CipherLab

User Guide

1500/1502 Series Barcode Scanner

Setup barcodes included.

Version 1.29

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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.
- Pack the scanner for storage when not using it for a long time.
- Keep the scanner away from any magnets and magnetic fields to prevent the laser engine from malfunction.
- If you shall find the scanner malfunctioning, write down the specific scenario and consult your local sales representative.

RELEASE NOTES

Version	Date	Notes
1.29	Apr. 29, 2020	New: **1.4.4 Power-on Beep** Modified: **1.6.7 Aiming Mode** – 2 submodes (1D scanner) added New: **1.15 Mobile Phone / Display Mode**
1.28	Sep. 10, 2019	Modified: **Symbologies Supported** - GS1 DataBar (RSS) items enabled by default New: **1.4.3 Bell Ring** New: **1.6.9 Release Mode** Modified: **2.1.1 Activate Keyboard Wedge & Select Keyboard Type** – 48 (Swiss French), 49 (Czech) Modified: **2.4.1 Activate USB HID & Select Keyboard Type** – 94 (Swiss French), 95 (Czech) Modified: **3.17.2 GS1 DataBar Omnidirectional (RSS-14)** – enabled by default, Transmit Code ID disabled by default Modified: **3.17.3 GS1 DataBar Expanded (RSS Expanded)** – enabled by default, Transmit Code ID disabled by default Modified: **3.17.4 GS1 Databar Limited (RSS Limited)** – enabled by default, Transmit Code ID disabled by default Modified: **Appendix V Keyboard Type One-Scan Barcode** - Swiss French, Czech added
1.27	Feb. 19, 2019	Modified: **2.7 Direct USB OPOS** - setting barcode added Modified: **3.8.1 Code 128 Security Level** – Ultra High added

1.26	Oct. 12, 2018	▸ Modified: **1.14 Cable Auto-Detection (1500P only)** – 9600 baud rate set by default for RS-232 ▸ Modified: **Ch. 2** – 9600 baud rate set by default for RS-232 cable auto-detection ▸ Modified: **2.1.1 Activate Keyboard Wedge & Select Keyboard Type** - Greek(35), Slovenian (45), Mexican Spanish (46) added ▸ New: **2.1.5 Special Keyboard Feature** - "Bypass with Control Character Output for Windows" setting barcode added ▸ Modified: **2.4.1 Activate USB HID & Select Keyboard Type** - Greek(81), Slovenian(91), Mexican Spanish (92) added ▸ Modified: **2.4 Direct USB HID** – Alternate Composing added ▸ New: **2.4.7 USB Polling Interval** ▸ New: **2.7 Direct USB OPOS** ▸ Modified: change section article to **4.2.1 Single Character Substitution** (previous article: **Select a Set for Character Substitution**) ▸ New: **4.2.2 Multiple Characters Substitution** ▸ Modified: **Appendix V - Keyboard Wedge**: Greek, Slovenian, Mexican Spanish added ▸ Modified: **Appendix V - Direct USB HID**: Greek, Slovenian, Mexican Spanish added
1.25	Oct. 16, 2017	▸ Modified: **Ch. 3** – disable/enable all symbologies setting barcodes added ▸ Modified: **3.17.8 Security Level** (GS1 DataBar, default set to Normal) ▸ New: **Appendix V Keyboard Type One-Scan Barcode**
1.24	Jul. 17, 2017	▸ Modified: **Symbology Supported** – Code 11, Trioptic Code 39 added ▸ Modified: **Chapter 2** – Pin assignment & drawing of Keyboard Wedge, RS232, and USB cables added ▸ New: **3.2.5 / 3.3.5 / 3.4.5** – Code 25 Security Level (1500P only) ▸ Modified: **3.5.5** – set "Normal" (Code 39 security level) to default ▸ New: **3.6 Trioptic Code 39** ▸ Modified: **3.8.1** – set "Normal" (Code 128 security level) to default ▸ Modified: **3.10.4** – set "Normal" (EAN-13 security level) to default ▸ New: **3.17.8 Security Level** (GS1 DataBar) ▸ New: **3.21 Code 11** (transmit/not transmit barcodes exchanged) ▸ Modified: **4.2.2 Symbologies for Character Substitution (All 3 Sets)** – Code 11, Trioptic Code 39 (1500P only) added ▸ Modified: **4.4.1 Select Pre-defined Code ID** – Apply AIM Code ID (1500P only) added ▸ Modified: **4.4.2 Change Code ID** – Code 11, Trioptic Code 39 (1500P only) added ▸ Modified: **4.5 Length Code** – Code 11, Trioptic Code 39 (1500P only) added ▸ Modified: **5.3.1 Applicable Code Type** – Code 11, Trioptic Code 39 (1500P only) added

1.23	Apr. 17, 2017	▸ Modified: **2.4** – Kanji Transmission removed ▸ Modified: **3.9.5** – EAN-13 979 & 491 Addon Mode setting barcodes added ▸ Modified: **3.9.6 EAN-13 Addon Mode Buzzer** removed (included in 3.9.5)
1.22	Dec. 10, 2015	▸ New: **1.11.1 Behavior of 1500** ▸ New: **1.11.2 Behavior of 1500P** ▸ New: **1.11.3 Ambient Light** ▸ Modified: **Appendix I** – add the Through USB Virtual COM Interface (1500P Only) section
1.21	Nov. 26, 2015	▸ New: **3.5.6 Asterisks as Data Characters**
1.20	Aug. 13, 2015	▸ Modified: descriptions relating to 'CD-ROM' removed ▸ Modified: **1.5 Send "NR" to Host** – 1500P added ▸ New: **1.14 Cable Auto-Detection** ▸ New: **2.4 Direct USB HID** ▸ New: **2.5 Direct USB VCOM** ▸ New: **2.6 Direct USB VCOM_CDC** ▸ Modified: **Specifications** – 1500P added
1.18	Sep. 15, 2014	▸ New: **3.9.5 EAN-13 Addon Mode** ▸ New: **3.9.6 EAN-13 Addon Mode Buzzer**
1.17	Mar. 18, 2014	▸ Modified: **Care & Maintenance** – "Keep the scanner away from any magnets and magnetic fields to prevent the laser engine from malfunctioning." Added ▸ Modified: **3.8.3** – GTIN-13 format barcodes added ▸ Modified: **3.10.3** – GS1 formatting barcodes added ▸ Modified: **3.10.4** – Application ID Mark barcodes added ▸ Modified: **3.11.1** – ISBT Concatenation barcodes added ▸ Modified: **3.16.5** – Field Separator barcode added ▸ Modified: **3.16.6** – GS1 Formatting barcodes added ▸ Modified: **3.16.7** – Application ID Mark barcodes added
1.16	Dec. 18, 2012	▸ Modification: **2.1.1** Keyboard type added with No. 32 PCAT (Swiss) & No. 33 PCAT (Danish) ▸ New: **2.3.6 Output Format** (Wand Emulation) setup barcodes added ▸ New: **3.1 Codabar** added w/ security Level (High: 100490/Normal: 100491) ▸ New: **3.7 Code 128** added w/ security Level (High: 100492/Normal: 100493)

