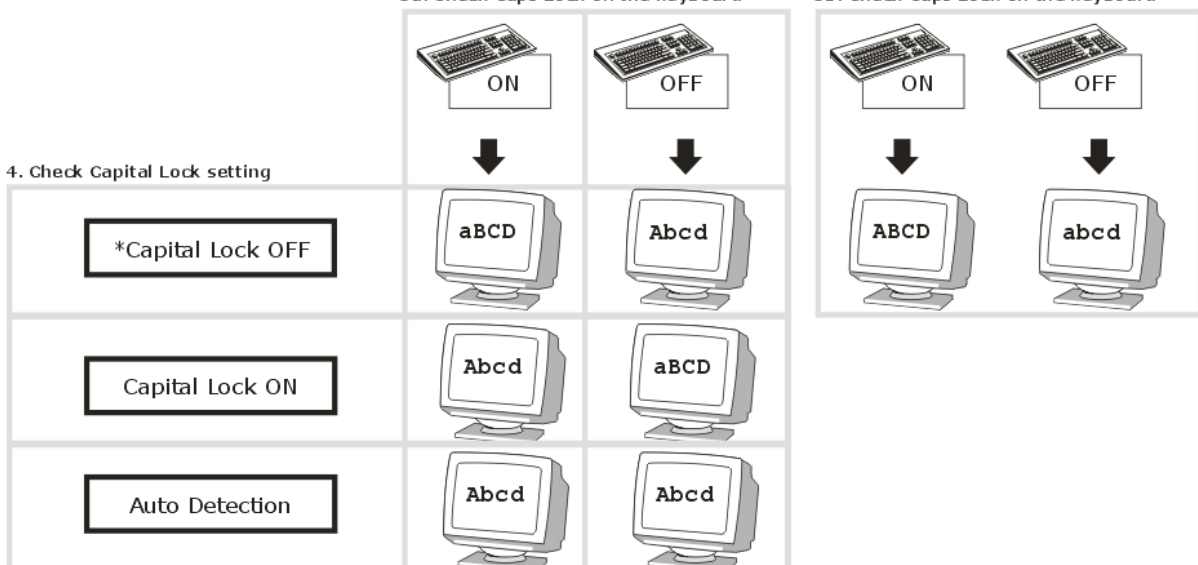
2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID



3a. Check Caps Lock on the keyboard

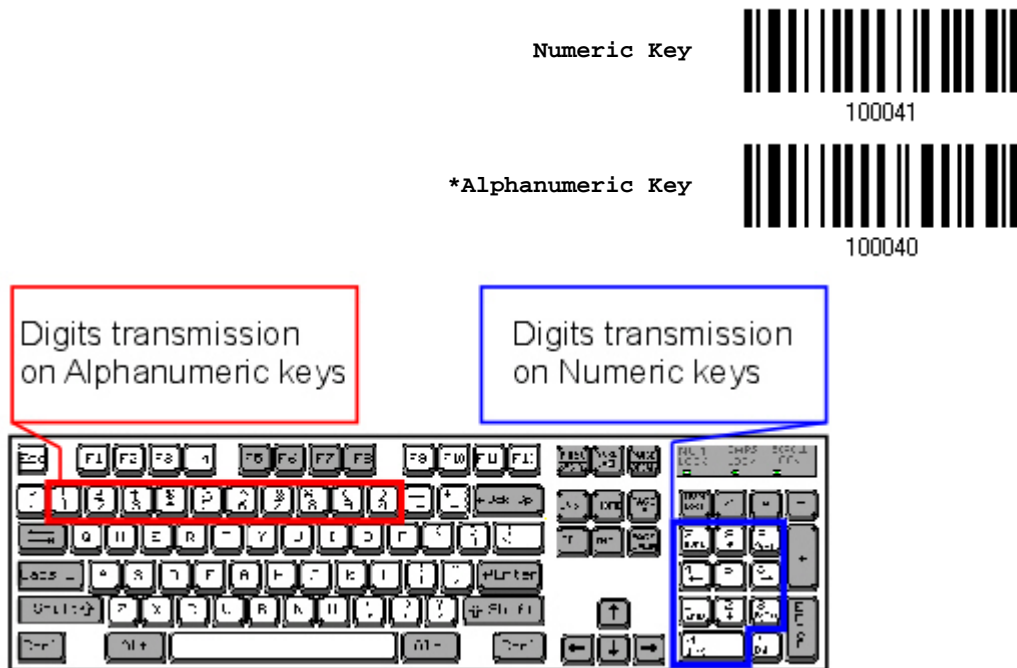
3b. Check Caps Lock on the keyboard

4. Check Capital Lock setting



Digits Transmission

By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if wishing to use the keys on the numeric keypad.

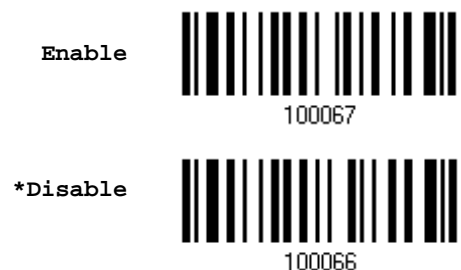


Note: If selecting “Numeric Keypad”, the Num Lock status of the physical keyboard should be “ON”.

Kanji Transmission

Kanji Transmission is supported by the scanner when either Keyboard Wedge or Direct USB HID is selected for the output interface. By Kanji Transmission, when the host computer is running on Japanese Windows O.S., the scanner is able to transmit Japanese characters including the Chinese characters used in modern Japanese writing system.

Kanji Transmission is disabled by default. Enable/disable scanner's Kanji Transmission by reading the following barcodes:



ALT Composing

By default, Alternate key composing is disabled. Select [Yes] to allow emulating Alternate key code of a specific keyboard character. For example, [Alt] + [065] will be sent to host for the character "A" regardless the keyboard type using.

Yes



100057

*No



100056

Laptop Support

By default, laptop support value is disabled. It suggests enabling this feature if connecting the wedge cable to a laptop without an external keyboard being inter-connected.

Enable



100059

*Disable



100058

2.1.3 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Character
Delay... (*0~254)



100011

- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.1.4 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every function code (0x01 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

2.1.5 SPECIAL KEYBOARD FEATURE

By default, the special keyboard feature is based on the factory definition. You can decide whether to apply the special keyboard feature. Refer to [Keyboard Wedge Table](#).

*Apply



Bypass



2.2 RS-232

Use the RS-232 cable to connect the scanner to the serial port of PC and join the power adaptor to the RS-232 connector. The associated RS-232 parameters must match those configured on the computer. The scanned data will be transmitted to the serial port.

RS-232 Settings	Defaults
Baud Rate, Data Bit, Parity, Stop Bit	115200 bps, 8 bits, No parity, 1 stop bit
Flow Control	None
Inter-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)
ACK/NAK Timeout	0
ACK/NAK Beep	Disable

2.2.1 ACTIVATE RS-232 INTERFACE

Activate RS-232
Interface



2.2.2 BAUD RATE

*115200 bps



57600 bps



38400 bps



19200 bps



9600 bps



4800 bps



2400 bps	 100085
1200 bps	 100086
600 bps	 100087



2.2.3 DATA BITS

*8 bits	 100093
7 bits	 100092

2.2.4 PARITY

*No parity	 100088
Even	 100090
Odd	 100091

2.2.5 STOP BIT

2 stop bits	 100099
*1 stop bit	 100098



2.2.6 FLOW CONTROL

By default, there is no flow control in use. Select the flow control (handshake) method.

Options	Description
No	No flow control
Scanner Ready	The scanner will activate the RTS signal upon powering on. After each good read, the scanner will then wait for the CTS signal to become active. Data will not be sent until the CTS signal becomes active.
Data Ready	The RTS signal will be activated after each good read. The scanner will then wait for the CTS signal to become active. Data will not be sent until the CTS signal becomes active.
Inverted Data Ready	It works the same as the Data Ready flow control except that the RTS signal level is inverted.

*None



100094

Scanner Ready



100095

Data Ready



100096

Invert Data Ready



100097



2.2.7 INTER-CHARACTER DELAY

By default, the inter-character delay is zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Character
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

2.2.8 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every function code (0x01 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function
Delay... (*0~254)



- 1) Read this barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.2.9 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Specify a value, ranging from 1 to 99 in units of 0.1 second. If no response within the specified period of time, the scanner will attempt to send the same data two more times. If all three attempts fail without any notification, data loss will occur.

ACK/NAK Time-out
after ... (*0~99)



100013

- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep



100015

*Disable Error Beep



100014

Note: We suggest enabling the error beep to notice of such data loss and have the scanner re-read data.



2.3 DIRECT USB HID

For USB HID, connect the scanner to the USB port of PC. Run any text editor on the computer, and the scanned data will be transmitted to the computer.

HID Settings	Defaults
Keyboard Type	PCAT (US)
Digits Layout	Normal
Capital Lock Type	Normal
Capital Lock State	Off
Alphabets Transmission	Case-sensitive
Digits Transmission	Alphanumeric keypad
Kanji Transmission	Disable
Inter-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)

2.3.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

When USB HID interface is activated, it will have to select a keyboard type to complete this setting.

Activate
Direct USB HID &
Select Keyboard
Type...



- 1) Read the barcode above to activate USB HID and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 183. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

USB HID

By default, the keyboard type is set to PCAT (US). The following keyboard types are supported —

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	72	PCAT (Spanish)
65	PCAT (French)	73	PCAT (Portuguese)
66	PCAT (German)	74	PS55 A01-2 (Japanese)
67	PCAT (Italy)	75	User-defined table
68	PCAT (Swedish)	76	PCAT (Turkish)
69	PCAT (Norwegian)	77	PCAT (Hungarian)
70	PCAT (UK)	78	PCAT (Swiss German)



71	PCAT (Belgium)	79	PCAT (Danish)
----	----------------	----	---------------

2.3.2 KEYBOARD SETTINGS

- ▶ Alphabets Layout
- ▶ Digits Layout
- ▶ Capital Lock Type
- ▶ Capital Lock Setting
- ▶ Alphabets Transmission
- ▶ Digits Transmission
- ▶ Kanji Transmission

Alphabets Layout

By default, the alphabets layout is set to normal mode, also known as the standard English layout. Select French or German keyboard layout if necessary. The scanner will make adjustments when sending the "A", "Q", "W", "Z", "Y", and "M" characters according to this setting.

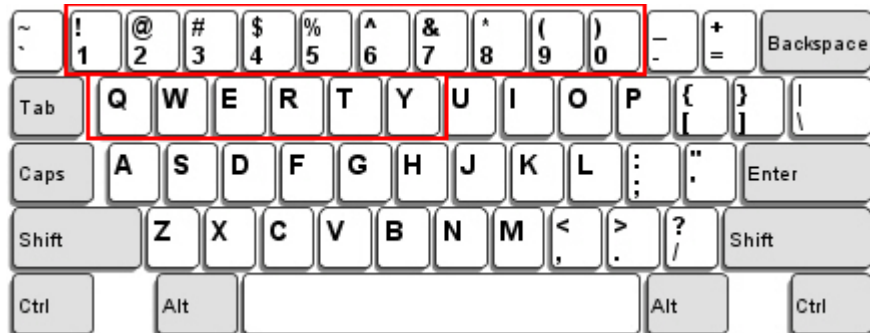


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match the keyboard.



US Keyboard Style – Normal

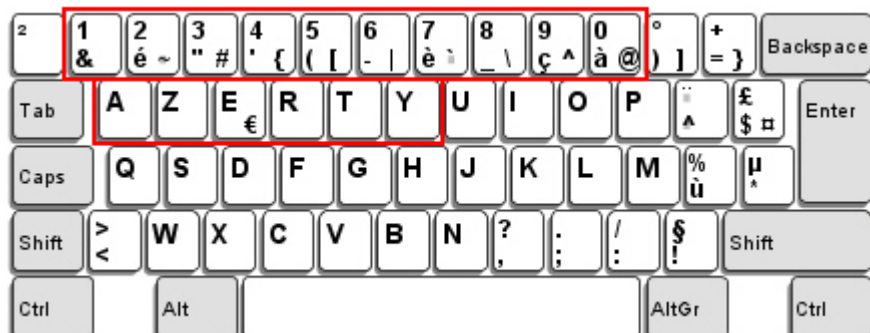
QWERTY layout, which is normally used in western countries.



- Select “Lower Row” for the “Digits Layout” setting for the upper row is for special characters.

French Keyboard Style – AZERTY

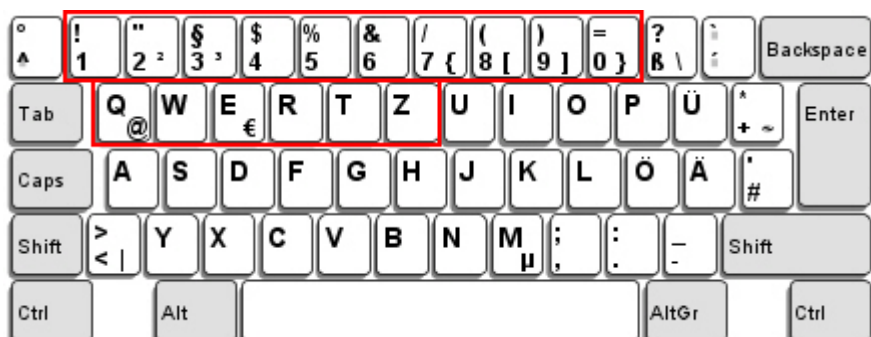
French layout; see below for French Keyboard Style.



- Select “Upper Row” for the “Digits Layout” setting for the lower row is for special characters.

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



- Select “Lower Row” for the “Digits Layout” setting for the upper row is for special characters.



Digits Layout

Select a proper layout that matches the alphabets layout. The scanner will make adjustments according to this setting.

Options	Description
Normal	Depends on the [Shift] key or [Shift Lock] setting
Lower Row	For QWERTY or QWERTZ keyboard
Upper Row	For AZERTY keyboard

***Normal**



Upper Row



Lower Row



Note: This setting is to be used with the Character Substitution setting when support to certain keyboard types (languages) is unavailable but required.



Capital Lock Type & Setting

In order to send the alphabets with correct case, the scanner needs to know the status of Caps Lock on the keyboard. Incorrect settings may result in reversed case of the alphabets being transmitted.

Cap Lock Type	Description
Normal	Normal type
Capital Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. However, this does not affect the number or punctuation keys.
Shift Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. In addition, this affects the number or punctuation keys.

***Normal**



100042

Shift Lock



100045

Capital Lock



100044

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▶ Refer to the Capital Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).

