CipherLab

User Guide

2504 Barcode Scanner

Setup barcodes included.

Version 1.00

CIPHERLAB

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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 numerique respecte les limites de bruits radioelectriques applicables aux appareils numeriques de Classe B prescrites dans la norme sur le material brouilleur: "Appareils Numeriques," NMB-003 edictee 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	Sep. 27, 2017	Initial Release

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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.

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.

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]
- Programmable 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.

Enter Setup

SYMBOLOGIES 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

Update

	GS1 DataBar Limited (RSS Limited)		Disabled
	GS1 DataBar Expanded (RSS Expanded)		Disabled
Composite Code	Composite CC-A/B		Disabled
	Composite CC-C		Disabled
2D Symbologies	PDF417	Enabled	
	MicroPDF417		Disabled
	Data Matrix	Enabled	
	Maxicode	Enabled	
	QR Code	Enabled	
	MicroQR		Disabled
	Aztec	Enabled	
	Han Xin		Disabled

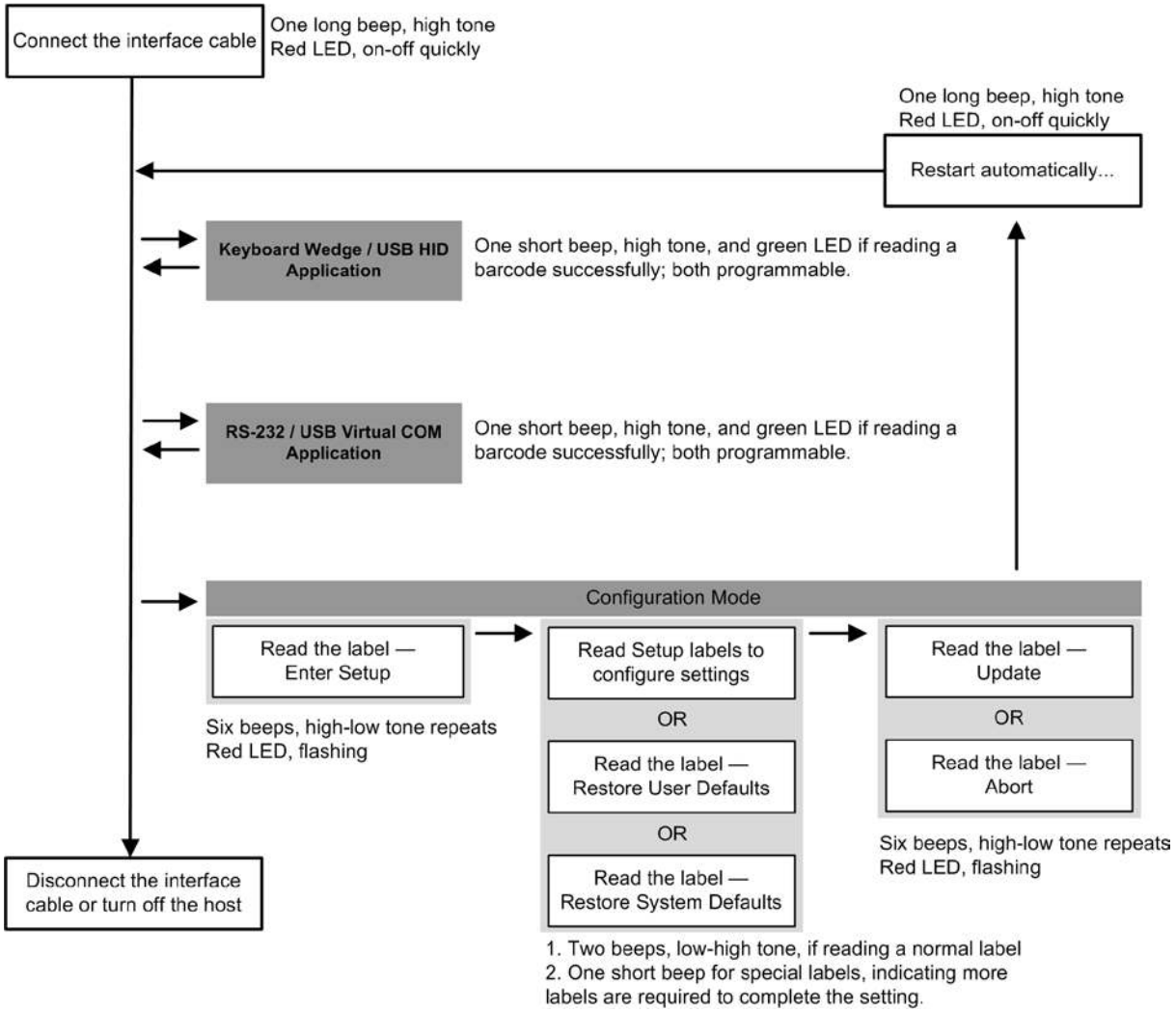
Enter Setup

QUICK START

The configuration of the scanner can be done by reading the setup barcodes (setup labels) 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.



Update

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

Abort

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

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

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

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

Update

READ A SETUP BARCODE

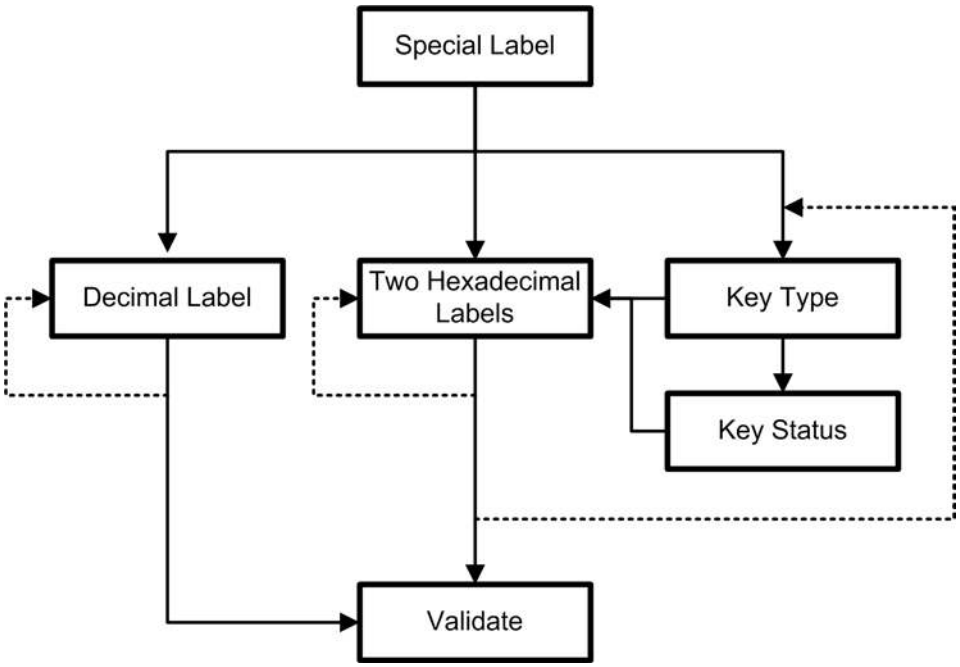
CONFIGURE PARAMETERS

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 indicating it needs to read more setup barcodes. These special parameters may require reading one or more setup barcodes, such as

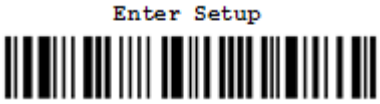
- Numeric barcodes, say, for keyboard type, inter-character delay, length qualification
- Hexadecimal barcodes, say, for character strings as prefix, suffix, etc.
- When "Keyboard Wedge" or "USB HID" is configured as the interface, Key Type and Key Status will then become applicable. Decide whether or 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 then the scanner will respond with two beeps (low-high tone) to indicate the input values are validated.



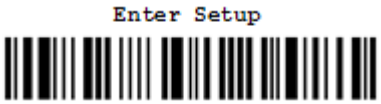
Enter Setup

The example below shows how to save settings as "User Default" to restore user defaults later:

Steps	Action	Scanner 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…	Same as for *Enter the Configuration Mode*.
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.
*	When any configuration error occurs...	The scanner will respond with one long beep (low tone).