1.15	Mar 02, 2012	▸ New: Quick Start — One-Scan Setup Barcodes
		▸ Modified: 2.1.1 Activate Keyboard Wedge & Select Keyboard Type — add #31 PCAT (Hungarian)
		▸ Modified: 3.10 GS1-128 (EAN-128) enabled by default
		▸ New: 3.5.5 Security Level (for Code 39)
		▸ Modified: 4.6.1 Edit a Concatenation of Barcodes — Code type for ISBT 128 added
		▸ Modified: 5.5 Configuring Format — Define Transmission Sequence (add Null Character Field)
1.14	Jul. 19, 2011	▸ Modified: 3.10 GS1-128 (EAN-128) — Cannot read when disabled since firmware v1.10
		▸ Modified: Specifications — Power Adaptor
1.13	Nov. 23, 2010	▸ Modified: 1.11 Auto-Sense Mode (1500 Only) — add High Sensitivity behavior
1.12	Sep. 27, 2010	▸ Modified: Introduction, Symbologies Supported — add support of more RSS symbologies
		▸ Modified: 3.16 GS1 DataBar (RSS Family)
		▸ Modified: 3.16.2 GS1 DataBar Omnidirectional (RSS-14)
		▸ Modified: 3.16.3 GS1 DataBar Expanded (RSS Expanded)
		▸ Modified: 4.2 Character Substitution — add table for Scan Code/Normal Key
		▸ New: 5.4.5 Pause Field Setting
		▸ Modified: 5.5 Configuring Format — Define Transmission Sequence (add Pause Field)
		▸ Specifications: add 1502
1.11	Apr. 14, 2010	▸ Modified: 2.1.1 Activate Keyboard Wedge & Select Keyboard Type — add Turkish
		▸ Modified: 3.9.4 Security Level
1.10	Apr. 09, 2010	▸ New: Introduction — add 1500WA
		▸ Modified: Appendix III Keyboard Wedge Table — remove settings for user-defined scan code
		▸ Modified: Appendix III Keyboard Wedge Table — provide examples
1.09	Nov. 25, 2009	▸ Modified: 2.2.2 Baud Rate — change setup barcode for 4800 bps (change 100079 to 100100)
1.08	Oct. 30, 2009	▸ Modified: 1.10 Auto-Sense Mode (1500 Only) — Continuous mode as an alternative
		▸ Modified: 1.12 Symbologies Supported — ISBT 128 enabled by default
		▸ Modified: 2.2.2 Baud Rate — add setup barcode for 4800 bps
		▸ Modified: 4.2.2 Symbologies for Character Substitution (All 3 Sets) — add ISBT 128
		▸ Modified: 4.4.1 Select Pre-defined Code ID — add ISBT 128
		▸ Modified: 4.4.2 Change Code ID — add ISBT 128
		▸ Modified: 4.5 Length Code — add ISBT 128
		▸ Modified: 5.3.1 Applicable Code Type (for Editing Format) — add ISBT 128

1.07	June 03, 2009	▸ Modified: 1.3 LED Indicator — Power on LED (1 s) ▸ Modified: 1.4 Beeper — More barcodes required for Multi-Barcode Editor ▸ Modified: 3.12.3 Code Length Qualification — MSI must include checksum ▸ Modified: 4.6.2 Activate the Concatenation of Barcodes — add description of LED and beeper ▸ Modified: 4.7 Removal of Special Character ▸ Modified: Appendix I Firmware Upgrade ▸ Modified: Appendix II Host Serial Commands
1.06	Mar. 02, 2009	▸ Modified: 3.10 GS1-128 (EAN-128) ▸ Modified: 3.16 GS1 DataBar (RSS Family) ▸ Modified: 3.16.2 GS1 DataBar Omnidirectional (RSS-14) ▸ Modified: 3.16.3 GS1 DataBar Expanded (RSS Expanded) ▸ Modified: 3.16.4 GS1 DataBar Limited (RSS Limited)
1.05	Feb. 11, 2009	▸ Modified: 1.6 Scan Modes — add Alternate Mode to table ▸ New: 1.6.8 Alternate Mode — add setup barcode (100203) ▸ Modified: 1.8 Delay between Re-read — add Alternate Mode
1.04	Dec. 12, 2008	▸ Modified: 4.6 Multi-Barcode Editor — 4-digit length excludes prefix, suffix, length code, etc. ▸ Modified: 5.2.3 Define Data Criteria — Data length includes prefix, suffix, length code, etc.
1.03	Nov. 24, 2008	▸ New: Quick Start — Flowchart ▸ New: 1.3.2 Good Read LED Duration ▸ Modified: 4.6 Multi-Barcode Editor — Reset scan mode to “Laser” ▸ Modified: Host Serial Commands — adds D, E commands
1.02	Sep. 11, 2008	▸ Modified: section 1.10 Auto-Sense Mode — add setup barcodes for improving sensitivity
1.01	July 23, 2008	▸ Modified: section 1.2 Transmit Buffer — the use of transmit buffer is different from memory mode, and the latter is not supported by 1500 scanner!
1.00	May 26, 2008	Initial release

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INTRODUCTION

CipherLab's small-form-factor 1500 Series Barcode Scanners are specifically designed to answer your mobile demands. The tethered handheld scanners are designed to help accelerate productivity while lowering the total cost of ownership. Intensive data collection jobs are made easier with fast, accurate barcode scanning in various working environments, especially in small businesses. A new ordering option is provided for adapting a wide angle CCD scan engine to read long barcodes.

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

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

This manual contains information on operating the scanner and using its features. We recommend you 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!