Auto Detect



100054

Capital Lock ON



100053



*Capital Lock OFF



Alphabets Transmission

By default, the alphabets transmission is case-sensitive, meaning that the alphabets will be transmitted according to their original case, the status of Caps Lock on the keyboard, as well as the Capital Lock setting. Select [Ignore Case] to have alphabets transmitted according to the status of Caps Lock on the keyboard only.

Ignore Case

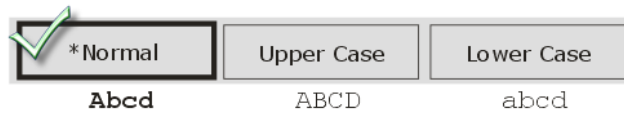


*Case-sensitive



1. Letter Case for Output Format

Refer to 4.1 Letter Case.



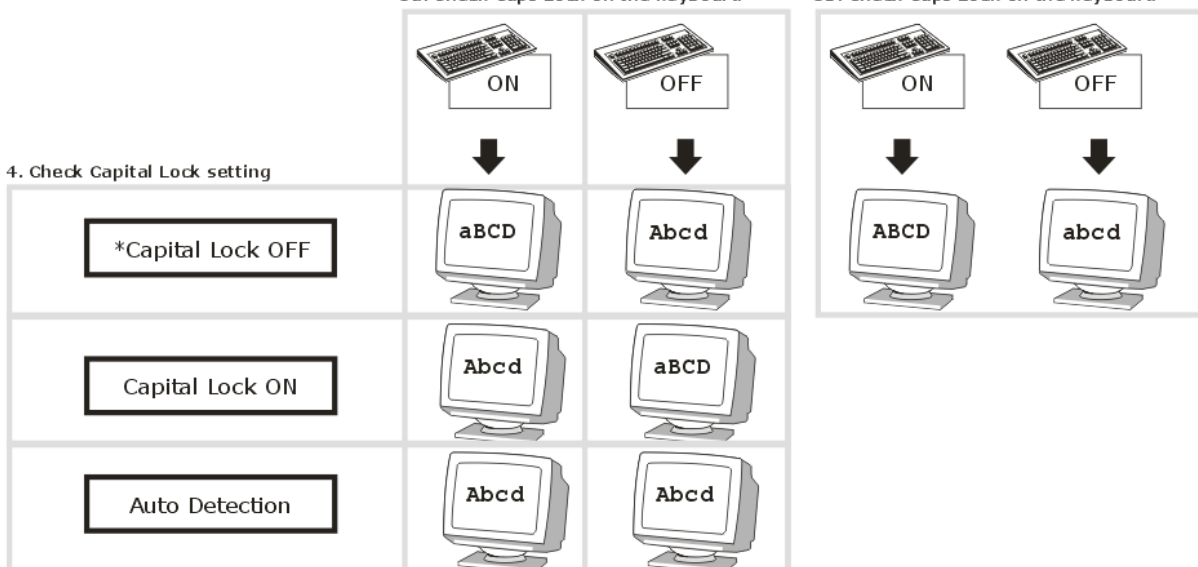
2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID



3a. Check Caps Lock on the keyboard

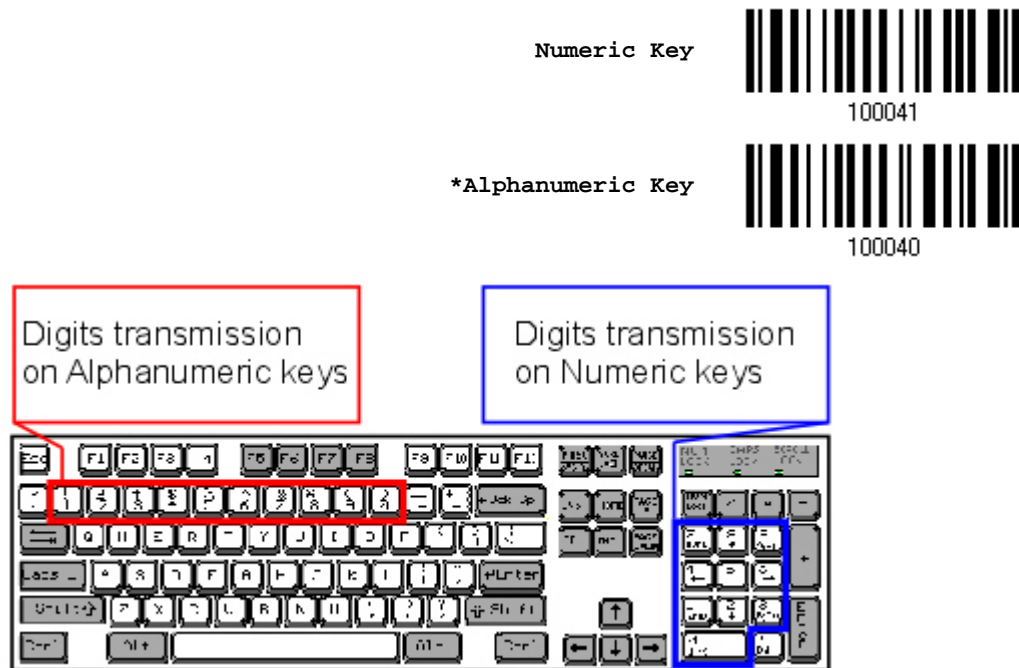
3b. Check Caps Lock on the keyboard

4. Check Capital Lock setting



Digits Transmission

By default, the alphanumeric keypad is used for transmitting digits. Select "Numeric Keypad" to use the keys on the numeric keypad.



Note: If selecting "Numeric Keypad", the Num Lock status of the physical keyboard should be "ON".

Kanji Transmission

Kanji Transmission is supported by the scanner when either Keyboard Wedge or Direct USB HID is selected for the output interface. By Kanji Transmission, when the host computer is running on Japanese Windows O.S., the scanner is able to transmit Japanese characters including the Chinese characters used in modern Japanese writing system.

Kanji Transmission is disabled by default. Enable/disable scanner's Kanji Transmission by reading the following barcodes:



2.3.3 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Character
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

2.3.4 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every function code (0x01 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.3.5 HID CHARACTER TRANSMIT MODE

By default, USB HID interface sends data to the host in batch. Have the scanner read the "By Character" barcode to process data one character at a time.

***Batch Processing**



100064

By Character



100065

2.3.6 SPECIAL KEYBOARD FEATURE

By default, the special keyboard feature is based on the factory definition. You can decide whether to apply the special keyboard feature. Refer to [Keyboard Wedge Table](#).

***Apply**



100018

Bypass



100019



2.4 DIRECT USB VCOM

For USB Virtual COM, connect the scanner to the USB port of PC. Run HyperTerminal.exe on the computer, and the scanned data will be transmitted to the computer.

Note: If using USB Virtual COM for the first time, you must install the accompanying driver beforehand. Driver version 5.4 or later is required. Please remove older versions! Instead, users can also decide to use the USB communication device class (CDC) driver by selecting Direct USB VCOM_CDC. Refer to [2.5 Direct USB VCOM_CDC](#).

2.4.1 ACTIVATE USB VIRTUAL COM

Activate Direct USB
Virtual COM



2.4.2 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every function code (0x01 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.4.3 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Specify a value, ranging from 1 to 99 in units of 0.1 second. If no response within the specified period of time, the scanner will attempt to send the same data two more times. If all three attempts fail without any notification, data loss will occur.

ACK/NAK Time-out
after ... (*0~99)



100013

- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep



100015

*Disable Error Beep



100014

Note: We suggest enabling the error beep to notice of such data loss and have the scanner re-read data.



2.5 DIRECT USB VCOM_CDC

For USB Virtual COM, connect the scanner to the USB port of PC. Run HyperTerminal.exe on the computer, and the scanned data will be transmitted to the computer.

Note: If using USB Virtual COM for the first time, you must install the accompanying VCOM_CDC driver beforehand.

2.5.1 ACTIVATE USB VCOM_CDC

Activate
Direct USB VCOM_CDC



2.5.2 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the keyboard interface. Such delay time is inserted between every function code (0x01 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function
Delay... (*0~254)



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.5.3 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Specify a value, ranging from 1 to 99 in units of 0.1 second. If no response within the specified period of time, the scanner will attempt to send the same data two more times. If all three attempts fail without any notification, data loss will occur.

ACK/NAK Time-out
after ... (*0~99)



100013

- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep



100015

*Disable Error Beep



100014

Note: We suggest enabling the error beep to notice of such data loss and have the scanner re-read data.





CHANGING SYMBOLOGY SETTINGS

In this chapter, a brief on the symbology settings is provided for reference.

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3.1 CODABAR

***Enable**



100313

Disable



100312

3.1.1 SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. The scanner allows you to change the CODABAR security level between high or normal level.

***Normal**



100491

High



100490

3.1.2 START/STOP TRANSMISSION

Decide whether to include the start/stop characters in the data being transmitted.

**Transmit Start/Stop
Characters**



100441

***Do Not Transmit**



100440





3.1.3 START/STOP CHARACTER SELECTION

Select one of the four different start/stop character pairs –

* abcd/abcd	 100436
abcd/tn*e	 100437
ABCD/ABCD	 100438
ABCD/TN*E	 100439

3.1.4 CLSI CONVERSION

When enabled, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode.

Apply CLSI Editing	 100443
*Do Not Apply	 100442

Note: The 14-character barcode length does not include start/stop characters.



3.1.5 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.

***Enable Max./Min.
Length (1~127)...**



**Enable Fixed
Length(s)...**



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.

**Max. Length (*55) or
Fixed Length 1**



**Min. Length (*4) or
Fixed Length 2**



- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



3.2 CODE 25 – INDUSTRIAL 25

***Enable**



100307

Disable



100306

3.2.1 SELECT START/STOP PATTERN

This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".

***Industrial 25
Start/Stop Pattern**



100412

**Interleaved 25
Start/Stop Pattern**



100413

**Matrix 25
Start/Stop Pattern**



100414

3.2.2 VERIFY CHECK DIGIT

Decide whether to verify the check digit. If incorrect, the barcode will not be accepted.

**Verify Industrial 25
Check Digit**



100425

***Do Not Verify**

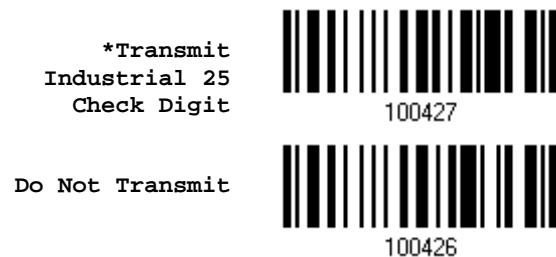


100424



3.2.3 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.



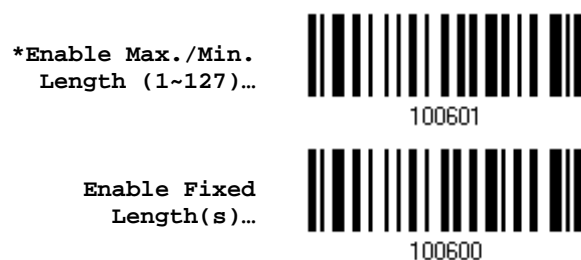
3.2.4 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.



Max. Length (*127) or
Fixed Length 1



100602

Min. Length (*4) or
Fixed Length 2



100603

- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



3.3 CODE 25 – INTERLEAVED 25

*Enable



100309

Disable



100308

3.3.1 SELECT START/STOP PATTERN

This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".

Industrial 25
Start/Stop Pattern



100416

*Interleaved 25
Start/Stop Pattern



100417

Matrix 25
Start/Stop Pattern



100418

3.3.2 VERIFY CHECK DIGIT

Decide whether to verify the check digit. If incorrect, the barcode will not be accepted.

Verify
Interleaved 25
Check Digit



100429

*Do Not Verify



100428



3.3.3 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.



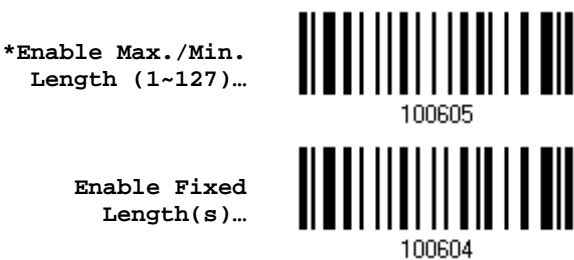
3.3.4 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.



Max. Length (*126) or
Fixed Length 1



100606

Min. Length (*4) or
Fixed Length 2



100607

- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



3.4 CODE 25 – MATRIX 25

Enable



100311

*Disable



100310

3.4.1 SELECT START/STOP PATTERN

This decides the readability of all 2 of 5 symbology variants. For example, flight tickets actually use an Industrial 2 of 5 barcode but with Interleaved 2 of 5 start/stop pattern. In order to read this barcode, the start/stop pattern selection parameter of Industrial 2 of 5 should set to "Interleaved 25".

Industrial 25
Start/Stop Pattern



100420

Interleaved 25
Start/Stop Pattern



100421

*Matrix 25
Start/Stop Pattern



100422

3.4.2 VERIFY CHECK DIGIT

Decide whether to verify the check digit. If incorrect, the barcode will not be accepted.

Verify Matrix 25
Check Digit



100433

*Do Not Verify



100432



3.4.3 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit Matrix 25
Check Digit



Do Not Transmit



3.4.4 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.

***Enable Max./Min.
Length (1~127)...**



**Enable Fixed
Length(s)...**



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.

**Max. Length (*127) or
Fixed Length 1**



**Min. Length (*4) or
Fixed Length 2**



- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



3.5 CODE 39

***Enable**



100301

Disable



100300

3.5.1 TRANSMIT START/STOP CHARACTERS

Decide whether to verify the check digit. If incorrect, the barcode will not be accepted.

**Transmit Code 39
Start/Stop
Characters**



100403

***Do Not Transmit**



100402

3.5.2 VERIFY CHECK DIGIT

Decide whether to verify the check digit. If incorrect, the barcode will not be accepted.

**Verify Code 39
Check Digit**



100405

***Do Not Verify**



100404



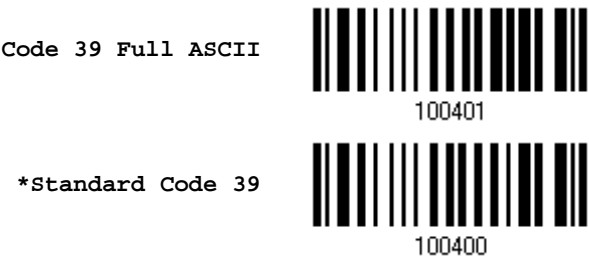
3.5.3 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.