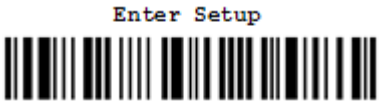
Update

The example below shows how to set numeric parameters:

Steps	Action	Scanner 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, **Normal setup barcode** **Normal setup barcode** **Special setup barcode** **Decimal barcodes**	Read the "Decimal Value" barcode(s). ▸ Refer to Appendix IV "Decimal System" The scanner will respond with two beeps (low-high tone) when the input values are validated.
4	Exit the Configuration Mode…	Same as for *Enter the Configuration Mode*.
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.

Enter Setup

The example below shows how to set string parameters:

Steps	Action	Scanner 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, **Special setup barcodes** 	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
	Hexadecimal barcodes 	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…	Same as for *Enter the Configuration Mode*.
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.

Update

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**	109950
Lists settings regarding Prefix, Suffix, and Length Code Setting (1/2)	**List Page 2**	109951
Lists settings regarding Prefix, Suffix, and Length Code Setting (2/2)	**List Page 3**	109952
Lists settings regarding Code ID	**List Page 4**	109953
Lists settings regarding: Readable Symbologies (1/2)	**List Page 5**	109954
Lists settings regarding: Readable Symbologies (2/2)	**List Page 6**	109955
Lists settings regarding Symbology Parameters (1/3)	**List Page 7**	109956
Lists settings regarding Symbology Parameters (2/3)	**List Page 8**	109957
Lists settings regarding Symbology Parameters (3/3)	**List Page 9**	109958
Reserved	**List Page 10**	109959

Enter Setup

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

Update

CREATE ONE-SCAN SETUP BARCODES

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:

Enter Setup

List Page 3

Update

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.

Enter Setup

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

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

The serial commands above can be combined to form a single 2D barcode:

2D One-Scan Setup Barcode for configuring suffix

Update

Enter Setup

Chapter 1

UNDERSTANDING THE BARCODE SCANNER

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

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Update

1.1 POWER-ON

Connect the interface cable between the scanner and computer.

- When using the RS-232 cable, attach the accompanying power adaptor 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.

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 belowe.

***Enable**

Disable

Enter Setup

1.3 LED INDICATOR

The dual-color LED on top of the scanner is used to indicate operating status. For example, the LED becomes solid red and goes off quickly upon powering on or running out of transmit buffer. Users can tell the difference by the beeps – for example, you 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	---	▸ 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

***Enable Good Read LED**

Disable 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.

Good Read LED Time-out after 0.01~2.54 sec. (*40 ms)

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 195. 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 give feedback for 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

Minimum Volume

Medium Volume

***Maximum Volume**

Enter Setup

1.4.2 GOOD READ BEEP

Frequency

8 kHz

***4 kHz**

2 kHz

1 kHz

Duration

***Shortest**

Shorter

Longer

Longest

Update

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

***Disable**

Enter Setup

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.

Update

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**

100206

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

100200

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

100202

Enter Setup

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 195. 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.

Update

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

100210

Low Light Enhancement

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

Enable

102247

***Disable**

102246

Enter Setup

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 195. 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

200 ms

***400 ms**

800 ms

1 sec

2 sec

3 sec

5 sec

Enter Setup

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.

***No Redundancy**

One Time

Two Times

Three Times

Update

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 195. 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

Enter Setup

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

***Disable**

Update

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

1.15 2D DECODE SETTINGS

1.15.1 AIMING PATTERN

Enable/Disable the aiming pattern during scanning.

***Enable**

102131

Disable

102130

1.15.2 DECODING ILLUMINATION

Enable/Disable illumination during scanning.

- Enabling illumination usually results in superior images. The effectiveness of the illumination decreases as the distance to the target increases.

***Enable**

102129

Disable

102128

Enter Setup

Chapter 2

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, the interface 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.

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2.5 Direct USB VCOM_CDC..... 62

Update

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)

Enter Setup

2.1.1 ACTIVATE KEYBOARD WEDGE & SELECT KEYBOARD TYPE

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

Activate Keyboard Wedge & Select Keyboard Type…

100000

1) Read this barcode above to activate Keyboard Wedge and select a keyboard type.
2) Read the "Decimal Value" barcode on page 195. 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)	23	PS55 002-82, 003-82
2	PCAT (French)	24	PS55 002-3, 003-3
3	PCAT (German)	25	PS55 002-8A, 003-8A
4	PCAT (Italian)	26	IBM 3477 Type 4 (Japanese)
5	PCAT (Swedish)	27	PS2-30
6	PCAT (Norwegian)	28	IBM 34XX/319X, Memorex Telex 122 Keys
7	PCAT (UK)	29	User-defined table
8	PCAT (Belgium)	30	PCAT (Turkish)
9	PCAT (Spanish)	31	PCAT (Hungarian)
10	PCAT (Portuguese)	32	PCAT (Swiss German)
11	PS55 A01-1	33	PCAT (Danish)
12	PS55 A01-2 (Japanese)	34	Reserved
13	PS55 A01-3	35	Reserved
14	PS55 001-1	36	Reserved
15	PS55 001-81	37	PCAT (Russian)
16	PS55 001-2	38	Reserved
17	PS55 001-82	39	Reserved
18	PS55 001-3	40	Reserved
19	PS55 001-8A	41	Reserved
20	PS55 002-1, 003-1	42	PCAT (Cyrillic on Russian)
21	PS55 002-81, 003-81	43	PCAT (Armenian)

Update

22	PS55 002-2, 003-2	44	PCAT (Thai)

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.

***Normal**

AZERTY

QWERTZ

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.

Enter Setup

US Keyboard Style – Normal

QWERTY layout, which is normally used in western countries.

- Select "Lower Row" for the "Digits Layout" setting because 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 because 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 because the upper row is for special characters.

Digits Layout

Select a proper layout that matches Alphabets Layout settings. 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 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.

Enter Setup

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**

Shift Lock

Capital Lock

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

Capital Lock ON

Update

***Capital Lock OFF**

100052

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.