Update

INSIDE THE PACKAGE

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

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

- Barcode Scanner: 1500, 1500P, 1500WA, or 1502

Note: (1) For model designation, please see the label on 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 wide angle scan engine for long barcodes
- Supports negative barcodes
- Supports different scan modes, including Aiming Mode and Multi-Barcode Mode
- 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 Wand Emulation.
- Programmable parameters include data output format, editing format, symbologies, etc.

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	

Note: Starting from firmware version 1.10, ISBT 128 is enabled by default.

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
	Trioptic Code 39 (1500P only)		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	

GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)	Enabled	
	GS1 DataBar Truncated	Enabled	
	GS1 DataBar Stacked	Enabled	
	GS1 DataBar Stacked Omnidirectional	Enabled	
	GS1 DataBar Limited (RSS Limited)	Enabled	
	GS1 DataBar Expanded (RSS Expanded)	Enabled	
	GS1 DataBar Expanded Stacked	Enabled	
Code 11	(1500P only)		Disabled

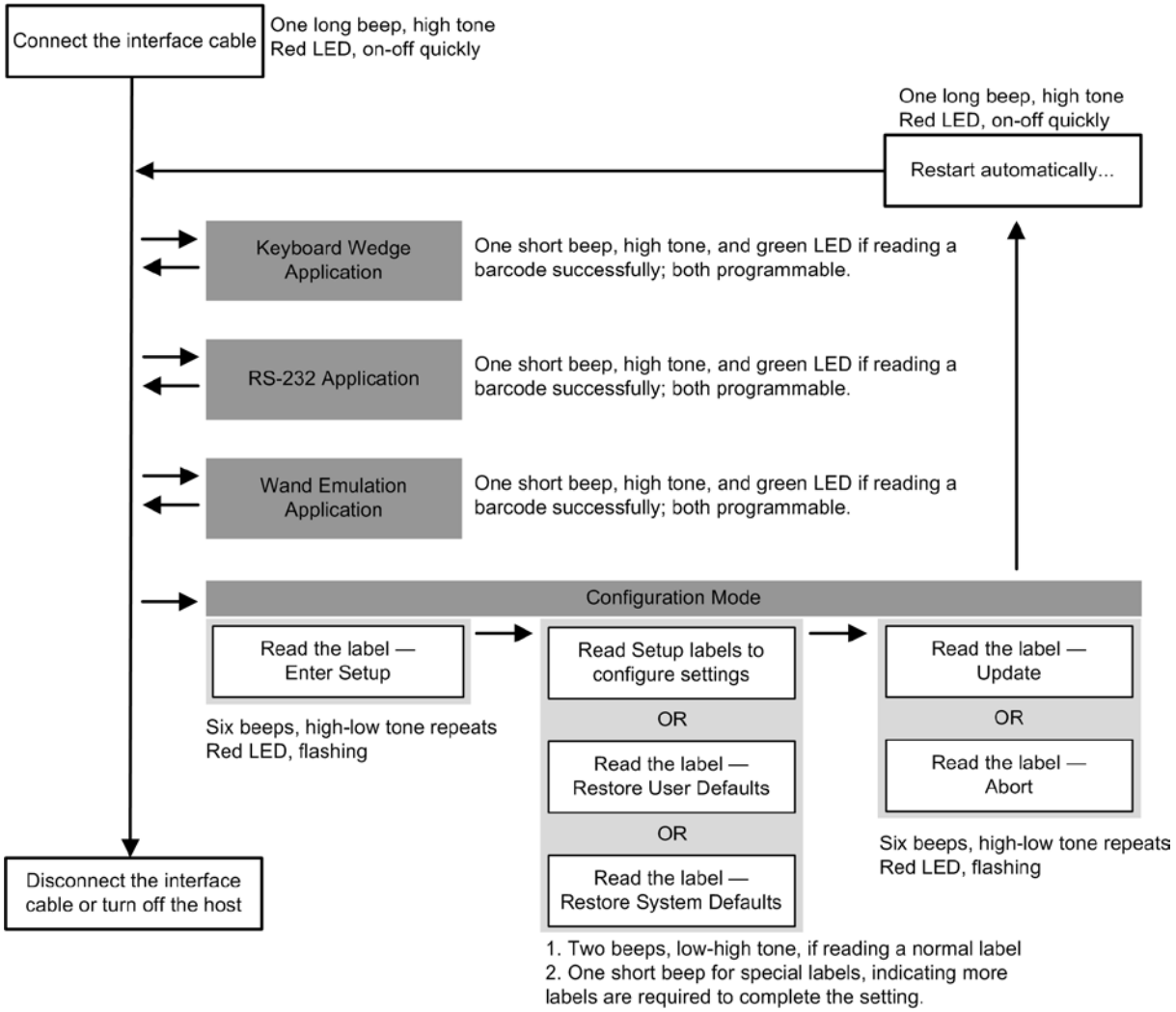
Enter Setup

QUICK START

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

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

Note: If RS-232 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, you must have it read the "Enter Setup" barcode, which can be 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, you must have it read the “Update” barcode, which can be located at the bottom of almost every odd page of this manual. If you want 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, you must 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, which you have saved earlier, you must 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, you must 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