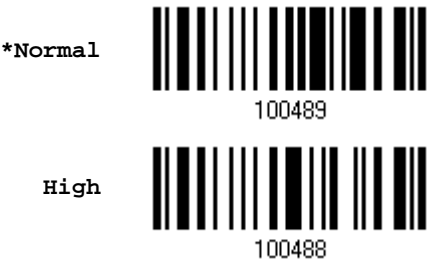
3.5.4 STANDARD/FULL ASCII CODE 39

Decide whether to support Code 39 Full ASCII that includes all the alphanumeric and special characters.



3.5.5 SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 39 barcodes.



3.5.6 ASTERISKS (*) AS DATA CHARACTERS

Decide whether to take asterisk (*) as part of the data.

Enable



100513

*Disable



100512

3.5.7 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.

*Enable Max./Min.
Length (1~127)...



102218

Enable Fixed
Length(s)...



102217

- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4. Repeat steps 2~4 for Min. Length or Fixed Length 2.



Max. Length (*55) or
Fixed Length 1



102219

Min. Length (*4) or
Fixed Length 2



102220

- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.

3.6 CODE 93

*Enable



100315

Disable



100314

3.6.1 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.



***Enable Max./Min.
Length (1~127)...**



102226

**Enable Fixed
Length(s)...**



102225

- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.

**Max. Length (*55) or
Fixed Length 1**



102227

**Min. Length (*4) or
Fixed Length 2**



102228

- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
4) Read the "Validate" barcode on the same page to complete this setting.



3.7 CODE 128

***Enable**



100317

Disable



100316

3.7.1 SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 128 barcodes.

***Normal**



100493

High



100492



3.8 EAN-8

EAN-8

*Enable EAN-8
(No Addon)



100327

Disable



100326

EAN-8 Addon 2

Enable EAN-8 Addon 2



100329

*Disable



100328

EAN-8 Addon 5

Enable EAN-8 Addon 5



100331

*Disable



100330

3.8.1 CONVERT TO EAN-13

Decide whether to expand the read EAN-8 barcode, as well as its addons, into EAN-13.

- ▶ After conversion, the data follows EAN-13 format and is affected by EAN-13 programming selections (e.g. Check Digit).

Convert EAN-8 to
EAN-13



100461

*Do Not Convert



100460




3.8.2 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit EAN-8
Check Digit


100471


Do Not Transmit


100470


3.8.3 CONVERSION FORMAT

When converting EAN-8 to EAN-13, you can scan the barcode below to decide conversion in default or GTIN-13 format.

*Default Format


100494

GTIN-13 Format


100495



3.9 EAN-13

EAN-13

***Enable EAN-13
(No Addon)**



Disable



EAN-13 Addon 2

Enable EAN-13 Addon 2



***Disable**



EAN-13 Addon 5

Enable EAN-13 Addon 5



***Disable**



3.9.1 EAN-13 ADDON MODES

Decide whether to enable EAN-13 414/419/434/439 Addon Mode. When enabled, barcodes starting with 414/419/434/439 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 414/419/434/439 Addon Mode



Decide whether to enable EAN-13 378/379 Addon Mode. When enabled, barcodes starting with 378/379 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 378/379 Addon Mode



Decide whether to enable EAN-13 977 Addon Mode. When enabled, barcodes starting with 977 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 977 Addon Mode



Decide whether to enable EAN-13 978 Addon Mode. When enabled, barcodes starting with 978 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 978 Addon Mode

Enable



***Disable**



Decide whether to enable EAN-13 979 Addon Mode. When enabled, barcodes starting with 979 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 979 Addon Mode

Enable



***Disable**



Decide whether to enable EAN-13 491 Addon Mode. When enabled, barcodes starting with 491 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 491 Addon Mode

Enable



***Disable**



Decide whether to enable EAN-13 529 Addon Mode. When enabled, barcodes starting with 529 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix.

EAN-13 529 Addon Mode



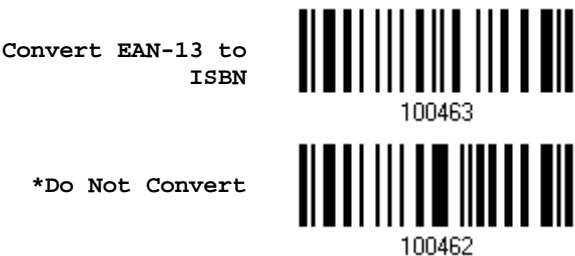
Decide whether to have the scanner buzzer sound two beeps (with tones descending from high to low) when decoding the scanned barcode that doesn't have the Addon 2 or Addon 5 suffix.

EAN-13 Addon Mode Buzzer



3.9.2 CONVERT TO ISBN

Decide whether to convert the EAN-13 barcode, starting with 978 and 979, to ISBN.



3.9.3 CONVERT TO ISSN

Decide whether to convert the EAN-13 barcode, starting with 977 to ISSN.



Convert EAN-13 to
ISSN



100465

*Do Not Convert



100464

3.9.4 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit EAN-13
Check Digit



100473

Do Not Transmit



100472

3.9.5 SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading EAN-13 barcodes.

*Normal



100487

High



100486



3.10 GS1-128 (EAN-128)

*Enable



100319

Disable



100318

Note: When this setting is disabled, GS1-128 barcodes used to be taken as Code 128.

3.10.1 TRANSMIT CODE ID

Decide whether to include the Code ID ("1C1") in the data being transmitted.

Transmit GS1-128
Code ID



100519

*Do Not Transmit



100518

3.10.2 FIELD SEPARATOR (GS CHARACTER)

Decide whether to apply a field separator (to convert the FNC1 control character to human readable character).

Enable Field
Separator...



100616

- 1) Read the barcode above to enable field separator.
- 2) Read the ["Hexadecimal Value"](#) barcode on page 184 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

Note: GS1-128 barcodes start with the FNC1 control character to distinguish themselves from other uses of Code 128. FNC1 is also used to separate data fields in the GS1-128 barcodes.



3.10.3 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-128.

Enable



101496

*Disable



101495

3.10.4 APPLICATION ID MARK

Decide whether to add an application ID mark (1 character) to the left (AIMark1) or right (AIMark2) of an application ID (AI) for the purpose of labeling it when formatting the GS1 data.

AIMark1



100620

AIMark2



100621

- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal System](#)" barcode on page 184 for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



3.11 ISBT 128

***Enable**



100355

Disable



100354

3.11.1 ISBT CONCATENATION

Decide whether to decode and concatenate pairs of ISBT barcodes.

▶ **Auto-discriminate ISBT Concatenation**

It decodes and concatenates pairs of ISBT barcodes immediately. If only a single ISBT barcode is present, the scanner must decode 10 times before transmitting its data to confirm that there is no additional ISBT barcode.

▶ **Enable ISBT Concatenation**

There must be two ISBT barcodes in order for the scanner to decode and perform concatenation. It does not decode single ISBT barcodes.

▶ **Disable ISBT Concatenation**

It will not concatenate pairs of ISBT barcodes it encounters.

Auto-discriminate



102239

Enable



102238

***Disable**



102237



3.12 MSI

Enable



100345

*Disable



100344

3.12.1 VERIFY CHECK DIGIT

Select one of the three calculations to verify check digit(s) when decoding barcodes. If incorrect, the barcode will not be accepted.

*Single Modulo 10



100448

Double Modulo 10



100449

Modulo 10 & 11



100450

3.12.2 TRANSMIT CHECK DIGIT

Decide whether to include the check digit(s) in the data being transmitted.

*Last Digit Not
Transmitted

100452

Both Digits
Transmitted

100453

Both Digits
Not Transmitted

100454



3.12.3 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.

***Enable Max./Min.
Length (1~127)...**



100613

**Enable Fixed
Length(s)...**



100612

- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.

**Max. Length (*127) or
Fixed Length 1**



100614

**Min. Length (*4) or
Fixed Length 2**



100615

- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



3.13 FRENCH PHARMACODE

Enable



100305

*Disable



100304

3.13.1 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit
French Pharmacode
Check Digit



100411

Do Not Transmit



100410

3.14 ITALIAN PHARMACODE

Enable



100303

*Disable



100302

3.14.1 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit
Italian Pharmacode
Check Digit



100409

Do Not Transmit



100408



3.15 PLESSEY

Enable



100347

*Disable



100346

3.15.1 CONVERT TO UK PLESSEY

Decide whether to change each occurrence of the character 'A' to character 'X' in the decoded data.

Convert to UK Plessey



100447

*Do Not Convert



100446

3.15.2 TRANSMIT CHECK DIGIT

Decide whether to include the two check digits in the data being transmitted.

*Transmit Plessey
Check Digits



100445

Do Not Transmit



100444



3.16 GS1 DATABAR (RSS FAMILY)

It is categorized into three groups:

Group I – GS1 DataBar Omnidirectional (RSS-14)

This group consists of the following:

- ▶ GS1 DataBar Omnidirectional
- ▶ GS1 DataBar Truncated
- ▶ GS1 DataBar Stacked
- ▶ GS1 DataBar Stacked Omnidirectional

Group II – GS1 DataBar Expanded (RSS Expanded)

This group consists of the following:

- ▶ GS1 DataBar Expanded
- ▶ GS1 DataBar Expanded Stacked

Group III – GS1 DataBar Limited (RSS Limited)

This group consists of the following:

- ▶ GS1 DataBar Limited

3.16.1 SELECT CODE ID

Select a desired Code ID to use:

- ▶ "Je0" (GS1 DataBar Code ID)
- ▶ "Jc1" (GS1-128 Code ID)

Use "Jc1"



100517

*Use "Je0"




100516




3.16.2 GS1 DATABAR OMNIDIRECTIONAL (RSS-14)

Enable RSS-14 &
RSS Expanded
(Groups I, II)


100349

*Disable


100348


The settings below apply to Group I symbologies only:

- ▶ GS1 DataBar Omnidirectional
- ▶ GS1 DataBar Truncated


Transmit Code ID

Decide whether to include the Code ID in the data being transmitted.

*Transmit RSS-14
Code ID


100523


Do Not Transmit


100522


Transmit Application ID

Decide whether to include the Application ID ("01") in the data being transmitted.

*Transmit RSS-14
Application ID


100529


Do Not Transmit


100528

Transmit Check Digit

Decide whether to include the check digit in the data being transmitted.

*Transmit RSS-14
Check Digit


100481

Do Not Transmit



100480

3.16.3 GS1 DATABAR EXPANDED (RSS EXPANDED)

Enable RSS-14 &
RSS Expanded
(Groups I, II)



100349

*Disable



100348

The settings below apply to Group II symbologies only:

- ▶ GS1 DataBar Expanded

Transmit Code ID

Decide whether to include the Code ID in the data being transmitted.

*Transmit
RSS Expanded Code ID



100527

Do Not Transmit



100526



3.16.4 GS1 DATABAR LIMITED (RSS LIMITED)

Enable RSS Limited
(Group III)



100351

*Disable



100350

Transmit Code ID

Decide whether to include the Code ID in the data being transmitted.

*Transmit
RSS Limited Code ID



100525

Do Not Transmit



100524

Transmit Application ID

Decide whether to include the Application ID ("01") in the data being transmitted.

*Transmit
RSS Limited
Application ID



100531

Do Not Transmit



100530

Transmit Check Digit

Decide whether to include the check digit in the data being transmitted.

*Transmit
RSS Limited
Check Digit



100483

Do Not Transmit



100482



3.16.5 FIELD SEPARATOR (GS CHARACTER)

Decide whether to apply a field separator (to convert the GS control character to human readable character).

Enable Field
Separator...



- 1) Read the barcode above to enable field separator.
- 2) Read the ["Hexadecimal System"](#) barcode on page 184 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

3.16.6 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1 DataBar (RSS family).

Enable



*Disable



3.16.7 APPLICATION ID MARK

Decide whether to add an application ID mark (1 character) to the left (AIMark1) or right (AIMark2) of an application ID (AI) for the purpose of labeling it when formatting the GS1 data.

AIMark1



AIMark2

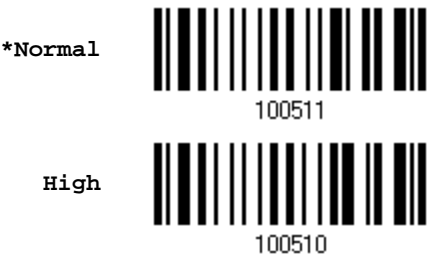


- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the ["Hexadecimal System"](#) barcode on page 184 for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



3.16.8 GS1 DATABAR SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading GS1 DataBar barcodes.



3.17 TELEPEN



3.17.1 TELEPEN OUTPUT ASCII/NUMERIC

Decide whether to support Telepen in full ASCII code. By default, it supports ASCII mode.

- ▶ AIM Telepen (Full ASCII) includes all the alphanumeric and special characters.

Original Telepen
(Numeric)



*AIM Telepen



3.18 UPC-A

UPC-A

*Enable UPC-A
(No Addon)



100339

Disable



100338

UPC-A Addon 2

Enable UPC-A Addon 2



100341

*Disable



100340

UPC-A Addon 5

Enable UPC-A Addon 5



100343

*Disable



100342



3.18.1 CONVERT TO EAN-13

Decide whether to expand the read UPC-A barcode, as well as its addons, into EAN-13.

- ▶ After conversion, the data follows EAN-13 format and is affected by EAN-13 programming selections (e.g. Check Digit).

Convert UPC-A to
EAN-13



100459

*Do Not Convert



100458

3.18.2 TRANSMIT SYSTEM NUMBER

Decide whether to include the system number in the data being transmitted.

*Transmit UPC-A
System Number



100477

Do Not Transmit



100476

3.18.3 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.

*Transmit UPC-A
Check Digit



100469

Do Not Transmit



100468



3.19 UPC-E

UPC-E

*Enable UPC-E
(No Addon)



Disable



UPC-E Addon 2

Enable UPC-E Addon 2



*Disable



UPC-E Addon 5

Enable UPC-E Addon 5



*Disable



3.19.1 SELECT SYSTEM NUMBER

Decide whether to decode the ordinary UPC-E barcodes only or both UPC-E0 and UPC-E1 barcodes.

- ▶ System number 0 enabled for decoding UPC-E0 barcodes.
- ▶ System number 1 enabled for decoding UPC-E1 barcodes.

System Number 0 & 1



*System Number 0 Only



Warning: Because of the way system number 1 is encoded, if both system numbers are enabled, the user might suffer from short scanning UPC-A or EAN-13 barcodes into UPC-E1 barcodes.

3.19.2 CONVERT TO UPC-A

Decide whether to expand the read UPC-E barcode, as well as its addons, into UPC-A.