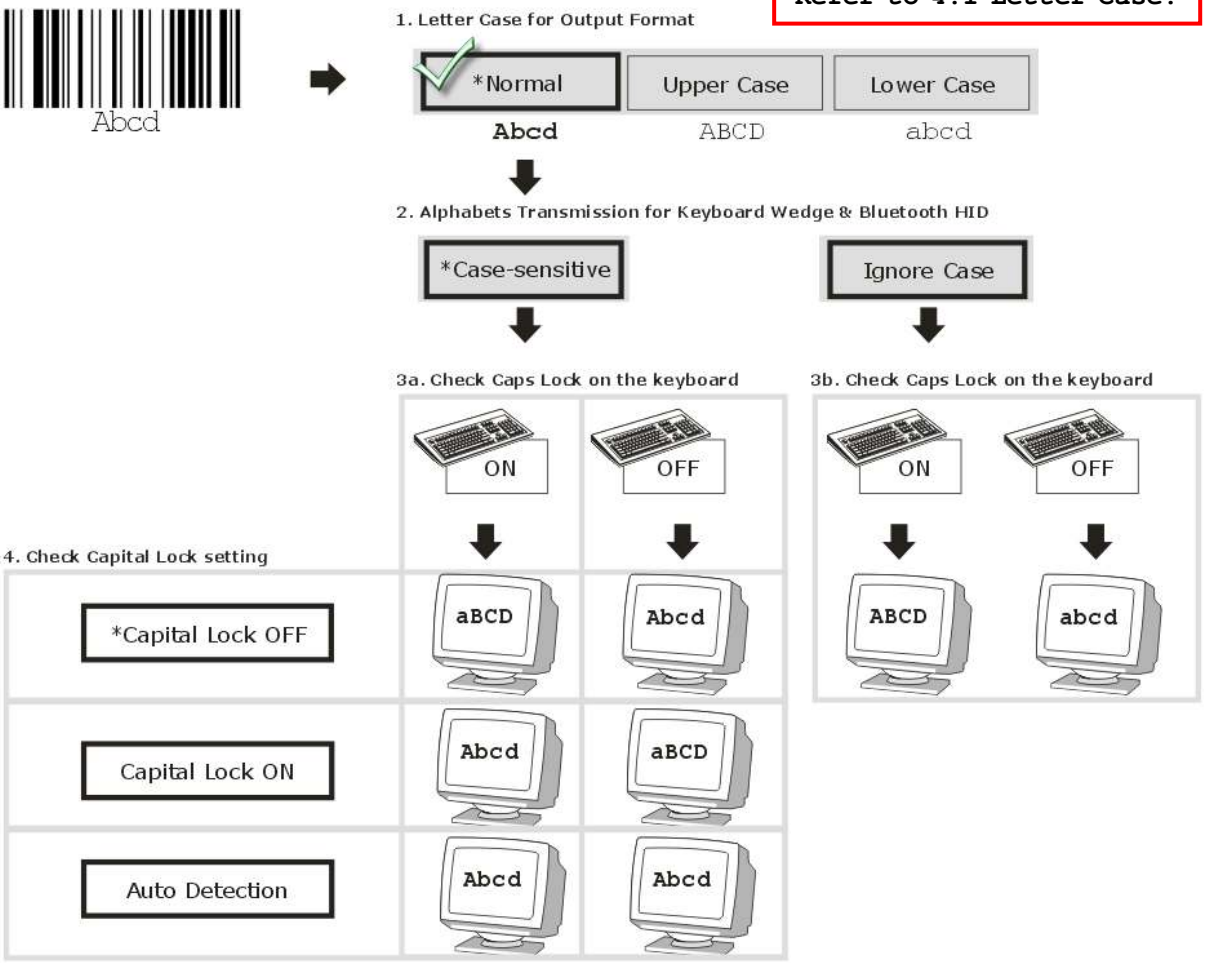
Ignore Case

100051

***Case-sensitive**

100050

Refer to 4.1 Letter Case.



Enter Setup

Digits Transmission

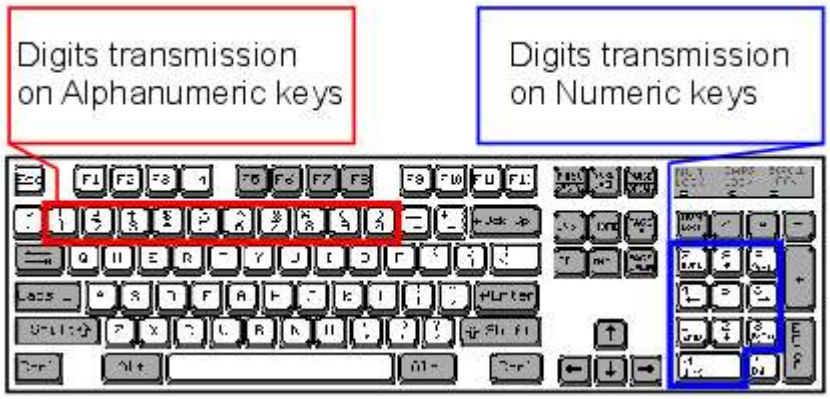
By default, the alphanumeric keypad is used for transmitting digits. Select "Numeric Keypad" if wishing to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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:

Enable

100067

***Disable**

100066

Update

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

***No**

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

***Disable**

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)

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on page 195 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

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 195 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

2.1.6 UTF8 CONVERSION

This function, disabled by default, is only for Russian, Cyrillic, Armenian, and Thai keyboard types.

Enable

***Disable**

Update

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

Enter Setup

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

Update

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**

Scanner Ready

Data Ready

Invert Data Ready

Enter Setup

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 195 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 195 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Update

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)

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 195. 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

***Disable Error Beep**

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

Enter Setup

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)

Update

2.3.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

With the USB HID interface activated, you 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 195. 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)	78	PCAT (Swiss German)
65	PCAT (French)	79	PCAT (Danish)
66	PCAT (German)	80	Reserved
67	PCAT (Italy)	81	Reserved
68	PCAT (Swedish)	82	Reserved
69	PCAT (Norwegian)	83	PCAT (Russian)
70	PCAT (UK)	84	Reserved
71	PCAT (Belgium)	85	Reserved
72	PCAT (Spanish)	86	Reserved
73	PCAT (Portuguese)	87	Reserved
74	PS55 A01-2 (Japanese)	88	PCAT (Cyrillic on Russian)
75	User-defined table	89	PCAT (Armenian)
76	PCAT (Turkish)	90	PCAT (Thai)
77	PCAT (Hungarian)		

Enter Setup

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.

***Normal**

AZERTY

QWERTZ

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.

Update

US Keyboard Style – Normal

QWERTY layout, which is normally used in western countries.

- Select "Lower Row" for the "Digits Layout" setting because 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 because 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 because 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.

Update

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**

Shift Lock

Capital Lock

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

Capital Lock ON

Enter Setup

***Capital Lock OFF**

100052

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.

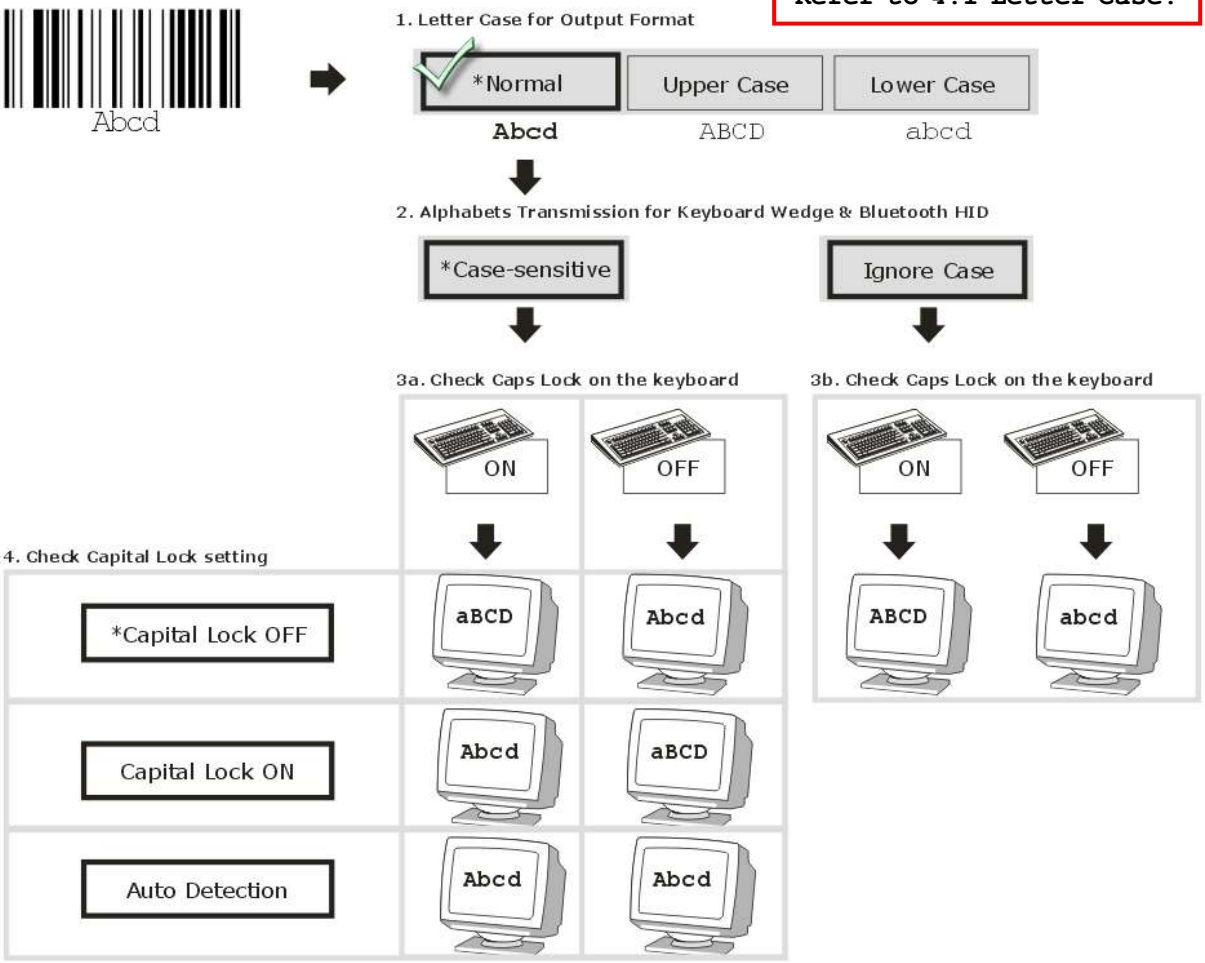
Ignore Case

100051

***Case-sensitive**

100050

Refer to 4.1 Letter Case.