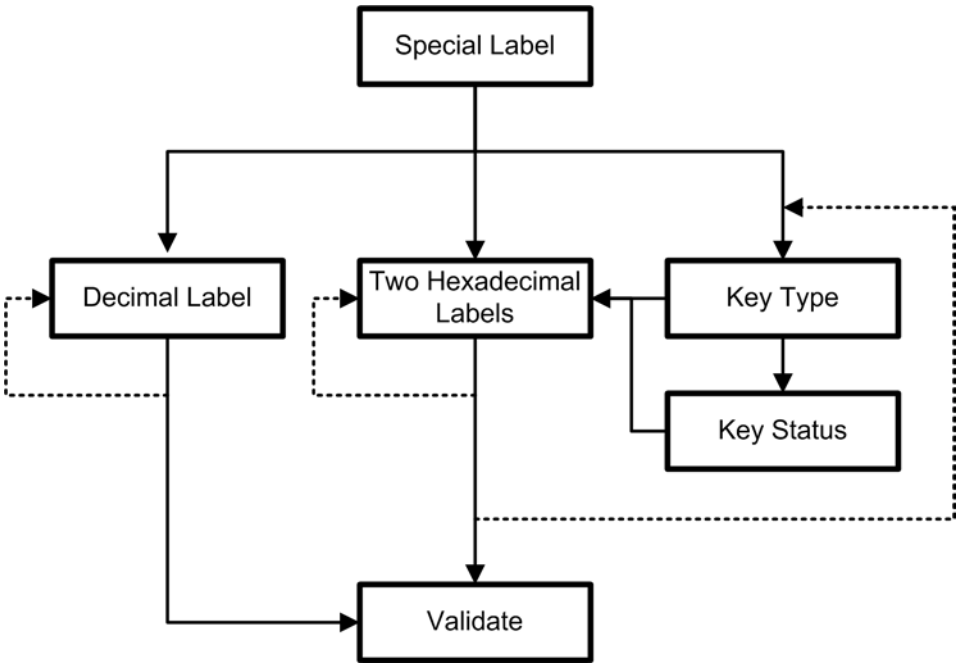
Configure Parameters

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

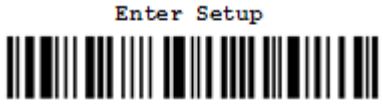
- Numeric barcodes, say, for keyboard type, inter-character delay, length qualification
- Hexadecimal barcodes, say, for character strings as prefix, suffix, etc.
- When “Keyboard Wedge” is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to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

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



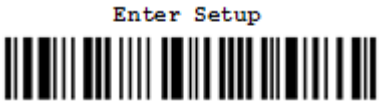
Enter Setup

The example below shows how to save your settings as “User Default” so that you may restore user defaults at a later time:

Steps	Action	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).

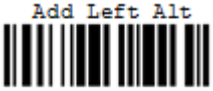
Update

The example below shows how to set numeric parameters:

Steps	Action	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**	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode. The scanner will respond with one short beep if reading a special setup barcode such as “Max. Length”, indicating the setup requires reading more barcodes. 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	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… Enter Setup 	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** Configure Prefix 101230	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.
	*Normal 109926	When “Keyboard Wedge” is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to change key status when “Normal Key” is selected for Key Type. ▸ Refer to Appendix III
	Add Left Alt  109932	
	Hexadecimal barcodes 2 109902	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”
	B 109911	
	Validate 109994	The scanner will respond with two beeps (low-high tone) when the input values are validated.
4	Exit the Configuration Mode… Update 109999 OR Abort 109998	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, via Keyboard Wedge or RS-232, to the host computer for user inspection. The listing includes pages as shown below. You can 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.

List settings regarding Firmware Version, Serial Number, Interface, Buzzer, and Other Scanner Parameters	**List Page 1**	109950
List settings regarding Prefix, Suffix, and Length Code Setting	**List Page 2**	109951
List settings regarding Code ID	**List Page 3**	109952
List settings regarding: Readable Symbologies	**List Page 4**	109953
List settings regarding Symbology Parameters (1/3)	**List Page 5**	109954
List settings regarding Symbology Parameters (2/3)	**List Page 6**	109955
List settings regarding Symbology Parameters (3/3)	**List Page 7**	109956
List settings regarding Editing Format 1	**List Page 8**	109957
List settings regarding Editing Format 2	**List Page 9**	109958
List settings regarding Editing Format 3	**List Page 10**	109959

Enter Setup

List settings regarding Editing Format 4

List Page 11

List settings regarding Editing Format 5

List Page 12

Update

ONE-SCAN SETUP BARCODES

The one-scan setup barcode is convenient for users to complete configuration by just one scanning.

To create a “One-scan Setup Barcode”:

- prefixing the setting parameter with “#@” characters
- suffixing the setting parameter with the “#”character

For example, the scanner needs to read three setup barcodes in sequence for the command parameter 109952 to take effect:

Enter Setup

List Page 3

Update

With the one-scan setup barcode #@109952#, setting is done with one scan.

One-Scan Setup Barcode for 109952

Note: If the scanner reads a once-scan setup barcode for changing the interface, it automatically restarts and responds with a long beep, and the LED becomes solid red and goes off.

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 your computer.

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

1.2 TRANSMIT BUFFER

The scanner is designed to send any collected data to a host computer one by one via the transmit buffer (SRAM). Upon reading a barcode successfully, the scanner responds with one short beep (high tone) and its LED indicator becomes solid green and goes off quickly. However, the host computer may not receive the data immediately if using a low baud rate or waiting for handshake signal (flow control). With the transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full. 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 4 KB transmit buffer on the scanner can hold as many as 256 scans based on EAN-13 barcodes (equipped with 10 KB transmit buffer, 1500P can hold approximately 640 scans). Data will be cleared out once the power adaptor to the RS-232 cable is removed or other interface cable is disconnected!

Enter Setup

1.3 LED INDICATOR

The dual-color LED on top of the scanner is used to provide a feedback to users about the behavior of the scanner. For example, the LED becomes solid red and goes off quickly upon powering on or running out of transmit buffer. You may 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 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 185. For example, read "1" and "5" for the Good Read LED to go off after 150 milliseconds.
3) Read the "Validate" barcode on the same page to complete this setting.

Update

1.4 BEEPER

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

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone ▸ Programmable, default to 4 KHz	Good Read, with green LED on-off quickly
Six short beeps ▸ High-low tone repeats three times	▸ Enter Configuration Mode, with red LED flashing ▸ Exit Configuration Mode
Two beeps, low-high tone	Setup barcode read successfully
Two beeps, high-low tone	RS-232 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

1.4.3 Bell Ring

With this function enabled, the scanner will produce a bell ring when receiving the '0x07' character which is sent via the RS-232, VCOM, and VCOM CDC interface.

Enable

***Disable**

1.4.4 Power-on Beep

By default, the scanner beeps when you press the trigger to power on it. You can have the scanner read the Disable setting barcode below to disable the power-on beep.

***Enable**

Disable

Enter Setup

1.5 SEND “NR” TO HOST

You may configure this function to have the scanner send the “NR” string to the host, notifying that the scanner fails to read the barcode. This function works depending on models and supported output interface as the table listed below.

Models	Supported Output Interface
1500/1500WA/1502	Keyboard Wedge RS-232
1500P	Keyboard Wedge RS-232 USB HID USB VCOM USB VCOM_CDC

Enable

***Disable**

Update

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.

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

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

Enter Setup

1.6.1 Continuous Mode

The scanner is always scanning.