- ▶ After conversion, the data follows UPC-A format and is affected by UPC-A programming selections (e.g. System Number, Check Digit).

Convert UPC-E to
UPC-A

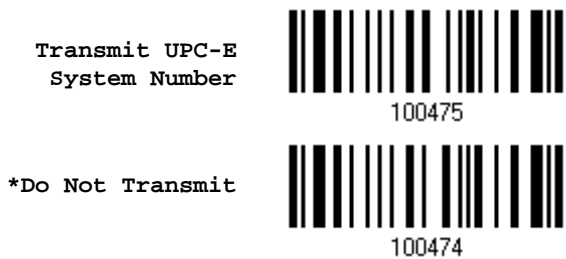


*Do Not Convert



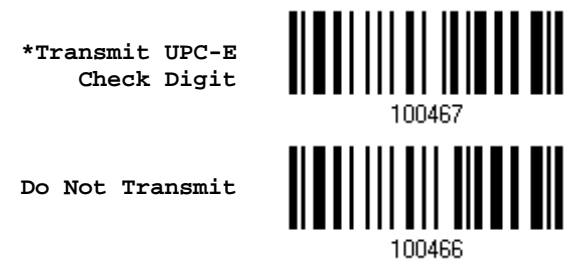
3.19.3 TRANSMIT SYSTEM NUMBER

Decide whether to include the system number in the data being transmitted.

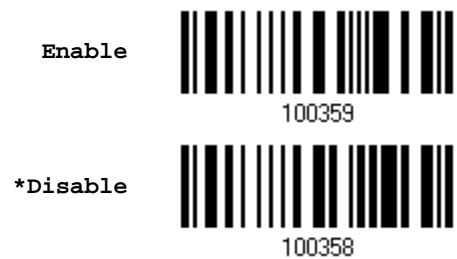


3.19.4 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.



3.20 CODE 11



3.20.1 VERIFY CHECK DIGIT

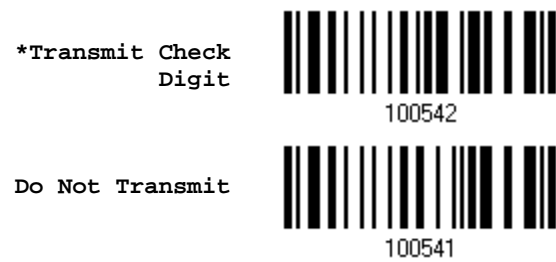
Select one of the verification when decoding barcodes. If incorrect, the barcode will not be accepted.





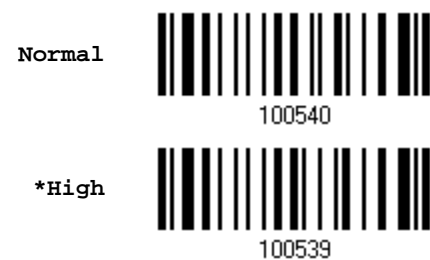
3.20.2 TRANSMIT CHECK DIGIT

Decide whether to include the check digit in the data being transmitted.



3.20.3 SECURITY LEVEL

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 11 barcodes.



3.20.4 CODE LENGTH QUALIFICATION

To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length.

- ▶ If "Max/Min Length" is selected, the maximum length and the minimum length must be specified. It only accepts those barcodes with lengths that fall between max/min lengths specified.
- ▶ If "Fixed Length" is selected, up to 2 fixed lengths can be specified.

Note: The specified length(s) must include the check digit(s) the barcode contains.

- 1) Read the barcode to enable either Max. /Min. Length qualification or Fixed Length(s) qualification.

***Enable Max./Min.
Length (1~127)...**



**Enable Fixed
Length(s)...**



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4.
Repeat steps 2~4 for Min. Length or Fixed Length 2.
- 3) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.

**Max. Length (*55) or
Fixed Length 1**



**Min. Length (*4) or
Fixed Length 2**



- 4) Read the "Validate" barcode on the same page to complete this setting.



3.21 2D SYMBOLOGIES

3.21.1 PDF417

***Enable PDF417**



102033

Disable



102032

3.21.2 MICROPDF417

Decide whether to enable MicroPDF417 barcodes.

Enable MicroPDF417



102035

***Disable**



102034

3.21.3 DATA MATRIX

Decide whether to enable Data Matrix barcodes.

***Enable Data Matrix**



102037

Disable



102036

DATA MATRIX MIRROR

Decide whether to decode mirror image Data Matrix barcodes.

- ▶ Never — do not decode Data Matrix barcodes that are mirror images.
- ▶ Always — decode only Data matrix barcodes that are mirror images.
- ▶ Auto — decode both mirrored and unmirrored Data Matrix barcodes.





*Never	
	102118
Always	
	102119
Auto	
	102120

DATA MATRIX INVERSE

Decide whether to decode inverse Data Matrix barcodes.

*Never	
	102060
Always	
	102061
Auto	
	102062

3.21.4 QR CODE

*Enable QR Code	
	102041
Disable	
	102040

QR CODE MIRROR

Decide whether to decode mirror image QR Code barcodes.

- ▶ Never — do not decode QR Code barcodes that are mirror images.
- ▶ Always — decode only QR Code barcodes that are mirror images.
- ▶ Auto — decode both mirrored and unmirrored QR Code barcodes.



***Never**



102048

Always



102049

Auto



102050

QR CODE INVERSE

Decide whether to decode inverse QR Code barcodes.

***Never**



102051

Always



102052

Auto



102053

3.21.5 MicroQR

Enable MicroQR



102043

***Disable**



102042



DEFINING OUTPUT FORMAT

Users can configure the data output format in which the collected data will be output to the host computer. Barcodes read by the scanner will be processed in the following sequence –

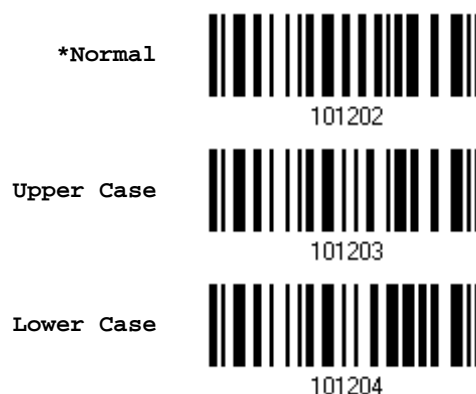
- 1) Perform character substitution on the data scanned.
- 2) Add [Code ID](#) and [Length Code](#) to the front of the data: [Code ID][Length Code][Data]
- 3) Process the whole data in step 2 with user formats. Data is now divided into fields by user specified rules. Refer to [Chapter 5 Applying Formats for Data Editing](#).
- 4) Add [Prefix Code](#) and [Suffix Code](#) before transmission: [Prefix Code][Processed Data][Suffix Code]

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4.1 LETTER CASE

By default, the alphabets transmission is case-sensitive, meaning that the alphabets will be transmitted according to their original case. Ignoring the original letter case, select [Upper Case] to output data in upper case only; otherwise, select [Lower Case] to output data in lower case only.



4.2 CHARACTER SUBSTITUTION

Character substitution is performed on every occurrence of the first character specified. If only one character is specified, every occurrence of that character in the barcode will be taken away.

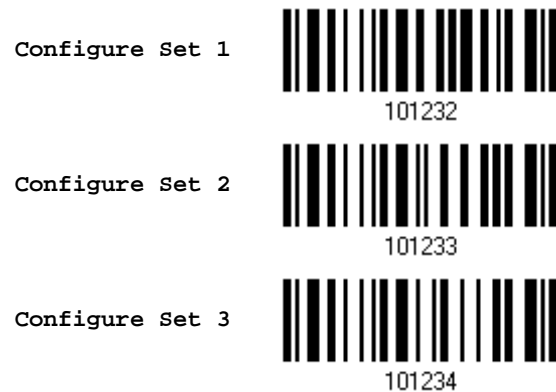
- ▶ The first character will be replaced by the second character(s).
- ▶ Up to three sets of character substitution can be configured.
- ▶ If "Keyboard Wedge" or "USB HID" is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. Decide whether or not to apply Key Status when "Normal Key" is selected for Key Type.

Key Type		Key Status
Scan Code	Only 1 scan code value is allowed. Refer to 4.2.1 Select a Set for Character Substitution .	N/A
Normal Key	Up to 3 character strings are allowed.	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt Refer to Keyboard Wedge Table .

Note: The character substitution is performed only on the barcode itself and before the processing of editing formats. It is not applicable to the Prefix/Suffix Code, Code ID, Length Code, or any Additional Field.



4.2.1 SELECT A SET FOR CHARACTER SUBSTITUTION



- 1) Read the barcode above to enable character substitution by set.

For example, have the scanner read the "Set 1" barcode to configure the first set of character substitution. The scanner will respond with one short beep, high tone, to indicate more setup barcodes are required.

- 2) Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character substitution. For example,

KEY TYPE = NORMAL

- ▶ Read "3", "0", "2", and "D" to replace the character "0" with a dash "-".
- ▶ Read "3", "0", "2", "D", "3", and "0" to replace the character "0" with a dash "-0".

KEY TYPE = SCAN CODE

Replace the character "0" with "a" (= "1C" on the scan code table):

1. Read "3" and "0".
2. Read the "Scan Code" barcode.
3. Read "1" and "C".

KEY TYPE = NORMAL + KEY STATUS = SHIFT

Replace the character "0" with "!" (= "Shift" + "1" on keyboard):

1. Read "3" and "0".
2. Read the "Add Shift" barcode.
3. Read "3" and "1".

- 3) Read the "Validate" barcode to complete this setting. (The defined set or sets will be applied to all symbologies by default.)



4.2.2 SYMBOLOGIES FOR CHARACTER SUBSTITUTION (ALL 3 SETS)

By default character substitution will be performed on all symbologies. If the character substitution is not desired with one or more symbologies, read the “Do Not Apply” barcode for each undesired symbologies and all the three sets will be ignored for them.

Character Substitution for Codabar

*Apply



101253

Do Not Apply



101252

Character Substitution for Code 39

*Apply



101241

Do Not Apply



101240

Character Substitution for Code 93

*Apply



101255

Do Not Apply



101254

Character Substitution for Code 128

*Apply



101257

Do Not Apply



101256



Character Substitution for GS1-128

*Apply



101259

Do Not Apply



101258

Character Substitution for ISBT 128

*Apply



101293

Do Not Apply



101292

Character Substitution for EAN-8 (No Addon)

*Apply



101267

Do Not Apply



101266

Character Substitution for EAN-8 Addon 2

*Apply



101269

Do Not Apply



101268

Character Substitution for EAN-8 Addon 5

*Apply



101271

Do Not Apply



101270



Character Substitution for EAN-13 (No Addon)

***Apply**



101273

Do Not Apply



101272

Character Substitution for EAN-13 Addon 2

***Apply**



101275

Do Not Apply



101274

Character Substitution for EAN-13 Addon 5

***Apply**



101277

Do Not Apply



101276

Character Substitution for French Pharmacode

***Apply**



101245

Do Not Apply



101244

Character Substitution for Italian Pharmacode

***Apply**



101243

Do Not Apply



101242



Character Substitution for Industrial 25

***Apply**

101247

Do Not Apply

101246

Character Substitution for Interleaved 25

***Apply**

101249

Do Not Apply

101248

Character Substitution for Matrix 25

***Apply**

101251

Do Not Apply

101250

Character Substitution for MSI

***Apply**

101285

Do Not Apply

101284

Character Substitution for Plessey

***Apply**

101287

Do Not Apply

101286



Character Substitution for GS1 DataBar

*Apply



101291

Do Not Apply



101290

Character Substitution for Telepen

*Apply



101289

Do Not Apply



101288

Character Substitution for UPC-A (No Addon)

*Apply



101279

Do Not Apply



101278

Character Substitution for UPC-A Addon 2

*Apply



101281

Do Not Apply



101280

Character Substitution for UPC-A Addon 5

*Apply



101283

Do Not Apply



101282



Character Substitution for UPC-E (No Addon)

***Apply**

101261

Do Not Apply

101260

Character Substitution for UPC-E Addon 2

***Apply**

101263

Do Not Apply

101262

Character Substitution for UPC-E Addon 5

***Apply**

101265

Do Not Apply

101264

Character Substitution for Code 11

***Apply**

101297

Do Not Apply

101296

Character Substitution for PDF417

***Apply**

102635

Do Not Apply

102634



Character Substitution for MicroPDF417

*Apply



102637

Do Not Apply



102636

Character Substitution for Data Matrix

*Apply



102639

Do Not Apply



102638

Character Substitution for QR Code

*Apply



102643

Do Not Apply



102642

Character Substitution for MicroQR

*Apply



102645

Do Not Apply



102644



4.3 PREFIX/SUFFIX CODE

By default, there is no prefix code, and [ENTER] or [CR] (Carriage Return) is configured to be suffix code. Up to 8 characters can be configured, for example, "Barcode_", and have the string appear in front of the barcode read, like this – "Barcode_1234567890".

- ▶ If "Keyboard Wedge" or "USB HID" is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. Decide whether to apply Key Status when select "Normal Key" for Key Type.

Key Type		Key Status
Scan Code	Up to 4 scan code values are allowed.	N/A
Normal Key	Up to 8 character strings are allowed.	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt Refer to Keyboard Wedge Table .

Configure Prefix



Configure Suffix



- 1) Read the barcode above to apply prefix code or suffix code separately, and follow steps 2~3. (Max. 8 characters each)
- 2) Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string. For example, read "2" and "B" for the scanner to prefix or suffix the character [+].
- 3) Read the "Validate" barcode to complete this setting.



4.4 CODE ID

Up to two characters for Code ID can be configured for each symbology. To make the Code ID configuration easier, the scanner provides five pre-defined Code ID sets that can select one and make necessary changes on it.

- ▶ If “Keyboard Wedge” or “USB HID” is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. Decide whether to apply Key Status when select “Normal Key” for Key Type.

Key Type		Key Status
Scan Code	Only 1 scan code value is allowed.	N/A
Normal Key	Up to 2 character strings are allowed.	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt Refer to Keyboard Wedge Table .

Note: “]C1” is the Code ID of GS1-128 (EAN-128) barcodes; “]e0” is the default Code ID of GS1 DataBar (RSS) barcodes.

4.4.1 SELECT PRE-DEFINED CODE ID

Apply Code ID Set 1



109961

Apply Code ID Set 2



109962

Apply Code ID Set 3



109963

Apply Code ID Set 4



109964

Apply Code ID Set 5



109965



Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Italian Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
UPC-E	S	E	C	E	E
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
MSI	V	V	D	P	M
Plessey	W	W	E	Q	P
Telepen	Z	---	---	---	---
Code 11	K	J	J	D	H
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
QR Code	e	S	S	X	Q
MicroQR	f	T	R	Y	Q

Besides Set 1 ~ 5 of Code ID options, you can also scan the barcode below to apply AIM Code ID as the Code ID option.