Update

Digits Transmission

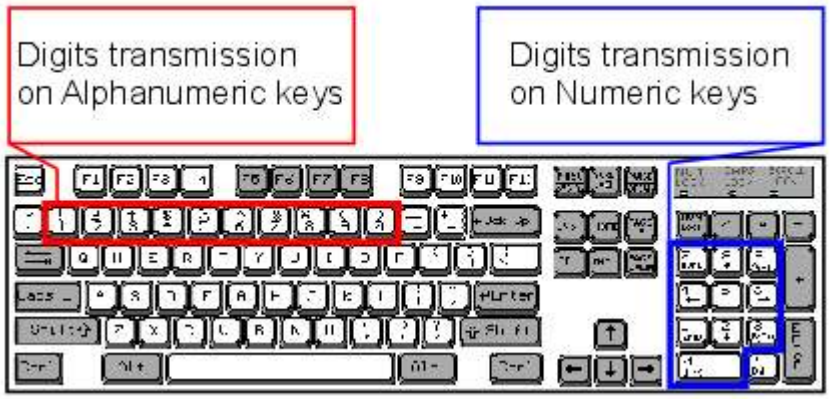
By default, the alphanumeric keypad is used for transmitting digits. Select "Numeric Keypad" to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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:

Enable

100067

***Disable**

100066

Enter Setup

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 195 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 195 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Update

2.3.5 HID CHARACTER TRANSMIT MODE

By default, HID interface sends data to the host character by character. You may have the scanner read the "Batch Processing" barcode to process data in batch.

Batch Processing

100064

***By Character**

100065

Note: "By Character" transmit mode is required when working with iPhone or iPad. It's recommended that the Auto-Correction function on your iOS keyboard should be turned off.

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

2.3.7 UTF8 CONVERSION

This function, disabled by default, is only for Russian, Cyrillic, Armenian, and Thai keyboard types.

Enable

100023

***Disable**

100022

Enter Setup

2.3.8 USB POLLING INTERVAL

Scan the barcodes below to specify the USB polling interval ranging from 1 to 15ms. It's set to 10ms by default.

Set USB polling interval
1~15 ms(*10)

1) Read the barcode above to specify the USB polling interval time.
2) Read the "Decimal Value" barcode on page 195.
3) Read the "Validate" barcode on the same page to complete this setting.

Update

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 195 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

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)

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 195. 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

***Disable Error Beep**

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

Update

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

100010

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)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 195 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

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)

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 195. 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

***Disable Error Beep**

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

Enter Setup

Chapter 3

CHANGING SYMBOLOGY SETTINGS

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

Users can simply scan the setting barcodes below to disable/enable all symbologies.

Enable

Disable

Settings for each particular symbology will be depicted as follows.

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Update

3.1 CODABAR

***Enable**

Disable

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**

High

3.1.2 START/STOP TRANSMISSION

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

Transmit Start/Stop Characters

***Do Not Transmit**

Enter Setup

3.1.3 START/STOP CHARACTER SELECTION

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

*** abcd/abcd**

abcd/tn*e

ABCD/ABCD

ABCD/TN*E

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

***Do Not Apply**

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

Update

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 (*127) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on page 195 for the desired length.

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

Enter Setup

3.2 CODE 25 – INDUSTRIAL 25

***Enable**

Disable

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**

Interleaved 25 Start/Stop Pattern

Matrix 25 Start/Stop Pattern

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

***Do Not Verify**

Update

3.2.3 TRANSMIT CHECK DIGIT

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

***Transmit Industrial 25 Check Digit**

Do Not Transmit

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.

***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.

Enter Setup

Max. Length (*127) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on page 195 for the desired length.

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

3.3 CODE 25 – INTERLEAVED 25

***Enable**

Disable

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

***Interleaved 25 Start/Stop Pattern**

Matrix 25 Start/Stop Pattern

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

***Do Not Verify**

Enter Setup

3.3.3 TRANSMIT CHECK DIGIT

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

***Transmit Interleaved 25 Check Digit**

Do Not Transmit

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.

***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.

Update

Max. Length (*126) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on page 195 for the desired length.

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

Enter Setup

3.4 CODE 25 – MATRIX 25

Enable

***Disable**

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

Interleaved 25 Start/Stop Pattern

***Matrix 25 Start/Stop Pattern**

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

***Do Not Verify**

Update

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

Enter Setup

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)…**

100609

Enable Fixed Length(s)…

100608

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

100610

Min. Length (*4) or Fixed Length 2

100611

3) Read the "Decimal Value" barcode on page 195 for the desired length.

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

Update

3.5 CODE 39

***Enable**

Disable

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

***Do Not Transmit**

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

***Do Not Verify**

Enter Setup

3.5.3 TRANSMIT CHECK DIGIT

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

***Transmit Code 39 Check Digit**

Do Not Transmit

3.5.4 STANDARD/FULL ASCII CODE 39

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

Code 39 Full ASCII

***Standard Code 39**

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.

***Normal**

High

Update

3.5.6 ASTERISKS (*) AS DATA CHARACTERS

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

Enable

***Disable**

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)…**

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.

Enter Setup

Max. Length (*127) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on page 195 for the desired length.

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

3.6 CODE 93

***Enable**

Disable

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.

Update

***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 195 for the desired length.

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

Enter Setup

3.7 CODE 128

***Enable**

Disable

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**

High

Update

3.8 EAN-8

EAN-8

***Enable EAN-8 (No Addon)**

Disable

EAN-8 Addon 2

Enable EAN-8 Addon 2

***Disable**

EAN-8 Addon 5

Enable EAN-8 Addon 5

***Disable**

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

***Do Not Convert**

Enter Setup

3.8.2 TRANSMIT CHECK DIGIT

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

***Transmit EAN-8 Check Digit**

Do Not Transmit

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**

GTIN-13 Format

Update

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**

Enter Setup

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

Enable

***Disable**

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

Enable

***Disable**

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

Enable

***Disable**

Update

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**

Enter Setup

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

Enable

***Disable**

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

Enable

***Disable**

3.9.2 CONVERT TO ISBN

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

Convert EAN-13 to ISBN

***Do Not Convert**

3.9.3 CONVERT TO ISSN

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

Update

Convert EAN-13 to ISSN

***Do Not Convert**

3.9.4 TRANSMIT CHECK DIGIT

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

***Transmit EAN-13 Check Digit**

Do Not Transmit

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**

High

Enter Setup

3.10 GS1-128 (EAN-128)

***Enable**

Disable

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 ("]C1") in the data being transmitted.

Transmit GS1-128 Code ID

***Do Not Transmit**

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…

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal Value" barcode on page 196 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.

Update

3.10.3 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-128.

Enable

***Disable**

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

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 196 for the desired character. Read '00' if you want to remove the AI mark.
3) Read the "Validate" barcode to complete this setting.

Enter Setup

3.11 ISBT 128

***Enable**

Disable

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

Enable

***Disable**

Update

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

Enter Setup

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 195 for the desired length.