- After a successful decoding, the removal of barcode is required. It is not allowed to proceed to decode until the decoding delay time has passed.
- To decode the same barcode repeatedly, move away the barcode and put it back again and again for scanning.

Note: Refer to 1.8 Delay between Re-read.

Continuous Mode

Decoding Delay

Set the time interval between each decoding.

***Disable**

0.5 sec

1 sec

2 sec

1.6.2 Test Mode

The scanner is always scanning.

- Capable of decoding the same barcode repeatedly without removing it, for testing purpose.

Test Mode

Update

1.6.3 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) you release the trigger.

Note: Refer to 1.7 Scanning Timeout.

***Laser Mode** 100206

1.6.4 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 1.7 Scanning Timeout.

Auto Off Mode 100200

1.6.5 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 1.8 Delay between Re-read and 1.7 Scanning Timeout.

Auto Power Off Mode 100202

1.6.6 Alternate Mode

The scanner will start scanning once the trigger is pressed

- The scanning won't stop until you press the trigger again.

Enter Setup

Alternate Mode

100203

1.6.7 Aiming Mode

Read the Aiming Mode barcode below to switch to aiming mode.

Aiming Mode

100208

Aiming Timeout

You can 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)

100226

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 185. 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.

Aiming Submodes

Users can further specify the aiming submode.

Original Mode:

By default, the scanner will aim at a barcode once the trigger is pressed, and start scanning when the trigger is pressed again within the aiming timeout.

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

***Original Mode**

100231

Note: Refer to 1.7 Scanning Timeout.

Always Aiming:

The scanner is aiming at all times. You are supposed to press the trigger to decode the barcode.

Always Aiming

100232

Update

1.6.8 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.

- 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 4.6 Multi-Barcode Editor.

1.6.9 Release Mode

The scanner will aim at a barcode once the trigger is pressed, and then start scanning when the trigger is released.

Note: Refer to 1.7 Scanning Timeout.

Release Mode

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
- Release 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 185. 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.

Update

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 –

- Continuous mode
- Auto Power Off mode
- Alternate mode

100 ms

200 ms

***400 ms**

800 ms

1 sec

2 sec

3 sec

5 sec

Enter Setup

1.9 READ REDUNDANCY FOR ALL SYMBLOGIES

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 "Three Times" is selected, it will take a total of four 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 you select, the higher the reading security is, and thus, the slower the reading speed becomes. You will have to compromise between reading security and decoding speed.

***No Redundancy**

100262

One Time

100263

Two Times

100264

Three Times

100265

Update

1.10 ADDON SECURITY FOR UPC/EAN BARCODES

The scanner is capable of decoding a mix of UPC/EAN barcodes with and without addons. The read redundancy (0~30 times) allows changing the number of times to decode a UPC/EAN barcode before transmission. The more redundancy you select, the higher the reading security is, and thus, the slower the reading speed becomes. You 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 (*0~30)

100380

1) Read the barcode above to specify the read redundancy for UPC/EAN barcodes. (It is set to 0 by default.)

2) Read the "Decimal Value" barcode on page 185. 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.

Enter Setup

1.11 AUTO-SENSE MODE (1500/1500P ONLY)

1.11.1 Behavior of 1500

For 1500, this mode is available when you seat the scanner in the Auto-sense stand and scan the Enable barcode. When you enable this mode, it will force the scanner to apply Laser mode as the scan mode. However, it works slightly different from the original Laser mode. Now the scanner will be expecting barcodes as long as it is seated in the Auto-sense Stand, as shown below. Whenever a barcode is brought within range, the scanner will be able to decode it.

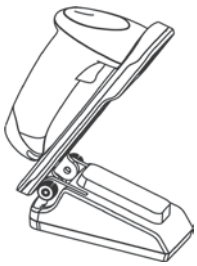
Enable

100271

***Disable**

100270

Note: Enabling Auto-sense will force the scanner into Laser mode. To stop this mode, you may remove the scanner from the stand or have the scanner read the "Disable (Auto-sense)" barcode above. It will then return to Laser mode. If Laser mode is not desired, proceed to select a scan mode best suits your application.



1.11.2 Behavior of 1500P

For 1500P, Auto-sense is only available when the scanner is working in Laser Mode. 1500P 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**

100271

Disable

100270

Update

You can determine the occasion for decoding destination barcodes. As the setting barcodes shown below, “Detection By Barcode” means when an object is judged a barcode, the scanner decodes the destination barcode. “Detection by Motion” means when an object is detected moving, the scanner decodes the destination barcode.

***Detection By Barcode**

101481

Detection By Motion

101482

Besides, users can determine the auto-sense detection level ranging from 0 to 7 (default value is set to 4; greater number means higher detection sensitivity) when the scanner is seated in the stand and set in the “Detection By Motion” mode.

Auto-sense Detection Level 0~7 (*4)

101483

1) Read the barcode above to specify the Auto-sense Detection level.
2) Read the “Decimal Value” barcode on page 185. For example, read “1” to set the Auto-sense Detection Level on 1.
3) Read the “Validate” barcode on the same page to complete this setting.

1.11.3 Ambient Light

When the ambient light is too dim to activate the sensor, you may have the scanner read the “High Sensitivity” barcode to improve performance. Starting from firmware version 1.12, it will emit scan beam every 300 milliseconds when “High Sensitivity” is enabled.

High Sensitivity

101469

***Normal**

101468

Note: If the ambient light is under 100 lux, we suggest that you either add lighting or use Continuous mode instead.

Enter Setup

1.12 NEGATIVE BARCODES

Normally, barcodes are printed with the color of the bars darker than that of the spaces. But for negative barcodes, they are printed in the opposite sense just like negative films. The spaces of negative barcodes are printed with a color darker than that of the bars. You can configure the scanner to be able to read negative barcodes.