Enable AIM Code ID



*Disable AIM Code ID



After applying AIM Code ID, three characters are added in front of the output data. "J" is always the first character. The second (Character) and third (Modifier Character) may vary depending on symbologies. Please refer to the table below.



Symbology	Character	Modifier Character
Codabar	F	0: Standard Codabar symbol. No special processing.
Code 11	H	0: Single modulo 11 check character validated and transmitted 1: Two modulo 11 check characters validated and transmitted 3: Check characters validated but not transmitted ?: No check character validation
Code 39	A	0: No check character validation nor full ASCII processing. All data transmitted as decoded. 1: Modulo 43 check character validated and transmitted 3: Modulo 43 check character validated but not transmitted 4: Full ASCII character conversion performed. No check character validation. 5: Full ASCII character conversion performed. Modulo 43 check character validated and transmitted. 7: Full ASCII character conversion performed. Modulo 43 check character validated but not transmitted.
Code 93	G	No options specified. Always transmit 0.
Code 128	C	0: Standard data packet. No FNC1 in first or second symbol character position after start character. 1: EAN/UCC-128 data packet. FNC1 in first symbol character position after start character. 2: FNC1 in second symbol character position after start character. 4: Concatenation according to International Society for Blood Transfusion specifications has been performed. Concatenated data follows.
GS1 DataBar Family	e	No option specified at this time. Always transmit 0. GS1 DataBar and GS1 DataBar Limited transmit with an Application Identifier "01".
Interleaved 25	I	0: No check character validation 1: Modulo 10 symbol check character validated and transmitted 3: Modulo 10 symbol check character validated but not transmitted
MSI	M	0: Modulo 10 symbol check character validated and transmitted 1: Modulo 10 symbol check character validated but not transmitted
Matrix 25	X	No options specified. Always transmit 0.
Plessey	P	No options specified. Always transmit 0.
Industrial 25	S	No options specified. Always transmit 0.
Telepen	B	No options specified. Always transmit 0.



UPC/EAN	E	0: Standard data packet in full EAN format (13 digits for EAN-13, UPC-A, and UPC-E; does not include add-on data) 3: Combined data packet comprising 13 digits from EAN-13, UPC-A, or UPC-E symbol and 2 or 5 digits from add-on symbol 4: EAN-8 data packet
DataMatrix	d	1: ECC 200
PDF417/Micro PDF417	L	2: Reader set to follow protocol of ENV 12925 for Extended Channel Interpretation
QR/Micro QR	Q	1: Model 2 symbol, ECI protocol not implemented



4.4.2 CHANGE CODE ID

- 1) Read the barcode below to change code ID of a specific symbology.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string. For example, read "4" and "4" for applying the character [D] for Code ID.
- 3) Read the "Validate" barcode to complete this setting.

Configure Code ID for
Codabar



101456

Configure Code ID for
Code 39



101450

Configure Code ID for
Code 93



101457

Configure Code ID for
Code 128



101458

Configure Code ID for
ISBT 128



101466

Configure Code ID for
EAN-8



101460

Configure Code ID for
EAN-13



101461

Configure Code ID for
French Pharmacode



101452

Configure Code ID for
Italian Pharmacode















101451

Configure Code ID for
Industrial 25



101453



Configure Code ID for Interleaved 25	 101454
Configure Code ID for Matrix 25	 101455
Configure Code ID for MSI	 101463
Configure Code ID for Plessey	 101464
Configure Code ID for Telepen	 101465
Configure Code ID for UPC-A	 101462
Configure Code ID for UPC-E	 101459
Configure Code ID for Code 11	 101499
Configure Code ID for PDF417	 102580
Configure Code ID for MicroPDF417	 102581
Configure Code ID for Data Matrix	 102582
Configure Code ID for QR Code	 102584



Configure Code ID for
MicroQR



102585

4.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID
Settings



109960



4.5 LENGTH CODE

A 4-digit code representing the length of barcode data (character count) can be inserted in front of data being transmitted. Such "Length" code can be individually enabled or disabled for each symbology.

Length Code for Codabar

Apply



*Do Not Apply



Length Code for Code 39

Apply



*Do Not Apply



Length Code for Code 93

Apply



*Do Not Apply



Length Code for Code 128

Apply



*Do Not Apply



Length Code for GS1-128 & GS1 DataBar

Apply



101419

*Do Not Apply



101418

Length Code for ISBT 128

Apply



101435

*Do Not Apply



101434

Length Code for EAN-8

Apply



101423

*Do Not Apply



101422

Length Code for EAN-13

Apply



101425

*Do Not Apply



101424

Length Code for French Pharmacode

Apply



101405

*Do Not Apply



101404



Length Code for Italian Pharmacode

Apply



101403

*Do Not Apply



101402

Length Code for Industrial 25

Apply



101407

*Do Not Apply



101406

Length Code for Interleaved 25

Apply



101409

*Do Not Apply



101408

Length Code for Matrix 25

Apply



101411

*Do Not Apply



101410

Length Code for MSI



102515



102514



Length Code for Pleesey

Apply



101431

*Do Not Apply



101430

Length Code for Telepen

Apply



101433

*Do Not Apply



101432

Length Code for UPC-A

Apply



101427

*Do Not Apply



101426

Length Code for UPC-E

Apply



101421

*Do Not Apply



101420

Length Code for Code 11

Apply



101439

*Do Not Apply



101438



Length Code for PDF417

Apply



102533

*Do Not Apply



102532

Length Code for MicroPDF417

Apply



102535

*Do Not Apply



102534

Length Code for Data Matrix

Apply



102537

*Do Not Apply



102536

Length Code for QR Code

Apply



102541

*Do Not Apply



102540

Length Code for MicroQR

Apply



102543

*Do Not Apply



102542



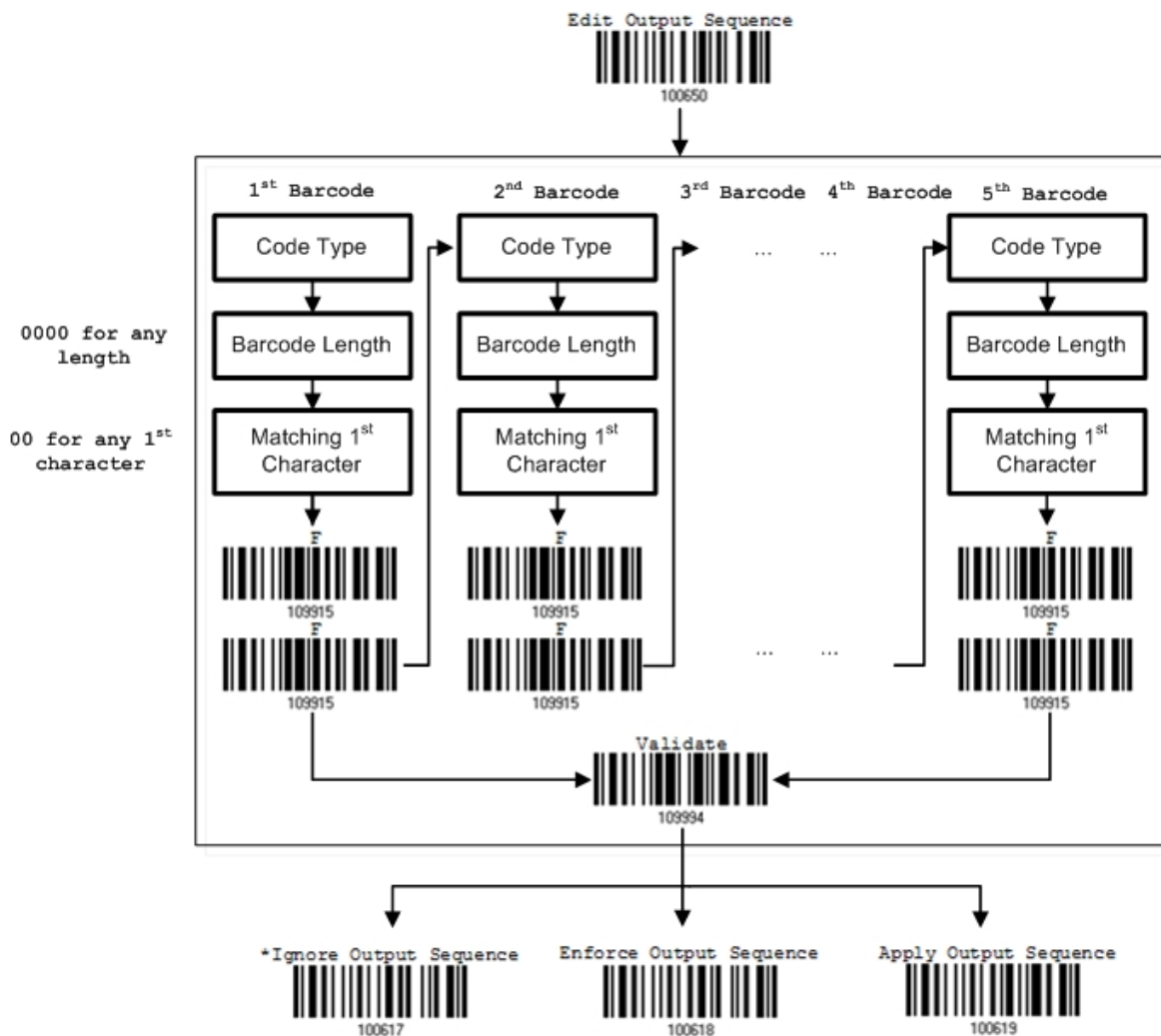
4.6 MULTI-BARCODE EDITOR

The Multi-Barcode Editor allows deciding the output sequence of a concatenation of barcodes. Up to five barcodes can be specified. Enabling this mode will force the scanner to apply Laser mode as the scan mode. For the scanner to concatenate barcodes, the maximum output data length of all the barcodes is 10 KB after configuration. When the data length exceeds 10 KB, the concatenation will not take effect.

Note: The Multi-Barcode Editor has nothing to do with [Multi-Barcode Mode](#).

The barcodes that are found meeting the specified criteria below will be arranged in the desired sequence.

- ▶ Code Type
- ▶ 4-digit barcode length, excluding prefix, suffix, length code, etc.
- ▶ Matching the first character of barcode data



4.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence



- 1) Read the barcode above to start editing a concatenation of barcodes.
- 2) Code Type setting – read the [“Hexadecimal Value”](#) barcode on page 184 for Code Type of the (first) barcode. For example, read “4” and “1” for Code 39.

Code Type	Symbology	Code Type	Symbology
40 (@)	ISBT 128	52 (R)	EAN-13 with Addon 5
41 (A)	Code 39	53 (S)	MSI
42 (B)	Italian Pharmacode	54 (T)	Plessey
43 (C)	French Pharmacode	55 (U)	GS1-128 (EAN-128)
44 (D)	Industrial 25	56 (V)	UPC-A
45 (E)	Interleaved 25	57 (W)	UPC-A with Addon 2
46 (F)	Matrix 25	58 (X)	UPC-A with Addon 5
47 (G)	Codabar (NW7)		
48 (H)	Code 93	5A (Z)	Telepen
49 (I)	Code 128	5B ([)	GS1 DataBar (RSS)
4A (J)	UPC-E0 / UPC-E1	67 (g)	Code 11
4B (K)	UPC-E with Addon 2	6B (k)	PDF417
4C (L)	UPC-E with Addon 5	6C (l)	MicroPDF417
4D (M)	EAN-8	6D (m)	Data Matrix
4E (N)	EAN-8 with Addon 2		
4F (O)	EAN-8 with Addon 5	6F (o)	QR Code
50 (P)	EAN-13		
51 (Q)	EAN-13 with Addon 2	7B (f)	Micro QR

- 3) Barcode Length setting – read the [“Decimal Value”](#) barcode on page 183 for the 4-digit length of the (first) barcode. For example, read “0065” for barcode length of 65 characters or read “0000” for any length.

Note: If not reading 0000 for any length, the 4-digit length must exclude prefix, suffix (0x0d by default), length code, etc.

- 4) Matching Character setting – read the [“Hexadecimal Value”](#) barcode on page 184 for the 1st character that must be found matching in the (first) barcode. For example, read “4” and “1” for matching character “A” as the first character in the barcode or read “00” for any character.



- 5) Read twice the "F" barcode on page 184 ("FF") to complete the setting of each barcode.
- 6) Read the "Validate" barcode to end the editing of the barcode set.



4.6.2 ACTIVATE THE CONCATENATION OF BARCODES

By default, the output sequence editing of the concatenation of barcodes is not applied.

When “Enforce Output Sequence” is enabled, all barcodes read by the scanner must meet with the criteria for the concatenation. If data is found excluded from all output sequence sets (= not meeting with the criteria), the scanner will not accept the reading, and therefore, data will not be transmitted.

When “Apply Output Sequence” is enabled, only barcodes found meeting with the criteria are counted for the concatenation. Those found not meeting with the criteria are processed normally and individually.

Note: When it requires reading more barcodes to complete the “output sequence” requirements, the scanner will respond with one short beep (low tone). After reading an acceptable barcode, its LED indicator will become solid green and go off quickly (= Good Read).

Upon completion of reading acceptable barcodes, the scanner will respond with one short beep (high tone) and its LED indicator will become solid green and go off quickly (= Good Read).



Warning: When disable the Multi-Barcode Editor later, the scan mode remains unchanged. If Laser mode is not desired, proceed to select a scan mode best suits the application.



4.7 REMOVAL OF SPECIAL CHARACTER

Specify only 1 character, but it will remove every matching character encountered from the starting position of barcode data until a different character is met. For example, if it is configured to remove the character "0" (hex value is "30"), one or more zeros will be stripped off the barcode data "012345" and "00012345". However, for barcode data "010333", only the first zero will be stripped off.

Remove Special
Character



101470

- 1) Read the barcode above to remove the specified character.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string. For example, read "3" and "0" for the scanner to remove the character "0".
- 3) Read the "Validate" barcode to complete this setting.



APPLYING FORMATS FOR DATA EDITING

The scanner allows advanced data editing by applying user-configured editing formats. The whole processed data can be divided into fields by user-specified rules. These fields together with the user-configurable additional fields consist of the data actually sent to the host computer.

To apply any editing format, the maximum output data length of a barcode is 7 KB after configuration. When the data length exceeds 7 KB, editing format will not take effect.