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

Update

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

Enter Setup

3.15 PLESSEY

Enable

***Disable**

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

***Do Not Convert**

3.15.2 TRANSMIT CHECK DIGIT

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

***Transmit Plessey Check Digits**

Do Not Transmit

Update

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:

- "]e0" (GS1 DataBar Code ID)
- "]C1" (GS1-128 Code ID)

Use "]C1"

***Use "]e0"**

Enter Setup

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

Update

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

Enter Setup

3.16.4 GS1 DATABAR LIMITED (RSS LIMITED)

Enable RSS Limited (Group III)

***Disable**

Transmit Code ID

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

***Transmit RSS Limited Code ID**

Do Not Transmit

Transmit Application ID

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

***Transmit RSS Limited Application ID**

Do Not Transmit

Transmit Check Digit

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

***Transmit RSS Limited Check Digit**

Do Not Transmit

Update

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…

100616

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal System" barcode on page 196 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

101486

***Disable**

101485

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

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 196 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.

***Normal**

High

3.17 TELEPEN

Enable Telepen

***Disable**

Update

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)

100485

***AIM Telepen**

100484

Enter Setup

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

Update

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

***Do Not Convert**

3.18.2 TRANSMIT SYSTEM NUMBER

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

***Transmit UPC-A System Number**

Do Not Transmit

3.18.3 TRANSMIT CHECK DIGIT

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

***Transmit UPC-A Check Digit**

Do Not Transmit

Enter Setup

3.19 UPC-E

UPC-E

***Enable UPC-E (No Addon)**

100321

Disable

100320

UPC-E Addon 2

Enable UPC-E Addon 2

100323

***Disable**

100322

UPC-E Addon 5

Enable UPC-E Addon 5

100325

***Disable**

100324

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

100479

***System Number 0 Only**

100478

Update

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.

Transmit UPC-E System Number

***Do Not Transmit**

3.19.4 TRANSMIT CHECK DIGIT

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

***Transmit UPC-E Check Digit**

Do Not Transmit

Enter Setup

3.20 CODE 11

Enable

***Disable**

3.20.1 VERIFY CHECK DIGIT

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

None

Double

Single

***Auto**

3.20.2 TRANSMIT CHECK DIGIT

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

***Transmit Check Digit**

Do Not Transmit

Update

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.

Normal

***High**

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 195 for the desired length.

Enter Setup

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.

Update

3.21 COMPOSITE CODE

3.21.1 COMPOSITE CC-A/B

Decide whether to enable Composite CC-A/B.

Enable Composite CC-A/B

102009

***Disable**

102008

Decide whether to enable GS1 formatting for Composite CC-A/B. When enabled, the field separator and application ID mark will be automatically added to the output data.

Enable

101492

***Disable**

101491

3.21.2 COMPOSITE CC-C

Decide whether to enable Composite CC-C.

Enable Composite CC-C

102011

***Disable**

102010

Decide whether to enable GS1 formatting for Composite CC-C.

Enable

101494

***Disable**

101493

Enter Setup

3.21.3 UPC COMPOSITE MODE

UPC barcodes can be "linked" with a 2D barcode during transmission as if they were one barcode.

- UPC Never Linked

  Transmit UPC barcodes regardless of whether a 2D barcode is detected.

- UPC Always Linked

  Transmit UPC barcodes and the 2D portion. If the 2D portion is not detected, the UPC barcode will not be transmitted.

Note: CC-A/B or CC-C must be enabled!

- Auto-discriminate UPC Composites

  Transmit UPC barcodes as well as the 2D portion if present.

UPC Never Linked

***UPC Always Linked**

Auto-discriminate

Update

3.22 2D SYMBOLOGIES

3.22.1 PDF417

***Enable PDF417**

102033

Disable

102032

3.22.2 MICROPDF417

Decide whether to enable MicroPDF417 barcodes.

Enable MicroPDF417

102035

***Disable**

102034

3.22.3 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 barcoes.

Enter Setup

***Never**

Always

Auto

DATA MATRIX INVERSE

Decide whether to decode inverse Data Matrix barcodes.

***Never**

Always

Auto

GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-Data Matrix barcodes. When enabled, the field separator and application ID mark will be automatically added to the output data.

Enable

***Disable**

FIELD SEPARATOR

Decide whether to apply a field separator (to convert the GS control character to human readable character). The field separator is automatically added to the data when GS1 formatting is enabled.

Update

Specify Field Separator…

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal System" barcode on page 196 for the desired character string.
3) Read the "Validate" barcode to complete this setting.

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 196 for the desired character.
3) Read '00' if you want to remove the AI mark.Read the "Validate" barcode to complete this setting.

Enter Setup

3.22.4 QR CODE

***Enable QR Code**

Disable

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**

Always

Auto

QR CODE INVERSE

Decide whether to decode inverse QR Code barcodes.

***Never**

Always

Auto

Update

GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-QR Code barcodes. When enabled, the field separator and application ID mark will be automatically added to the output data.

Enable

***Disable**

FIELD SEPARATOR

Decide whether to apply a field separator (to convert the GS control character to human readable character). The field separator is automatically added to the data when GS1 formatting is enabled.

Specify Field Separator…

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal System" barcode on page 196 for the desired character string.
3) Read the "Validate" barcode to complete this setting.

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 196 for the desired character.Read '00' if you want to remove the AI mark.
3) Read the "Validate" barcode to complete this setting.

Enter Setup

3.22.5 MicroQR

Enable MicroQR

102043

***Disable**

102042

3.22.6 MAXICODE

***Enable Maxicode**

102039

Disable

102038

3.22.7 AZTEC

***Enable Aztec**

102045

Disable

102044

AZTEC MIRROR

Decide whether to decode mirror image Aztec barcodes.

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

***Never**

102054

Always

102055

Update

Auto

102056

AZTEC INVERSE

Decide whether to decode inverse Aztec barcodes.

***Never**

102057

Always

102058

Auto

102059

3.22.8 HAN XIN

Enable Han Xin

102047

***Disable**

102046

Enter Setup

Chapter 4

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.

***Normal**

Upper Case

Lower Case

Update

4.2 CHARACTER SUBSTITUTION

Character substitution is performed on every occurrence of the first character specified. If only one character is specified, each time the character occurs 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 Substituion.	N/A
Normal Key	Up to 3 character strings are allowed.	▸ 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.

Enter Setup

4.2.1 SELECT A SET FOR CHARACTER SUBSTITUION

Configure Set 1

Configure Set 2

Configure Set 3

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 196 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.)

Update

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**

Do Not Apply

Character Substitution for Code 39

***Apply**

Do Not Apply

Character Substitution for Code 93

***Apply**

Do Not Apply

Character Substitution for Code 128

***Apply**

Do Not Apply

Enter Setup

Character Substitution for GS1-128

***Apply**

Do Not Apply

Character Substitution for ISBT 128

***Apply**

Do Not Apply

Character Substitution for EAN-8 (No Addon)

***Apply**

Do Not Apply

Character Substitution for EAN-8 Addon 2

***Apply**

Do Not Apply

Character Substitution for EAN-8 Addon 5

***Apply**

Do Not Apply

Update

Character Substitution for EAN-13 (No Addon)

***Apply**

Do Not Apply

Character Substitution for EAN-13 Addon 2

***Apply**

Do Not Apply

Character Substitution for EAN-13 Addon 5

***Apply**

Do Not Apply

Character Substitution for French Pharmacode

***Apply**

Do Not Apply

Character Substitution for Italian Pharmacode

***Apply**

Do Not Apply

Enter Setup

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

Update

Character Substitution for GS1 DataBar

*Apply

Do Not Apply

Character Substitution for Telepen

*Apply

Do Not Apply

Character Substitution for UPC-A (No Addon)

*Apply

Do Not Apply

Character Substitution for UPC-A Addon 2

*Apply

Do Not Apply

Character Substitution for UPC-A Addon 5

*Apply

Do Not Apply

Enter Setup

Character Substitution for UPC-E (No Addon)

***Apply**

Do Not Apply

Character Substitution for UPC-E Addon 2

***Apply**

Do Not Apply

Character Substitution for UPC-E Addon 5

***Apply**

Do Not Apply

Character Substitution for Code 11

***Apply**

Do Not Apply

Character Substitution for Comopsite CC-A/B

***Apply**

Do Not Apply

Update

Character Substitution for Comopsite CC-C

***Apply**

Do Not Apply

Character Substitution for PDF417

***Apply**

Do Not Apply

Character Substitution for MicroPDF417

***Apply**

Do Not Apply

Character Substitution for Data Matrix

***Apply**

Do Not Apply

Character Substitution for Maxicode

***Apply**

Do Not Apply

Enter Setup

Character Substitution for QR Code

***Apply**

Do Not Apply

Character Substitution for MicroQR

***Apply**

Do Not Apply

Character Substitution for Aztec

***Apply**

Do Not Apply

Character Substitution for Han Xin

***Apply**

Do Not Apply

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.	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt Refer to Keyboard Wedge Table.