Enable

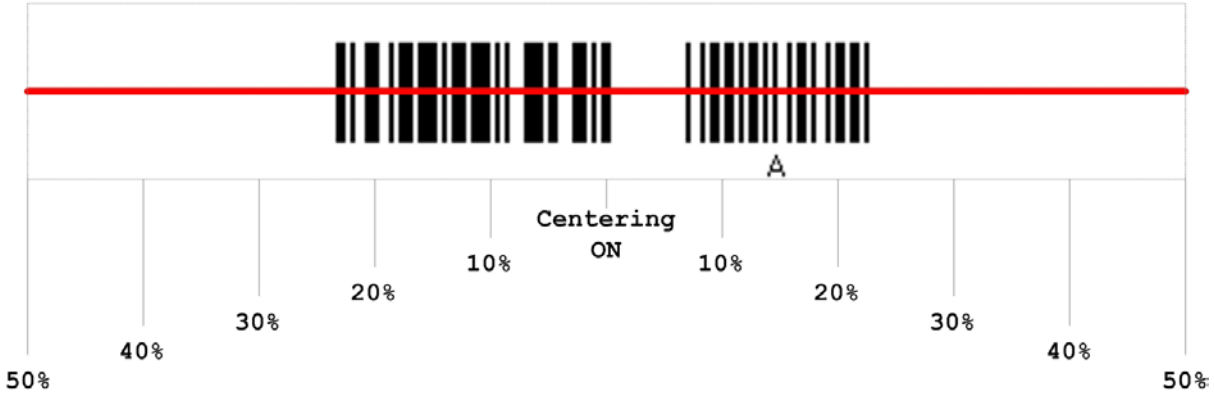
***Disable**

Update

1.13 EFFECTIVE DECODING AREA

By default, the effective decoding area is 100% covered by the scanned area. However, you may narrow down the decoding area to prevent reading the wrong barcode when a number of barcodes are printed closely. The scanner will only read barcodes that appear in the effective decoding area.

Read the barcode “Centering On” and specify the percentage to narrow down the decoding area. For example, read “Left 10%” and then “Right 30%” for the scanner to decode barcode “A” only.



1.13.1 Positioning Window

Centering On

100279

***Centering Off**

100278

Enter Setup

1.13.2 Adjusting Window

Percentage for Left Half

***Left 50%**

Left 40%

Left 30%

Left 20%

Left 10%

Percentage for Right Half

Right 10%

Right 20%

Right 30%

Right 40%

***Right 50%**

Update

1.14 CABLE AUTO-DETECTION (1500P ONLY)

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	9600 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

1.15 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.

Enable

***Disable**

Enter Setup

Chapter 2

SELECTING OUTPUT INTERFACE

In order to establish a proper connection between your computer and the scanner, we suggest that you follow these instructions –

1) Connect the provided interface cable between the scanner and your computer. The scanner is capable of detecting the interface.
   - If using the RS-232 cable, join the power supply cord.
   - If using the USB cable, it is set to USB HID by default.

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

Cable Auto-Detection	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	9600 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

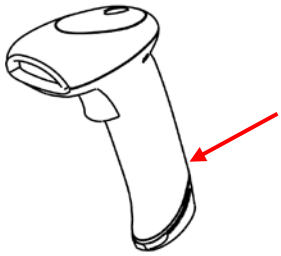
Note: Please make sure the wired cable supports auto-detection. Check whether there is a sticker on the cable, stating "Cable Detection Supported". The information of available cables for a particular model is listed in the specifications table. Refer to Specifications.

2) Have the scanner read the "Enter Setup" barcode to enter the configuration mode.
3) Have the scanner read the associated barcode to activate the desired interface.

   See the following sections for output interfaces supported.
   - If you are connecting the scanner to the USB port of the host computer via USB HID cable (part # 307), refer to 2.1 Keyboard Wedge for related settings.
   - If you are connecting the scanner to the USB port of the host computer via USB Virtual COM cable (part # 308), refer to 2.2 RS-232 related settings.
   - If you are connecting the scanner to the IBM POS 4683/4694 via the converter cable (part # 346), refer to 2.1 Keyboard Wedge for related settings.
4) Have the scanner read the barcodes for related settings.
5) Have the scanner read the "Update" barcode to apply the settings and exit the configuration mode.

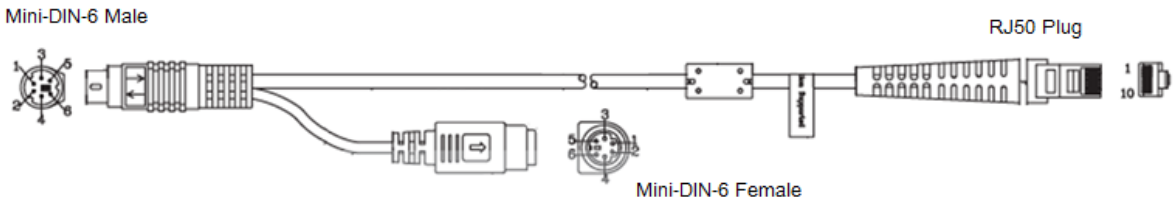
Update

Note: By default, the output interface is set to “Keyboard Wedge”.



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

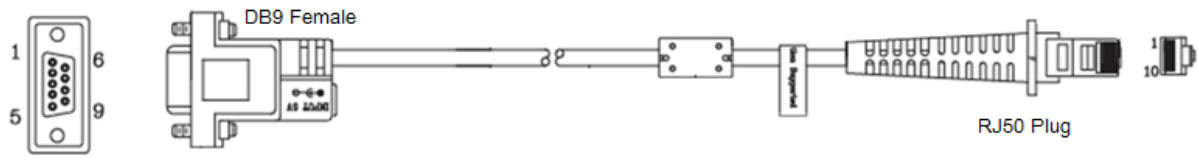
Keyboard Wedge Cable (P/N: WSY0817040001)



Pin Assignments

Mini-DIN-6 Male	Mini-DIN-6 Female	RJ50 Plug	Name
4	4	7	+5V
5		6	PC_CLOCK
1		5	PC_DATA
	5	8	KB_CLOCK
	1	9	KB_DATA
3	3	4	GND
			SHEILDING GND
2	2		SHORT
6	6		SHORT

RS-232 Cable (P/N: WSI0817040001)



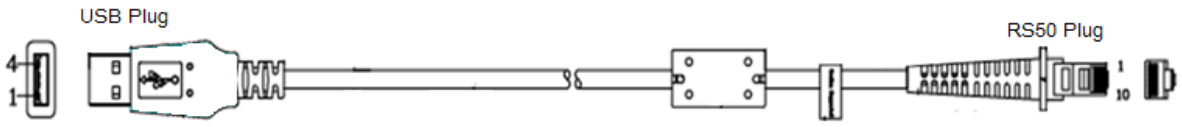
Pin Assignments

DB9 Female	Mini-DIN-6 Female	RJ50 Plug	Name
2	4	3	TxD

Enter Setup

3		1	RxD
4			
5	5	4	GND
6	1		
7	3	2	CTS
8		10	RTS
9	2	7	+5V

USB Cable (P/N: WSI0517040001)



Pin Assignments

USB Plug	RJ50 Plug	Name
1	7	VBUS
2	5	USB D-
3	6	USB D+
4	4	GND

In This Chapter

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2.6 Direct USB VCOM_CDC 72
2.7 Direct USB OPOS 74

Update

2.1 KEYBOARD WEDGE

The Y cable allows you to connect the scanner to the keyboard input port of PC and you may join 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
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

Once Keyboard Wedge interface is activated, a keyboard type must be selected to complete the setting.