[Prefix Code]	[Code ID]	[Length Code]	[Data]	[Suffix Code]	Additional Field(s)
None by default	None by default	None by default	Barcode itself	0x0d by default	

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5.1 ACTIVATING EDITING FORMATS

5.1.1 ACTIVATE EDITING FORMATS

Any editing format configured before can directly be applied. If there's not, users must start with configuring an editing format first, and then activate the editing format when it is desired in use.

Editing Format 1

Enable



101301

***Disable**



101300

Editing Format 2

Enable



101303

***Disable**



101302

Editing Format 3

Enable



101305

***Disable**



101304

Editing Format 4

Enable



101307

***Disable**



101306



Editing Format 5



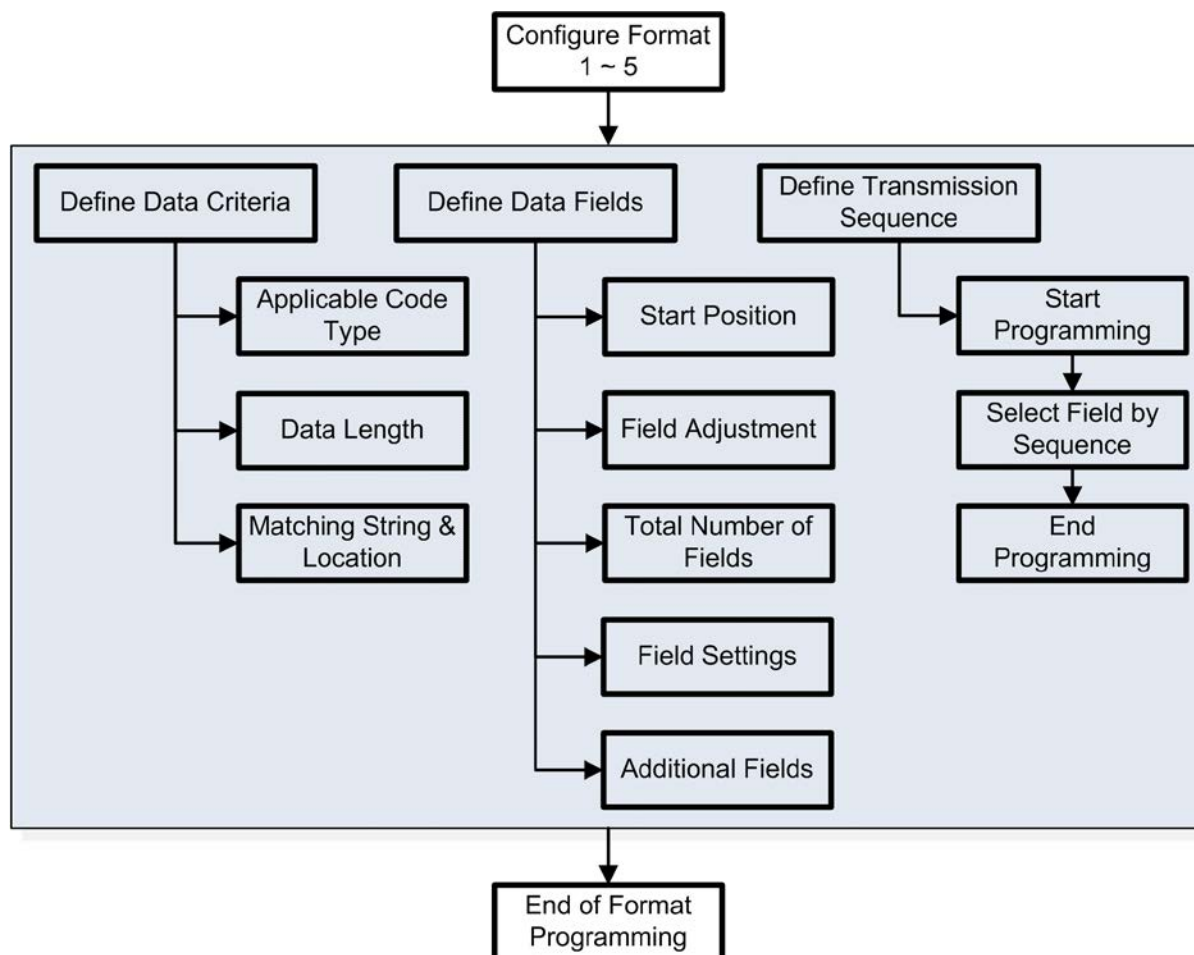
5.1.2 EXCLUSIVE DATA EDITING

By default, only barcodes found meeting with the criteria are processed by the editing formats. Those found not meeting with the criteria are processed normally.

When “Exclusive Data Editing” is enabled, all barcodes read by the scanner must be processed by the editing formats. If data is found excluded from all enabled editing formats (= not meeting with the specified criteria), the scanner will not accept the reading, and therefore, data will not be transmitted.



5.2 HOW TO CONFIGURE EDITING FORMATS




5.2.1 SELECT FORMAT TO CONFIGURE

Start Programming Format


Select one editing format (Format 1~5) and the parameters pertaining to the editing format can then be configured – applicable code type, data length, matching string & location, start position, field adjustment, total number of fields, field settings (field-dividing rule), additional fields, and field transmission sequence.

- ▶ Up to five different formats can be specified.


Configure Format 1


109981


Configure Format 2


109982


Configure Format 3


109983

Configure Format 4


109984

Configure Format 5


109985

Note: Before completing the programming of an editing format, having the scanner read any barcode for parameters other than those pertaining to the editing format will automatically abort the programming process.

End Programming Format

After configuring all the desired parameters, have the scanner read the “End Programming Format” barcode, which can be located at the bottom of every even page in this chapter.

End Programming
Format


109980



5.2.2 RESTORE DEFAULT FORMAT

Select an existing editing format and have the defaults restored. The default settings of an editing format are listed below.

Editing format	Defaults
Applicable Code Type	All
Data Length	0 (No qualification)
Matching String	Disable
Matching String Location	None
Start Position	From head
Field Adjustment	No adjustment
Total Number of Fields	1
Field Setting – field-dividing rule	Not configured
Additional Fields	None
Field Transmission Sequence	F1

Restore Default
Format



5.3 CONFIGURING FORMAT — DEFINE DATA CRITERIA

Three applicable conditions can be configured to check whether the data read by the scanner can be processed by the particular editing format.

Note: Data editing cannot be performed unless the three conditions are all met.

5.3.1 APPLICABLE CODE TYPE

By default, barcodes of all the supported symbologies will be processed by any editing format previously configured and enabled. For quick configuration, first clear all, and then select the desired symbologies.

Note: It must have at least one symbology selected.



Editing Format for Codabar

*Apply



101513

Do Not Apply



101512

Editing Format for Code 39

*Apply



101501

Do Not Apply



101500

Editing Format for Code 93

*Apply



101515

Do Not Apply



101514

Editing Format for Code 128

*Apply



101517

Do Not Apply



101516

Editing Format for GS1-128 & GS1 DataBar

*Apply



101519

Do Not Apply



101518



Editing Format for ISBT 128

*Apply	 101553
Do Not Apply	 101552

Editing Format for EAN-8

*Apply	 101527
Do Not Apply	 101526

Editing Format for EAN-8 Addon 2

*Apply	 101529
Do Not Apply	 101528

Editing Format for EAN-8 Addon 5

*Apply	 101531
Do Not Apply	 101530

Editing Format for EAN-13

*Apply	 101533
Do Not Apply	 101532

Editing Format for EAN-13 Addon 2

***Apply**



101535

Do Not Apply



101534

Editing Format for EAN-13 Addon 5

***Apply**



101537

Do Not Apply



101536

Editing Format for French Pharmacode

***Apply**



101505

Do Not Apply



101504

Editing Format for Italian Pharmacode

***Apply**



101503

Do Not Apply



101502

Editing Format for Industrial 25

***Apply**



101507

Do Not Apply



101506



Editing Format for Interleaved 25

*Apply	 101509
Do Not Apply	 101508

Editing Format for Matrix 25

*Apply	 101511
Do Not Apply	 101510

Editing Format for MSI

*Apply	 101545
Do Not Apply	 101544

Editing Format for Plessey

*Apply	 101547
Do Not Apply	 101546

Editing Format for Telepen

*Apply	 101549
Do Not Apply	 101548

Editing Format for UPC-A

***Apply**



101539

Do Not Apply



101538

Editing Format for UPC-A Addon 2

***Apply**



101541

Do Not Apply



101540

Editing Format for UPC-A Addon 5

***Apply**



101543

Do Not Apply



101542

Editing Format for UPC-E

***Apply**



101521

Do Not Apply



101520

Editing Format for UPC-E Addon 2

***Apply**



101523

Do Not Apply



101522



Editing Format for UPC-E Addon 5

*Apply	 101525
Do Not Apply	 101524

Editing Format for Code 11

*Apply	 101557
Do Not Apply	 101556

Editing Format for PDF417

*Apply	 101653
Do Not Apply	 101652

Editing Format for MicroPDF417

*Apply	 101655
Do Not Apply	 101654

Editing Format for Data Matrix

*Apply	 101657
Do Not Apply	 101656

Editing Format for QR Code

***Apply****Do Not Apply****Editing Format for MicroQR**

***Apply****Do Not Apply****5.3.2 DATA LENGTH**

The length must include prefix, suffix (0x0d by default), length code, etc. By default, barcodes of any length (character count) are eligible for data editing.

- ▶ Specify a value.
- ▶ When zero is given to both, the scanner will not perform the length qualification.

I) Read the barcode below to specify Max. Length or Min. Length separately, and follow steps 2~3.

Max. Length**Min. Length**

- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired length.
- 3) Read the "Validate" barcode on the same page to complete this setting.



5.3.3 MATCHING STRING & LOCATION

By default, no matching string is specified, and therefore, it is disabled. Enable this feature by specifying a matching string; up to four characters are allowed.

- ▶ When the Matching String Location is zero, the scanner will only check for the existence of the matching string in the barcode data.
- ▶ Specify a value to indicate where the matching string starts in the barcode data.

1) Read the barcode to specify a matching string.

Matching String...



- 2) Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.
- 4) Read the barcode to specify the location of the matching string.

Location of Matching
String...



- 5) Read the "[Decimal Value](#)" barcode on page 183 for the desired location.
- 6) Read the "Validate" barcode on the same page to complete this setting.



5.4 CONFIGURING FORMAT — DEFINE DATA FIELD

5.4.1 START POSITION

Data can be divided into fields in one of the following direction –

- ▶ from head (F1) to tail (F5)
- ▶ from tail (F1) to head (F5)

***From Head**



101600

From Tail



101601

5.4.2 FIELD ADJUSTMENT

Apply equal length to all fields, if necessary. If data is found longer than specified, it will be truncated automatically. When data is found shorter, it will add "Space" (0x20) to field.

***No adjustment**



101602

**Set length to adjust
fields... (*0)**



101603

- 1) Read the barcode above to adjust field by length.
- 2) Read the "[Decimal Value](#)" barcode on page 183 for the desired field length.
- 3) Read the "Validate" barcode on the same page to complete this setting.



5.4.3 TOTAL NUMBER OF FIELDS

Data can be divided into at most 6 fields; each of them is numbered from F1 to F6 accordingly. However, only F1~F5 can be configured.

- ▶ The total number of fields must be specified correctly. If three fields are configured for the editing format, the data characters after F3 will be assigned to F4 automatically. This feature is quite useful especially when data of variable lengths is processed by editing formats.

*One Field	 101590
Two Fields	 101591
Three Fields	 101592
Four Fields	 101593
Five Fields	 101594
Six Fields	 101595

Note: The number of configurable fields is always one less than the total number of fields specified. The extra data characters beyond the last field configured will be automatically assigned to the next field.



5.4.4 FIELD SETTINGS

Data eligible for editing formats is divided into fields by user-specified rules – either using the field terminating string or specified field length.

By Terminating String

Specify the field terminating string. Up to two characters are allowed. The scanner will search for the occurrence of this particular string in the data.

- ▶ By default, this string will be included in the field.

By Length

Alternatively, you may simply specify the field length. The scanner will assign the next specified number of characters into the field.

Field 1 Setting

1. Read the barcode below to divide field 1 by a specified terminating string.

Select
Field Separator
to Divide Field 1...



2. Read the ["Hexadecimal Value"](#) barcode on page 184 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



If not dividing the field by a specific separator, you may divide it by a specified length.

1. Read the barcode below to divide field 1 by length.

Divide Field 1
by Length




2. Read the ["Decimal Value"](#) barcode on page 183 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Field 2 Setting

- 1. Read the barcode below to divide field 2 by a specified terminating string.

Select
Field Separator
to Divide Field 2...



101571

- 2. Read the ["Hexadecimal Value"](#) barcode on page 184 for the desired character string.
- 3. Read the "Validate" barcode to complete this setting.
- 4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator


101569

Discard Separator


101568

If not dividing the field by a specific separator, you may divide it by a specified length.

- 1. Read the barcode below to divide field 2 by length.

Divide Field 2
by Length


101570

- 2. Read the ["Decimal Value"](#) barcode on page 183 for the desired field length.
- 3. Read the "Validate" barcode on the same page to complete this setting.



Field 3 Setting

1. Read the barcode below to divide field 3 by a specified terminating string.

Select
Field Separator
to Divide Field 3...



2. Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



If not dividing the field by a specific separator, you may divide it by a specified length.

1. Read the barcode below to divide field 3 by length.

Divide Field 3
by Length




2. Read the "[Decimal Value](#)" barcode on page 183 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Field 4 Setting

- 1. Read the barcode below to divide field 4 by a specified terminating string.

Select
Field Separator
to Divide Field 4...


101579

- 2. Read the ["Hexadecimal Value"](#) barcode on page 184 for the desired character string.
- 3. Read the "Validate" barcode to complete this setting.
- 4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator


101577

Discard Separator


101576

If not dividing the field by a specific separator, you may divide it by a specified length.

- 1. Read the barcode below to divide field 4 by length.

Divide Field 4
by Length


101578

- 2. Read the ["Decimal Value"](#) barcode on page 183 for the desired field length.
- 3. Read the "Validate" barcode on the same page to complete this setting.



Field 5 Setting

1. Read the barcode below to divide field 5 by a specified terminating string.

Select
Field Separator
to Divide Field 5...



2. Read the "[Hexadecimal Value](#)" barcode on page 184 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



If not dividing the field by a specific separator, you may divide it by a specified length.

1. Read the barcode below to divide field 5 by length.

Divide Field 5
by Length



2. Read the "[Decimal Value](#)" barcode on page 183 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Additional Fields

Up to five additional fields can be created for each editing format; each of them is numbered from AF1 to AF5 accordingly.