Configure Prefix

101230

Configure Suffix

101231

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 196 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.

Enter Setup

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.	▸ 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

Update

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
Composite CC-A/B	L	X	M	J	La
Composite CC-C	N	Y	N	O	Lc
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
Maxicode	d	R	T	W	U
Aztec	g	U	Q	Z	z
Han Xin	r	k	c	s	X

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

Enter Setup

***Disable AIM Code ID**

102269

After applying AIM Code ID, three characters are added in front of the output data. "]" 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.

Update

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
Aztec	z	0: Aztec symbol C: Aztec Rune symbol
Maxicode	U	0: Symbol in Mode 4 or 5 1: Symbol in Mode 2 or 3
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

Enter Setup

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 196 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

Update

Configure Code ID for Interleaved 25

Configure Code ID for Matrix 25

Configure Code ID for MSI

Configure Code ID for Plessey

Configure Code ID for Telepen

Configure Code ID for UPC-A

Configure Code ID for UPC-E

Configure Code ID for Code 11

Configure Code ID for Composite CC-A/B

Configure Code ID for Composite CC-C

Configure Code ID for PDF417

Configure Code ID for MicroPDF417

Enter Setup

Configure Code ID for Data Matrix

102582

Configure Code ID for Maxicode

102583

Configure Code ID for QR Code

102584

Configure Code ID for MicroQR

102585

Configure Code ID for Aztec

102586

Configure Code ID for Han Xin

102590

4.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID Settings

109960

Update

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**

Enter Setup

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

Update

Length Code for Italian Pharmacode

Apply

***Do Not Apply**

Length Code for Industrial 25

Apply

***Do Not Apply**

Length Code for Interleaved 25

Apply

***Do Not Apply**

Length Code for Matrix 25

Apply

***Do Not Apply**

Length Code for MSI

Enter Setup

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

Update

Length Code for Composite CC-A/B

Apply

102509

***Do Not Apply**

102508

Length Code for Composite CC-C

Apply

102511

***Do Not Apply**

102510

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

Enter Setup

Length Code for Maxicode

Apply

***Do Not Apply**

Length Code for QR Code

Apply

***Do Not Apply**

Length Code for MicroQR

Apply

***Do Not Apply**

Length Code for Aztec

Apply

***Do Not Apply**

Length Code for Han Xin

Apply

***Do Not Apply**

Update

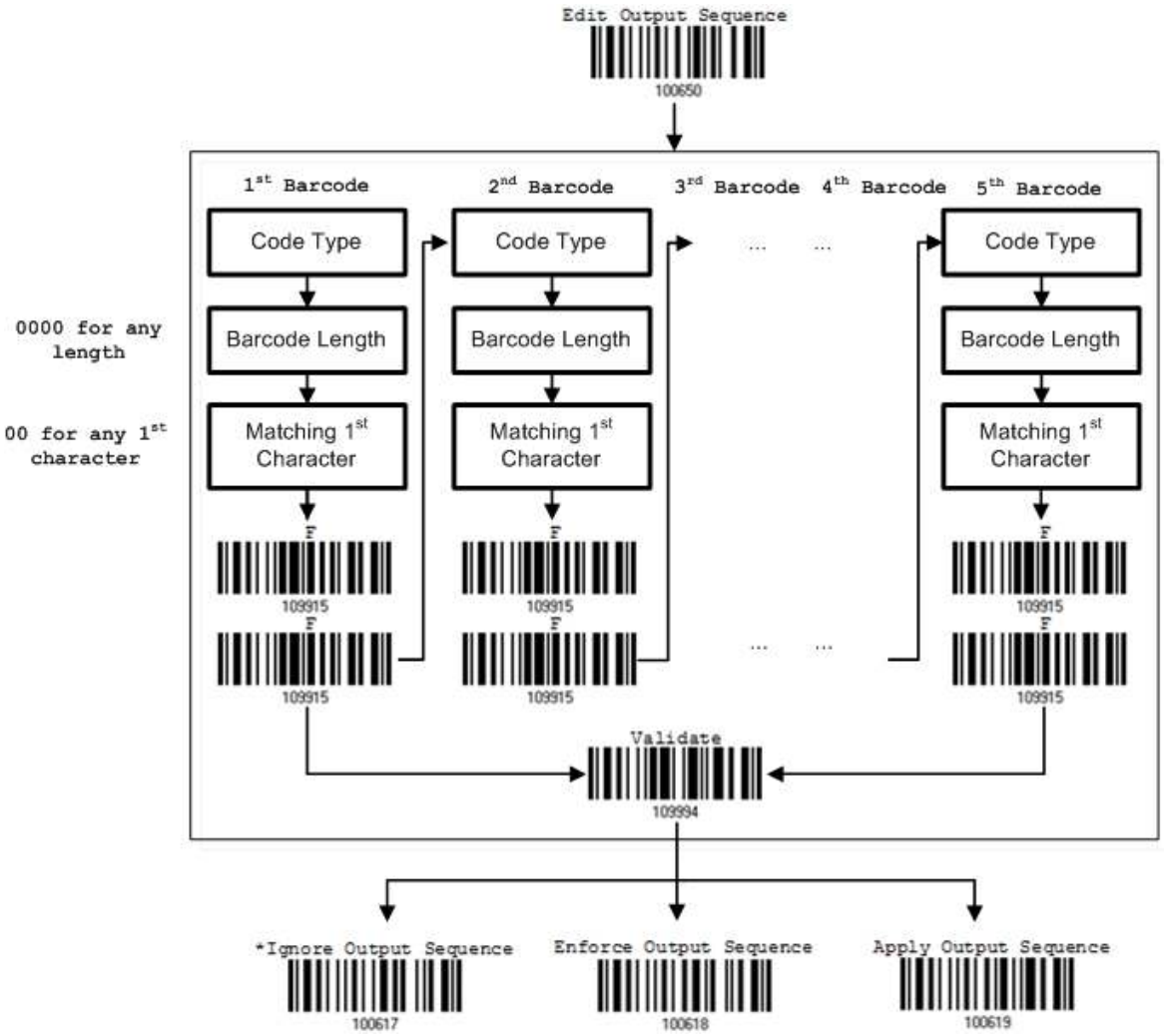
4.6 MULTI-BARCODE EDITOR

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



Enter Setup

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 196 for Code Type of the (first) barcode. For example, read "4" and "1" for Code 39.

Update

Code Type	Symbology	Code Type	Symbology
3E (>)	Han Xin		
40 (@)	ISBT 128		
41 (A)	Code 39		
42 (B)	Italian Pharmacode		
43 (C)	French Pharmacode		
44 (D)	Industrial 25		
45 (E)	Interleaved 25		
46 (F)	Matrix 25		
47 (G)	Codabar (NW7)	67 (g)	Code 11
48 (H)	Code 93		
49 (I)	Code 128		
4A (J)	UPC-E0 / UPC-E1	6A (j)	Composite CC-C
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	6E (n)	Maxicode
4F (O)	EAN-8 with Addon 5	6F (o)	QR Code
50 (P)	EAN-13		
51 (Q)	EAN-13 with Addon 2		
52 (R)	EAN-13 with Addon 5		
53 (S)	MSI		
54 (T)	Plessey		
55 (U)	GS1-128 (EAN-128)		
56 (V)	UPC-A	76 (v)	Composite CC-A/B
57 (W)	UPC-A with Addon 2		
58 (X)	UPC-A with Addon 5		
5A (Z)	Telepen	7A (z)	Aztec
5B ([ )	GS1 DataBar (RSS)	7B ({)	Micro QR

3) Barcode Length setting – read the "Decimal Value" barcode on page 195 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.