Activate Keyboard Wedge & Select Keyboard Type…

1) Read the aforelisted barcode to activate Keyboard Wedge.
2) Read the "Decimal Value" barcode on page 185 to select the keyboard type. Refer to the table below for the corresponding number
3) Read the "Validate" barcode on the same page to complete this setting.

Update

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)	25	PS55 002-8A, 003-8A
2	PCAT (French)	26	IBM 3477 Type 4 (Japanese)
3	PCAT (German)	27	PS2-30
4	PCAT (Italian)	28	IBM 34XX/319X, Memorex Telex 122 Keys
5	PCAT (Swedish)	29	User-defined table
6	PCAT (Norwegian)	30	PCAT (Turkish)
7	PCAT (UK)	31	PCAT (Hungarian)
8	PCAT (Belgium)	32	PCAT (Swiss German)
9	PCAT (Spanish)	33	PCAT (Danish)
10	PCAT (Portuguese)	34	Reserved
11	PS55 A01-1	35	PCAT (Greek)
12	PS55 A01-2 (Japanese)	36	Reserved
13	PS55 A01-3	37	Reserved
14	PS55 001-1	38	Reserved
15	PS55 001-81	39	Reserved
16	PS55 001-2	40	Reserved
17	PS55 001-82	41	Reserved
18	PS55 001-3	42	Reserved
19	PS55 001-8A	43	Reserved
20	PS55 002-1, 003-1	44	Reserved
21	PS55 002-81, 003-81	45	PCAT (Slovenian)
22	PS55 002-2, 003-2	46	PCAT (Mexican Spanish)
23	PS55 002-82, 003-82	48	PCAT (Swiss French)
24	PS55 002-3, 003-3	49	PCAT (Czech)

Enter Setup

2.1.2 Keyboard Settings

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

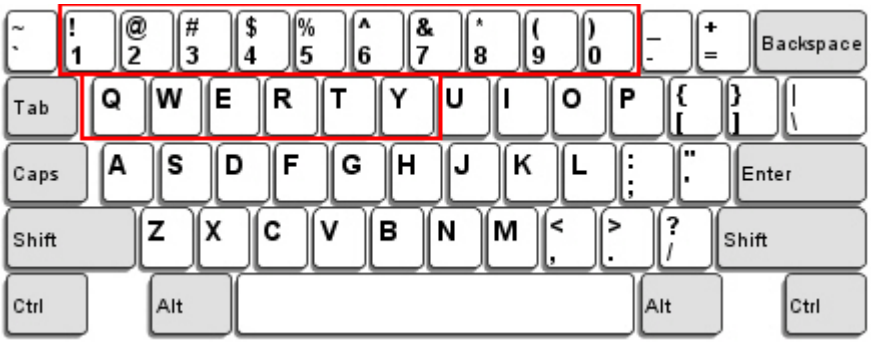
QWERTZ

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 your keyboard.

Update

US Keyboard Style – Normal

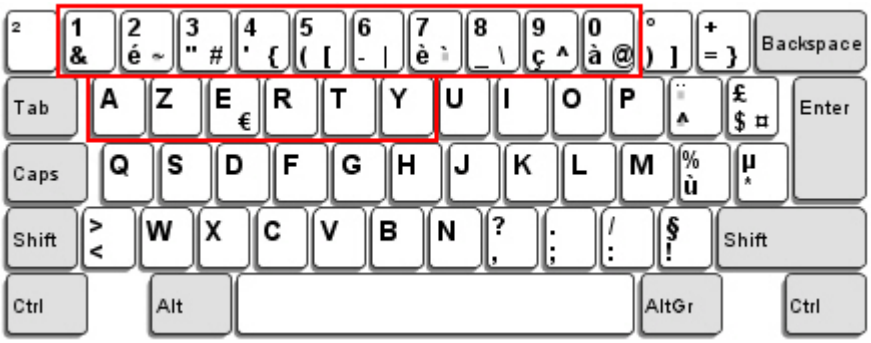
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

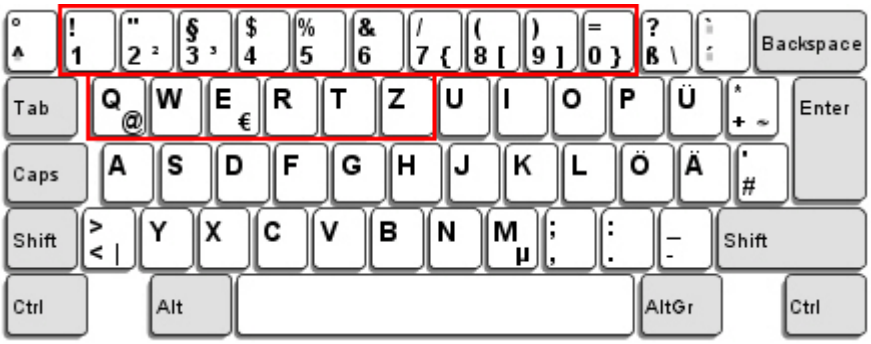
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Enter Setup

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 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.

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**

100042

Shift Lock

100045

Capital Lock

100044

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

Auto Detect

100054

Capital Lock ON

100053

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.