- ▶ If “Keyboard Wedge” or “USB HID” is configured for interface, Key Type and Key Status will then become applicable. Decide whether to apply Key Status when “Normal Key” is selected for Key Type.

Key Type		Key Status
Scan Code	Up to 2 scan code values are allowed.	N/A
Normal Key	Up to 4 character strings are allowed.	<ul style="list-style-type: none">▶ Add Shift▶ Add Left Ctrl▶ Add Left Alt▶ Add Right Ctrl▶ Add Right Alt Refer to Keyboard Wedge Table .

1. Read the barcode below to specify an additional field, one at a time.

Additional Field 1...



Additional Field 2...



Additional Field 3...



Additional Field 4...



Additional Field 5...



2. Read the “[Hexadecimal Value](#)” barcode on page 184 for the desired additional field.
3. Read the “Validate” barcode to complete this setting.



5.4.5 PAUSE FIELD SETTING

Pause Field Time

Limit the pause time interval (1~16). By default, it is set to 1 second.

Pause Field Time
1~16 sec.
(*1)



1. Read the barcode above to specify the time interval for the Pause Field. (It is set to 1 by default.)
2. Read the "[Decimal Value](#)" barcode on page 183. For example, read "1" and "0" for setting the Pause Field Time to 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.



5.5 CONFIGURING FORMAT — DEFINE TRANSMISSION SEQUENCE

After configuring the data fields and additional fields, you must now program the transmission sequence of these fields that comprise the final data. This field transmission sequence can be assigned in any desired order and fields can be assigned multiple times as well.

Note: Up to twelve fields can be assigned.

- 1) Read the "Start" barcode to begin with programming the field transmission sequence.

Start Programming...



- 2) Program the transmission sequence by reading the desired fields as well as additional fields.

Field 1



Field 2



Field 3



Field 4



Field 5



Field 6



Additional Field 1



Additional Field 2



Additional Field 3



Additional Field 4



Additional Field 5



Pause Field



Null Character Field



3) Read the “End” barcode to complete this setting.

End Programming...



5.6 PROGRAMMING EXAMPLES

5.6.1 EXAMPLE I

Extract data from the 10th character to the 19th character...

The editing format should be configured as follows:

1. Read the "Enter Setup" barcode to enter the Configuration Mode.
2. Read the "Configure Format 1" barcode.
3. Read the "Clear All" and "Code 128" barcodes for applicable code type.
4. Read the "Three Fields" barcode.
5. Read the "Divide Field 1 by Length" barcode, and set length to 9.
Field 1 data starts from the 1st character to the 9th character.
6. Read the "Divide Field 2 by Length" barcode, and set length to 10.
Field 2 data starts from the 10th character to the 19th character.
7. Read the "Start (Programming)" barcode to program the transmission sequence.
8. Read the "Field 2" barcode.
9. Read the "End" barcode to complete the transmission sequence setting.
10. Read the "End Programming Format" barcode to complete the setting of Editing Format 1.
11. Read the "Enable Format 1" barcode to apply Editing Format 1 to Code 128.
12. Read the "Update" barcode to exit the Configuration Mode.



5.6.2 EXAMPLE II

Extract the date code, item number, and quantity information from barcodes.

Data in a barcode is encoded like this:

- ▶ From the 1st character to the 6th character is the date code.
- ▶ From the 7th character to the dash '-' character is the item number.
- ▶ After the dash '-' character is the quantity information.

Data will be transmitted like this:

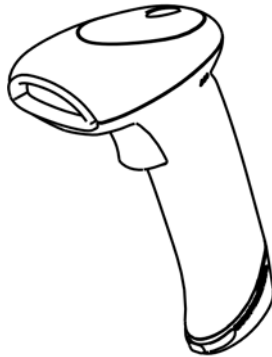
- ▶ The item number goes first, then a TAB character, followed by the date code, then another TAB character, and finally the quantity information.

The editing format should be configured as follows:

1. Read the "Enter Setup" barcode to enter the Configuration Mode.
2. Read the "Configure Format 2" barcode.
3. Read the "Three Fields" barcode.
4. Read the "Divide Field 1 by Length" barcode, and set length to 6.
Field 1 data starts from the 1st character to the 6th character.
5. Read the "Select Field Separator to Divide Field 2" barcode, and use a dash '-' character.
Field 2 data starts from the 7th character until the dash '-' character is met.
6. Read the "Additional Field 1" barcode, and use a tab character for the field.
7. Read the "Start (Programming)" barcode to program the transmission sequence.
8. Read the "Field 2", "Additional Field 1", "Field 1", "Additional Field 1", "Field 3" barcodes.
9. Read the "End" barcode to complete the transmission sequence (F2 A1 F1 A1 F3) setting.
10. Read the "End Programming Format" barcode to complete the setting of Editing Format 1.
11. Read the "Enable Format 2" barcode to apply Editing Format 2 to all code types.
12. Read the "Update" barcode to exit the Configuration Mode.



SPECIFICATIONS



Optical Characteristics		1504B
Scan Engine		2D Imager
Light Source		Aiming pattern: 623nm LED Illumination: White LED x 2 (Cool White CRI typ. 70nm)
Physical Characteristics		
Switch		Tactile switch
Indication		Dual-color LED (Red/Green) and beeper
Interface Options		Keyboard Wedge, RS-232, USB HID, USB Virtual COM
Weight		Approx. 149 g
Power Adaptor		
Input		AC 100~240 V, 50/60 Hz
Output		DC 5V, 1A
Power Consumption	Standby	50 mA
	Operating	280 mA
Operating Temperature		0 °C to 40 °C
Environmental Characteristics		
Temperature	Operating	0 °C to 50 °C
	Storage	-20 °C to 60 °C
Humidity (Non-condensing)	Operating	10% to 90%
	Storage	5% to 95%



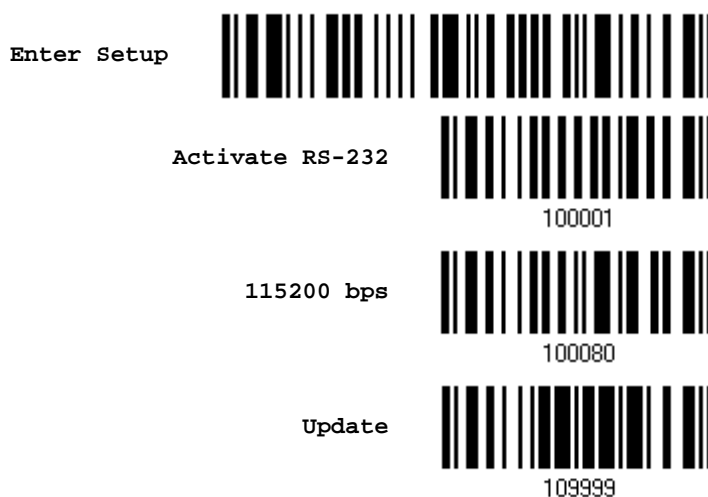
Resistance	
Impact Resistance	1.2 m, 5 drops per 6 sides
Splash / Dust Resistance	IP 30
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV contact discharge
Programming Support	
Configuration via Setup Barcodes	Use setup barcodes or host serial commands.
Software	Windows®-based ScanMaster
Firmware upgradeable	Download firmware updates via the download utility.
Accessories (✓ means “supported”)	
Auto-Sense Stand	✓
RS-232 Cable	✓
Keyboard Wedge Cable	✓
USB Cable	✓



FIRMWARE UPGRADE

USING RS-232

- 1) Connect the RS-232 cable between the scanner and the computer, and join the power supply cord.
- 2) Read the following barcodes in sequence to configure the scanner to use RS-232 as download interface.

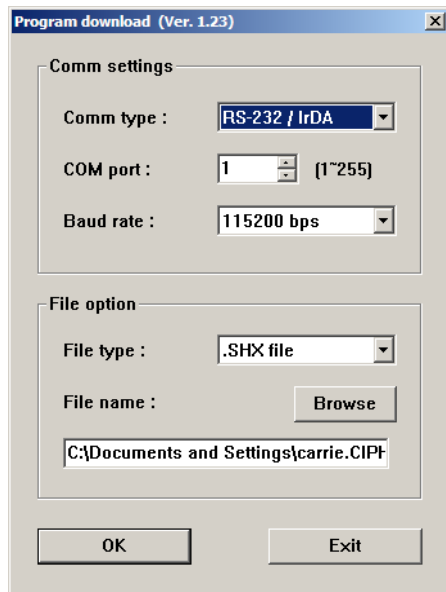


- 3) Read the following barcodes in sequence for the scanner to enter the download mode. The scanner will respond with beeps to indicate it is ready for downloading.



- 4) Run the download utility "ProgLoad.exe" on the computer.

Kernel Program	User Program
K150x_V*.shx	STD150x_V*.shx



- ▶ For the communication settings, select "RS-232" and the correct COM port for RS-232 or USB Virtual COM interface.
- ▶ For RS-232, select 115200 bps for baud rate; for USB Virtual COM, ignore the baud rate setting.
- ▶ For the file option, click [Browse] to select the target file for firmware update.
- ▶ Click [OK].

- 5) After upgrading kernel, you will need to restart the scanner manually.

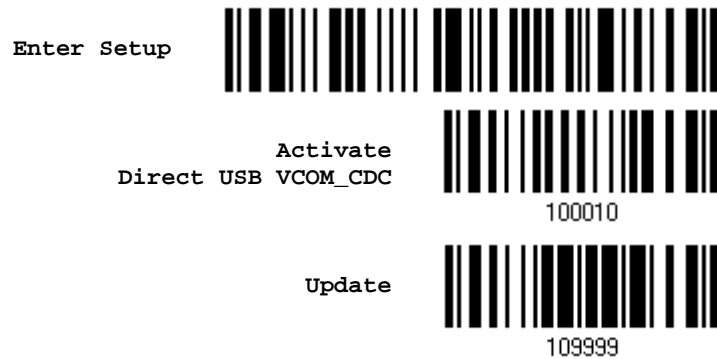
After upgrading the user program, the scanner will automatically restart itself once the download is completed successfully.

Note: The output interface remains unchanged as specified in step 2 (= RS-232 or USB Virtual COM). For RS-232, the baud rate setting is still 115200 bps!

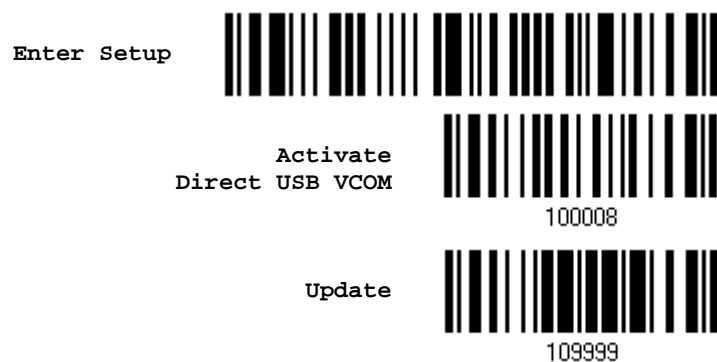


USING USB VIRTUAL COM

- 1) Connect the USB cable between the scanner and the computer.
 - ▶ If using USB Virtual COM for the first time, you must install its driver beforehand.
- 2) For Windows platform, read the following barcodes in sequence to configure the scanner to use USB VCOM_CDC as download interface.



For non-Windows platform, read the following barcodes in sequence to configure the scanner to use USB Virtual COM as download interface.



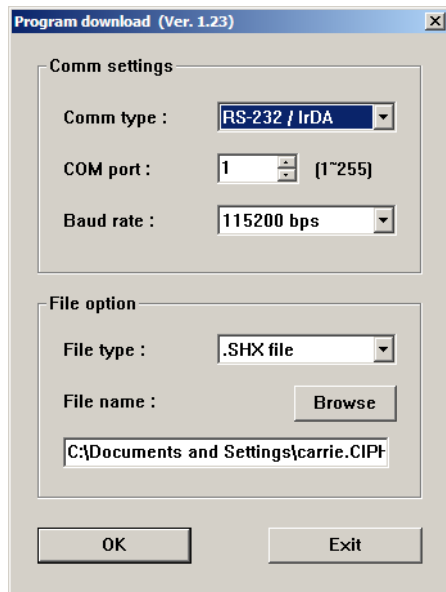
- 3) Read the following barcodes in sequence for the scanner to enter the download mode. The scanner will respond with beeps to indicate it is ready for downloading.



- 4) Run the download utility "ProgLoad.exe" on the computer.



Kernel Program	User Program
K150x_V*.shx	STD150x_V*.shx



- ▶ For the communication settings, select "RS-232" and the correct COM port for RS-232 or USB Virtual COM interface.
- ▶ For RS-232, select 115200 bps for baud rate; for USB Virtual COM, ignore the baud rate setting.
- ▶ For the file option, click [Browse] to select the target file for firmware update.
- ▶ Click [OK].

5) After upgrading kernel, you will need to restart the scanner manually.

After upgrading the user program, the scanner will automatically restart itself once the download is completed successfully.

Note: The output interface remains unchanged as specified in step 2 (= RS-232 or USB Virtual COM). For RS-232, the baud rate setting is still 115200 bps!



HOST SERIAL COMMANDS

SERIAL COMMANDS

D

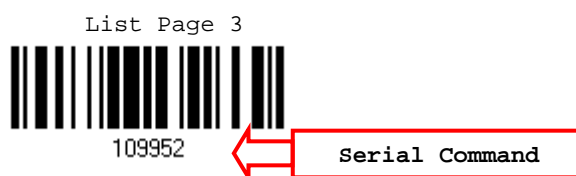
Purpose	To disable the scanner.
Remarks	"D"

E

Purpose	To enable the scanner.
Remarks	"E"

#@ nnnnnn <CR>

Purpose	To configure the scanner.
Remarks	nnnnnn – the six digits of command parameters. For example, "109952" is to list the current Code ID settings.



"0x23" + "0x40" + "0x31" + "0x30" + "0x39" + "0x39" + "0x35" + "0x32" + "0x0d"

Note: After configuring the scanner, send the serial command "#@109999" to save the settings.