Enter Setup

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 196 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 196 ("FF") to complete the setting of each barcode.

6) Read the "Validate" barcode to end the editing of the barcode set.

Update

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).

Enter Setup

***Ignore Output Sequence**

Enforce Output Sequence

Apply Output Sequence

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.

Update

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

1) Read the barcode above to remove the specified character.
2) Read the "Hexadecimal Value" barcode on page 196 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.

Enter Setup

Chapter 5

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

End Programming Format

Editing Format 5

Enable

***Disable**

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.

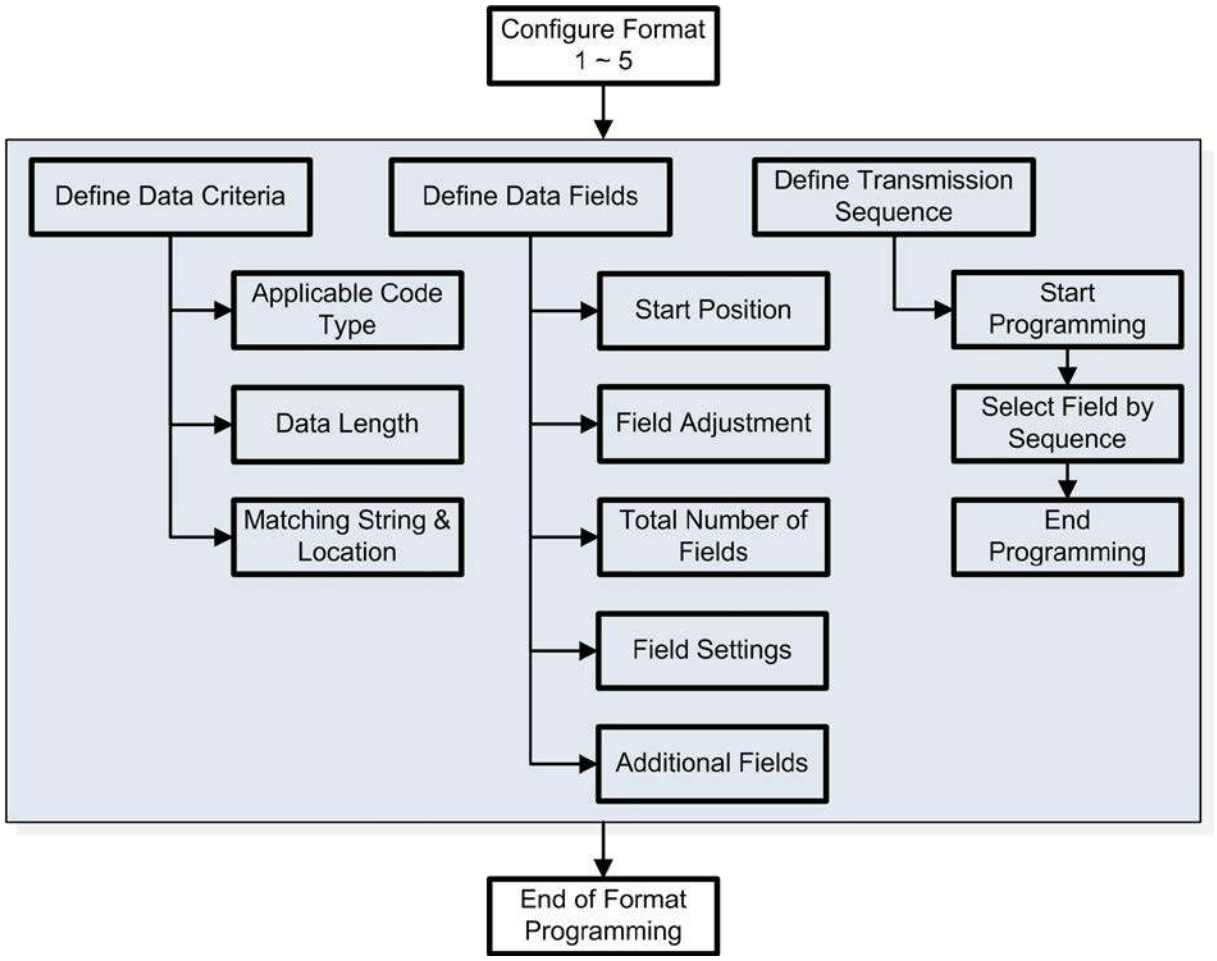
When "Exclusive Data Editing" is enabled, all barcodes read by the scanner must be processed by the editing formats. If data is found excluded from all enabled editing formats (= not meeting with the specified criteria), the scanner will not accept the reading, and therefore, data will not be transmitted.

Yes

***No**

Update

5.2 HOW TO CONFIGURE EDITING FORMATS



End Programming Format

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

Configure Format 2

Configure Format 3

Configure Format 4

Configure Format 5

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

Update

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

End Programming 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.

***Apply to All**

109992

Clear All

109991

Update

Editing Format for Codabar

***Apply**

Do Not Apply

Editing Format for Code 39

***Apply**

Do Not Apply

Editing Format for Code 93

***Apply**

Do Not Apply

Editing Format for Code 128

***Apply**

Do Not Apply

Editing Format for GS1-128 & GS1 DataBar

***Apply**

Do Not Apply

End Programming Format

Editing Format for ISBT 128

***Apply**

Do Not Apply

Editing Format for EAN-8

***Apply**

Do Not Apply

Editing Format for EAN-8 Addon 2

***Apply**

Do Not Apply

Editing Format for EAN-8 Addon 5

***Apply**

Do Not Apply

Editing Format for EAN-13

***Apply**

Do Not Apply

Update

Editing Format for EAN-13 Addon 2

***Apply**

Do Not Apply

Editing Format for EAN-13 Addon 5

***Apply**

Do Not Apply

Editing Format for French Pharmacode

***Apply**

Do Not Apply

Editing Format for Italian Pharmacode

***Apply**

Do Not Apply

Editing Format for Industrial 25

***Apply**

Do Not Apply

End Programming Format

Editing Format for Interleaved 25

***Apply**

Do Not Apply

Editing Format for Matrix 25

***Apply**

Do Not Apply

Editing Format for MSI

***Apply**

Do Not Apply

Editing Format for Plessey

***Apply**

Do Not Apply

Editing Format for Telepen

***Apply**

Do Not Apply

Update

Editing Format for UPC-A

***Apply**

Do Not Apply

Editing Format for UPC-A Addon 2

***Apply**

Do Not Apply

Editing Format for UPC-A Addon 5

***Apply**

Do Not Apply

Editing Format for UPC-E

***Apply**

Do Not Apply

Editing Format for UPC-E Addon 2

***Apply**

Do Not Apply

End Programming Format

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 Composite CC-A/B

***Apply**

101629

Do Not Apply

101628

Editing Format for Composite CC-C

***Apply**

101631

Do Not Apply

101630

Editing Format for PDF417

***Apply**

101653

Do Not Apply

101652

Update

Editing Format for MicroPDF417

***Apply**

Do Not Apply

Editing Format for Data Matrix

***Apply**

Do Not Apply

Editing Format for Maxicode

***Apply**

Do Not Apply

Editing Format for QR Code

***Apply**

Do Not Apply

Editing Format for MicroQR

***Apply**

Do Not Apply

End Programming Format

Editing Format for Aztec

***Apply**

Do Not Apply

Editing Format for Han Xin

***Apply**

Do Not Apply

Update

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.

1) 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 195 for the desired length.

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

End Programming Format

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 196 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 195 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**

From Tail

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**

Set length to adjust fields… (*0)

1) Read the barcode above to adjust field by length.
2) Read the "Decimal Value" barcode on page 195 for the desired field length.
3) Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

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**

Two Fields

Three Fields

Four Fields

Five Fields

Six Fields

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 196 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 195 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

Field 2 Setting

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

Select Field Separator to Divide Field 2…

2. Read the "Hexadecimal Value" barcode on page 196 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 2 by length.

Divide Field 2 by Length

2. Read the "Decimal Value" barcode on page 195 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 196 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 195 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

Field 4 Setting

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

Select Field Separator to Divide Field 4…

2. Read the "Hexadecimal Value" barcode on page 196 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 4 by length.

Divide Field 4 by Length

2. Read the "Decimal Value" barcode on page 195 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 196 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 195 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

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.	▸ 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… 101584

Additional Field 2… 101585

Additional Field 3… 101586

Additional Field 4… 101587

Additional Field 5… 101588

2. Read the "Hexadecimal Value" barcode on page 196 for the desired additional field.
3. Read the "Validate" barcode to complete this setting.

Update

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 195. 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.

End Programming Format

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…

End Programming Format

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.

Update

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.

End Programming Format

SPECIFICATIONS

Optical Characteristics		2504
Scan Engine		2D Imager
Light Source		Aiming pattern: 620~630nm LED Illumination: Warm White LED
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. 145 g
Dimensions		160.5 x 96.2 x 66 mm
Power Adaptor		
Input		AC 100~240 V, 50/60 Hz
Output		DC 5V, 1A
Operating Temperature		0 °C to 40 °C
Environmental Characteristics		
Temperature	Operating Storage	0 °C to 50 °C -40 °C to 70 °C
Humidity (Non-condensing)	Operating Storage	10% to 90% 5% to 95%

Resistance	
Impact Resistance	1.8 m, 5 drops per 6 sides
Splash / Dust Resistance	IP 54
Electrostatic Discharge	± 20 kV air discharge, ± 10 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	√

Enter Setup

Appendix I

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.

Enter Setup

Activate RS-232

100001

115200 bps

100080

Update

109999

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.

Enter Setup

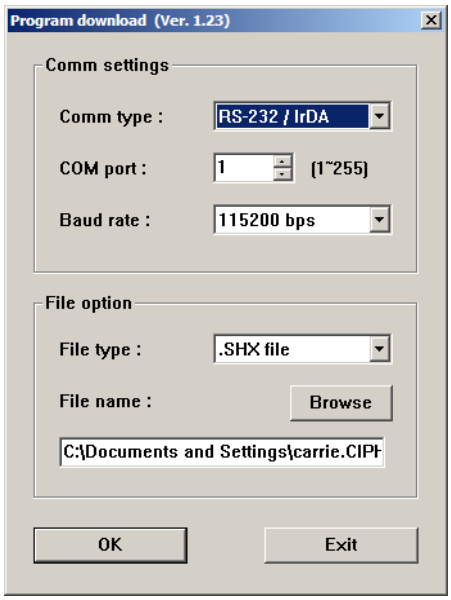
Download

109997

Update

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

Kernel Program	User Program
K250x_V*.shx	STD250x_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!

Enter Setup

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.

Enter Setup

Activate Direct USB VCOM_CDC

100010

Update

109999

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

Enter Setup

Activate Direct USB VCOM

100008

Update

109999

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.

Enter Setup

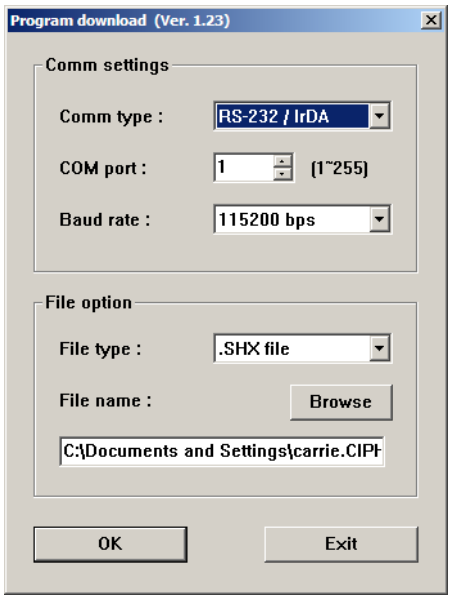
Download

109997

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

Update

Kernel Program	User Program
K250x_V*.shx	STD250x_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!

Enter Setup

Appendix II

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.

List Page 3

"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"

Update

#@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.

Enter Setup

Appendix III

KEYBOARD WEDGE TABLE

"Apply" Special Keyboard									
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
0		F2	SP	0	@	P	`	p	⓪
1	INS	F3	!	1	A	Q	a	q	①
2	DLT	F4	"	2	B	R	b	r	②
3	Home	F5	#	3	C	S	c	s	③
4	End	F6	$	4	D	T	d	t	④
5	Up	F7	%	5	E	U	e	u	⑤
6	Down	F8	&	6	F	V	f	v	⑥
7	Left	F9	'	7	G	W	g	w	⑦
8	BS	F10	(	8	H	X	h	x	⑧
9	HT	F11	)	9	I	Y	i	y	⑨
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) ⓪~⑨: Digits of numeric keypad.
(2) CR*/ENTER*: ENTER key on the numeric keypad.

Update

"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) ⓪~⑨: Digits of numeric keypad.
(2) CR*/ENTER*: ENTER key on the numeric keypad.

Enter Setup

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

Update

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 196 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 196 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 196 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 196 for "4", "1" (= "A").
4. Read the "Add Left Ctrl" barcode.
5. Read the "Hexadecimal Value" barcode on page 196 for "2", "4" (= "$").
6. Read the "Validate" barcode to complete this setting.

Enter Setup

Appendix IV

NUMERAL SYSTEMS

DECIMAL SYSTEM

Decimal

0

109900

1

109901

2

109902

3

109903

4

109904

5

109905

6

109906

7

109907

8

109908

9

109909

Validate the Values

Validate

109994

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

Enter Setup

Validate the Values

Validate

109994

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	

Update

Abort

Enter Setup

Appendix V

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 oganized 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

Last Name

First Name

Middle Name/Initial

Name Suffix

Name Prefix

Mailing Address Line1

Mailing Address Line2

Mailing Address City

Mailing Address State

Enter Setup

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)

Weight (Kilograms)

Eye Color

Hair Color

License Expiration Date

Birth Date

Gender

License Issue Date

Issue Timestamp

Number of Duplicates

Medical Codes

Organ Donor

Enter Setup

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

Country

Federal Commission Codes

Place of Birth

Audit Information

Inventory Control

Race/Ethnicity

Std Vehicle Class

Std Restrictions

Std Endorsements

Class Description

Endorsement Description

Enter Setup

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"**

Separator 2
(1 byte)
***"Enter"**

Separator 3
(1 byte)
***",**

Separator 4
(1 byte)
***".**

Separator 5
(1 byte)
***"-"**

Additional Field 1
(4 bytes)

Additional Field 2
(4 bytes)

Additional Field 3
(4 bytes)

Additional Field 4
(4 bytes)

Additional Field 5
(4 bytes)

Enter Setup

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.

Edit Separator 1

Edit Separator 2

Edit Separator 3

Edit Separator 4

Edit Separator 5

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.	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt Refer to Keyboard Wedge Table.

Edit Additional Field 1

Edit Additional Field 2

Edit Additional Field 3

Edit Additional Field 4

Edit Additional Field 5

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)

PCAT (French)

PCAT (German)

PCAT (Italian)

PCAT (Swedish)

PCAT (Norwegian)

PCAT (UK)

PCAT (Belgium)

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

IBM 34XX/319X, Memorex Telex 122 Keys

User-defined table

PCAT (Turkish)

PCAT (Hungarian)

PCAT (Swiss German)

PCAT (Danish)

PCAT (Russian)

PCAT (Cyrillic on Russian)

PCAT (Armenian)

#@KW0043#

PCAT (Thai)

#@KW0044#

DIRECT USB HID

PCAT (US)

PCAT (French)

PCAT (German)

PCAT (Italian)

PCAT (Swedish)

PCAT (Norwegian)

PCAT (UK)

PCAT (Belgium)

PCAT (Spanish)

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#

PCAT (Russian)

#@DH0083#

PCAT (Cyrillic on Russian)

#@DH0088#

PCAT (Armenian)

PCAT (Thai)