#@ ----<CR>

Purpose	To halt the scanner.
Remarks	"0x23" + "0x40" + "0x2d" + "0x2d" + "0x2d" + "0x2d" + "0x0d"

#@<CR>

Purpose	To resume operation.
Remarks	"0x23" + "0x40" + "0x2e" + "0x2e" + "0x2e" + "0x2e" + "0x0d"

#@////<CR>

Purpose	To respond with a beep.
Remarks	"0x23" + "0x40" + "0x2f" + "0x2f" + "0x2f" + "0x2f" + "0x0d"



#@TRIGOFF<CR>

Purpose	Disable software trigger
Remarks	"0x23" + "0x40" + "0x54" + "0x52" + "0x49" + "0x47" + "0x4f" + "0x46" + "0x46" + "0x0d"

#@TRIGON<CR>

Purpose	Enable software trigger
Remarks	"0x23" + "0x40" + "0x54" + "0x52" + "0x49" + "0x47" + "0x4f" + "0x4e" + "0x0d"

EXAMPLE

Run HyperTerminal.exe on the host computer to send serial commands to the scanner via RS-232 or USB Virtual COM.

- ▶ For the scanner to stop immediately –
D
- ▶ For the scanner to resume working –
E
- ▶ For the scanner to change the beeper to medium volume and beep –
#@101011<CR>
#@////<CR>
- ▶ For the scanner to change the beeper to minimal volume and beep –
#@101010<CR>
#@////<CR>
- ▶ For the scanner to change the beeper frequency to 8 kHz (for Good Read Beep only) and beep –
#@101001<CR>
#@////<CR>
- ▶ For the scanner to change the beeper length to longest (for Good Read Beep only) and beep –
#@101008<CR>
#@////<CR>
- ▶ For the scanner to save the settings, send the serial command "#@109999" –
#@101011<CR>
#@109999<CR>

Note: Configure more than one scanner connected to the host via RS-232 or USB Virtual COM. To identify the scanner, please end the serial command to have it respond with a beep.



KEYBOARD WEDGE TABLE

"Apply" Special Keyboard									
	0	1	2	3	4	5	6	7	8
0		F2	SP	0	@	P	`	p	⑩
1	INS	F3	!	1	A	Q	a	q	⑪
2	DLT	F4	"	2	B	R	b	r	⑫
3	Home	F5	#	3	C	S	c	s	⑬
4	End	F6	\$	4	D	T	d	t	⑭
5	Up	F7	%	5	E	U	e	u	⑮
6	Down	F8	&	6	F	V	f	v	⑯
7	Left	F9	'	7	G	W	g	w	⑰
8	BS	F10	(	8	H	X	h	x	⑱
9	HT	F11	)	9	I	Y	i	y	⑲
A	LF	F12	*	:	J	Z	j	z	
B	Right	ESC	+	;	K	[	k	{	
C	PgUp	Exec	,	<	L	\	l	|	
D	CR	CR*	-	=	M	]	m	}	
E	PgDn		.	>	N	^	n	~	
F	F1		/	?	O	_	o	Dly	ENTER*

Note: (1) ⑩~⑲: Digits of numeric keypad.
 (2) CR*/ENTER*: ENTER key on the numeric keypad.



"Bypass" Special Keyboard									
	0	1	2	3	4	5	6	7	8
0			SP	0	@	P	`	p	
1			!	1	A	Q	a	q	
2			"	2	B	R	b	r	
3			#	3	C	S	c	s	
4			\$	4	D	T	d	t	
5			%	5	E	U	e	u	
6			&	6	F	V	f	v	
7			'	7	G	W	g	w	
8	BS		(	8	H	X	h	x	
9	HT		)	9	I	Y	i	y	
A	LF		*	:	J	Z	j	z	
B		ESC	+	;	K	[	k	{	
C			,	<	L	\	l	|	
D	CR		-	=	M	]	m	}	
E			.	>	N	^	n	~	
F			/	?	O	_	o	Dly	

Note: (1) ①~⑨: Digits of numeric keypad.
 (2) CR*/ENTER*: ENTER key on the numeric keypad.



KEY TYPE & STATUS

KEY TYPE

If “Keyboard Wedge” or “USB HID” is configured for interface, Key Type and Key Status will then become applicable.

*Normal



109926

Scan Code



109936

KEY STATUS

Decide whether or not to change key status when “Normal Key” is selected for Key Type.

Add Shift



109930

Add Left Ctrl



109931

Add Right Ctrl



109933

Add Left Alt



109932

Add Right Alt



109934



EXAMPLE**KEY TYPE = NORMAL**

For example, if you want to program the character "!" as the prefix code:

1. Read the "Configure Prefix" barcode.
2. Read the "[Hexadecimal Value](#)" barcode on page 184 for "2" and "1".
3. Read the "Validate" barcode to complete this setting.

KEY TYPE = SCAN CODE

For example, if you want to program the character "a" (= "1C" on the scan code table) as the prefix code:

1. Read the "Configure Prefix" barcode.
2. Read the "Scan Code" barcode.
3. Read the "[Hexadecimal Value](#)" barcode on page 184 for "1" and "C".
4. Read the "Validate" barcode to complete this setting.

KEY TYPE = NORMAL + KEY STATUS = SHIFT

For example, if you want to program the character "!" (= "Shift" + "1" on keyboard) as the prefix code:

1. Read the "Configure Prefix" barcode.
2. Read the "Add Shift" barcode.
3. Read the "[Hexadecimal Value](#)" barcode on page 184 for "3" and "1".
4. Read the "Validate" barcode to complete this setting.

KEY TYPE = NORMAL + KEY STATUS = CTRL

For example, if you want to program "Ctrl+A" and "Ctrl+\$" as the prefix code:

1. Read the "Configure Prefix" barcode.
2. Read the "Add Left Ctrl" barcode.
3. Read the "[Hexadecimal Value](#)" barcode on page 184 for "4", "1" (= "A").
4. Read the "Add Left Ctrl" barcode.
5. Read the "[Hexadecimal Value](#)" barcode on page 184 for "2", "4" (= "\$").
6. Read the "Validate" barcode to complete this setting.



NUMERAL SYSTEMS

DECIMAL SYSTEM

Decimal



Validate the Values



Update



















Abort



HEXADECIMAL SYSTEM

Hexadecimal

0  109900	1  109901
2  109902	3  109903
4  109904	5  109905
6  109906	7  109907
8  109908	9  109909
A  109910	B  109911
C  109912	D  109913
E  109914	F  109915



Validate the Values



ASCII TABLE

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





READING DRIVER LICENSES

The scanner is capable of reading 2D driver's licenses and other American Association of Motor Vehicle Administrators (AAMVA) compliant ID cards. For compliant 2D licensed card scanning, it decodes the information embedded in the ID cards to a formatted data. This appendix provides the setup barcodes required while ScanMaster utility provides GUI setup that is organized and easy-to-use.

Note: The configured settings are saved in flash memory for access once a driver's license is read.

LICENSE PARSING SETUP

*License Parse Disable



License Parse Enable



Parse Field Clear



FILE TYPE

You can check the file type of ANSI by scanning the barcode as below.

*Enable



Disable



Update













Abort















OUTPUT SEQUENCE SETUP

The scanner supports arranging the sequences of license embedded data via separators and fields. In order to present data in a consistent format, some barcodes (ex. First Name, Middle Name/Initial, Last Name, Name suffix, Name Prefix, Birth Date and so on) will return data based on the calculated actual data contained in the ID barcode.

Full Name	 103011
Last Name	 103012
First Name	 103013
Middle Name/Initial	 103014
Name Suffix	 103015
Name Prefix	 103016
Mailing Address Line1	 103017
Mailing Address Line2	 103018
Mailing Address City	 103019
Mailing Address State	 103020



Mailing Address Postal Code	 103021
Home Address Line1	 103022
Home Address Line2	 103023
Home Address City	 103024
Home Address State	 103025
Home Address Postal Code	 103026
License ID Number	 103027
License Class	 103028
License Restrictions	 103029
License Endorsements	 103030
Height (Feet and/or Inches)	 103031
Height (Centimeters)	 103032

Update



Abort



Weight (Pounds)	 103033
Weight (Kilograms)	 103034
Eye Color	 103035
Hair Color	 103036
License Expiration Date	 103037
Birth Date	 103038
Gender	 103039
License Issue Date	 103040
Issue Timestamp	 103041
Number of Duplicates	 103042
Medical Codes	 103043
Organ Donor	 103044





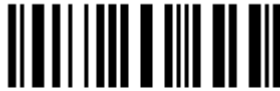









Nonresident	 103045
Customer ID	 103046
Social Security Number	 103047
AKA Birth Date	 103048
AKA Social Security Name	 103049
AKA Full Name	 103050
AKA Last Name	 103051
AKA First Name	 103052
AKA Middle Name/Initial	 103053
AKA Name Suffix	 103054
AKA Name Prefix	 103055
Weight Range	 103056

Update



Abort



Document Discriminator	 103057
Country	 103058
Federal Commission Codes	 103059
Place of Birth	 103060
Audit Information	 103061
Inventory Control	 103062
Race/Ethnicity	 103063
Std Vehicle Class	 103064
Std Restrictions	 103065
Std Endorsements	 103066
Class Description	 103067
Endorsement Description	 103068



Restrictions
Description



103069

Permit Class



103070

Permit Expiration
Date



103071

Permit ID Number



103072

Permit Issue Date



103073

Permit Restrictions



103074

Permit endorsements



103075

Issuer ID Number



103076

Family Name
Truncation



103077

First Name
Truncation



103078

Middle Name
Truncation



103079

Update













Abort



SEPARATORS AND FIELDS

Define the separators that separate fields during the transmission sequence of data scanning. In addition to the built-in data elements, you can also specify up to 5 Additional Fields with 4 bytes characters. Program the transmission sequence by reading the desired fields as additional fields.

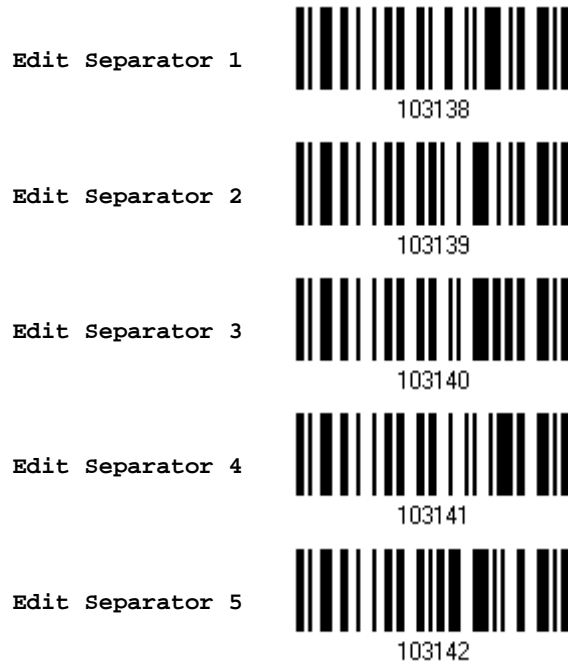
Note: Up to 5 separators can be assigned.

Separator 1 (1 byte) *"Space"	 103128
Separator 2 (1 byte) *"Enter"	 103129
Separator 3 (1 byte) *", "	 103130
Separator 4 (1 byte) *". "	 103131
Separator 5 (1 byte) *"- "	 103132
Additional Field 1 (4 bytes)	 103133
Additional Field 2 (4 bytes)	 103134
Additional Field 3 (4 bytes)	 103135
Additional Field 4 (4 bytes)	 103136
Additional Field 5 (4 bytes)	 103137



EDIT SEPARATORS

All the driver license fields can be split with a pre-selected separator, for example, "-" as First Name-Last Name or ":" as First Name:Last Name.



- 1) Read the barcode above to apply separator to driver license information separately, and follow steps 2~3.
- 2) Read the "[Hexadecimal Value](#)" barcode for the desired character string. For example, read "3" and "A" for the separator to split the data with character [:].
- 3) Read the "Validate" barcode on the same page to complete this setting.

Update



Abort



EDIT FIELDS

Up to five additional fields can be created for each editing format; each of them is numbered from Additional 1 to Additional 5 accordingly.

- ▶ If “Bluetooth® HID” or “USB HID” is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to apply Key Status when “Normal Key” is selected for Key Type.

Key Type		Key Status
Scan Code	Up to 2 scan code values are allowed.	N/A
Normal Key	Up to 4 character strings are allowed.	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt Refer to Keyboard Wedge Table .

Edit Additional
Field 1

103143

Edit Additional
Field 2

103144

Edit Additional
Field 3

103145

Edit Additional
Field 4

103146

Edit Additional
Field 5

103147

- 1) Read the barcode above to specify an additional field, one at a time.
- 2) Read the “[Hexadecimal Value](#)” barcode for the desired additional field.
- 3) Read the “Validate” barcode on the same page to complete this setting.



Appendix VI

KEYBOARD TYPE ONE-SCAN BARCODE

KEYBOARD WEDGE

PCAT (US)



#@KW0001#

PCAT (French)



#@KW0002#

PCAT (German)



#@KW0003#

PCAT (Italian)



#@KW0004#

PCAT (Swedish)



#@KW0005#

PCAT (Norwegian)



#@KW0006#

PCAT (UK)



#@KW0007#

PCAT (Belgium)



#@KW0008#

PCAT (Spanish)



PCAT (Portuguese)



PS55 A01-1



PS55 A01-2 (Japanese)



PS55 A01-3



PS55 001-1



PS55 001-81



PS55 001-2



PS55 001-82



PS55 001-3



#@Kw0018#

PS55 001-8A



#@Kw0019#

PS55 002-1, 003-1



#@Kw0020#

PS55 002-81, 003-81



#@Kw0021#

PS55 002-2, 003-2



#@Kw0022#

PS55 002-82, 003-82



#@Kw0023#

PS55 002-3, 003-3



#@Kw0024#

PS55 002-8A, 003-8A



#@Kw0025#

IBM 3477 Type 4 (Japanese)



#@Kw0026#

PS2-30



#@KW0027#

IBM 34XX/319X, Memorex Telex 122 Keys



#@KW0028#

User-defined table



#@KW0029#

PCAT (Turkish)



#@KW0030#

PCAT (Hungarian)



#@KW0031#

PCAT (Swiss German)



#@KW0032#

PCAT (Danish)



#@KW0033#

DIRECT USB HID

PCAT (US)



#@DH0064#

PCAT (French)



#@DH0065#

PCAT (German)



#@DH0066#

PCAT (Italian)



#@DH0067#

PCAT (Swedish)



#@DH0068#

PCAT (Norwegian)



#@DH0069#

PCAT (UK)



#@DH0070#

PCAT (Belgium)



#@DH0071#

PCAT (Spanish)



#@DH0072#

PCAT (Portuguese)



#@DH0073#

PS55 A01-2 (Japanese)



#@DH0074#

User-defined table



#@DH0075#

PCAT (Turkish)



#@DH0076#

PCAT (Hungarian)



#@DH0077#

PCAT (Swiss German)



#@DH0078#

PCAT (Danish)



#@DH0079#