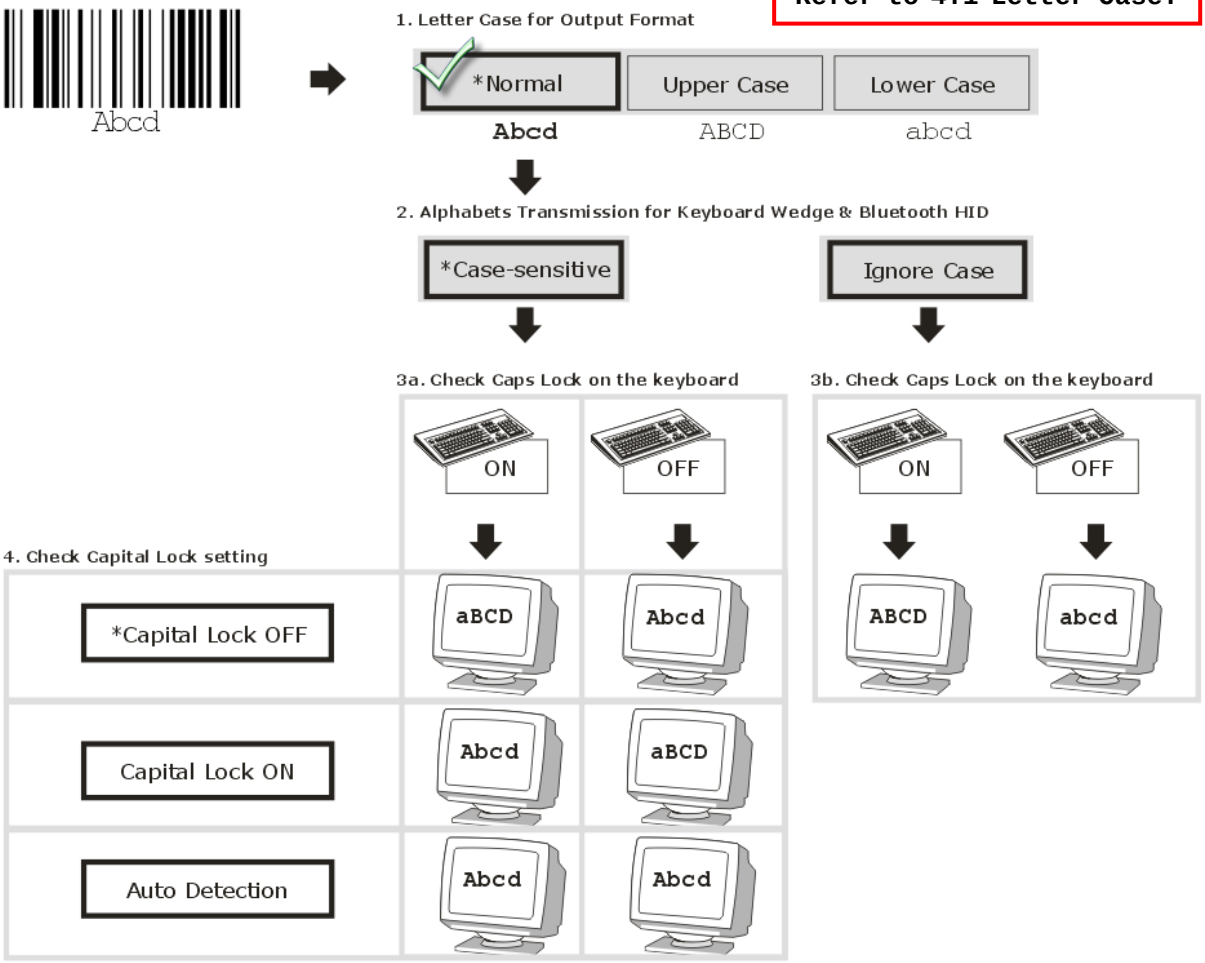
Ignore Case

100051

***Case-sensitive**

100050

Refer to 4.1 Letter Case.



Update

Digits Transmission

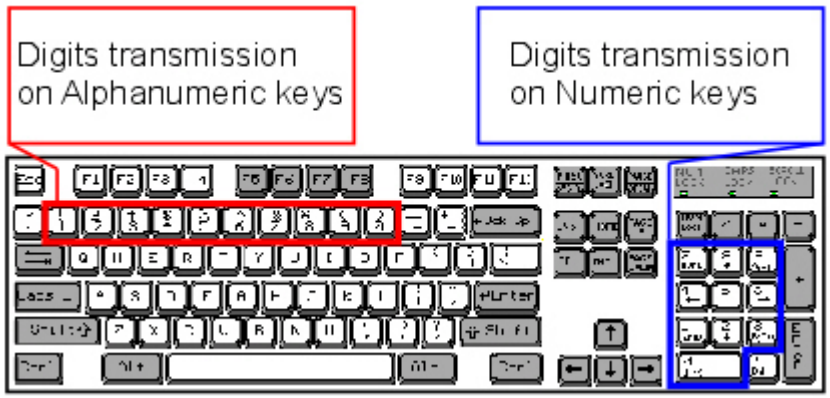
By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if you wish to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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

Enter Setup

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 you are using.

Yes

***No**

Laptop Support

By default, laptop support is disabled. It is suggested to enable this feature if you connect 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 185 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Update

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)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 185 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, this interface doesn't employ special function codes (0x01 ~ 0x1F) defined in the Keyboard Wedge Table for users may want to get rid of these special codes within the barcodes to avoid data error.

Or you can enable the "Bypass with Control Character Output for Windows" function to output control characters ranging from 0x01 to 0x1F in text form. For instance, [BS] (the backspace) is output rather than 0x08 when this function is enabled.

You can decide whether to apply the special keyboard feature. For further details please refer to Keyboard Wedge Table.

***Bypass**

100019

Apply

100018

Bypass with Control Character Output for Windows

100020

Enter Setup

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	9600 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

Update

2400 bps

1200 bps

600 bps

2.2.3 Data Bits

***8 bits**

7 bits

2.2.4 Parity

***No parity**

Even

Odd

2.2.5 Stop Bit

2 stop bits

***1 stop bit**

Enter Setup

2.2.6 Flow Control

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

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

***None**

100094

Scanner Ready

100095

Data Ready

100096

Invert Data Ready

100097

Update

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 185 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 185 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

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 185. 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 so that you will be notified of such data loss and have the scanner re-read data.

Update

2.3 WAND EMULATION

The wand emulation cable allows you to connect the scanner to a data terminal that is expecting input from a wand scanner. Note that this function doesn't support 1500P.

Wand Emulation Settings	Defaults
Normal State	Low
Bar State	High
Module Time	1 (ms)
Margin Time	20 (ms)
Output Format	Normal Output

2.3.1 Activate Wand Emulation

Activate Wand Emulation

100002

2.3.2 Normal State

By default, the signal level is set to "Low" for the normal state when not transmitting any barcode image (= white spaces in a barcode).

High

100137

***Low**

100136

2.3.3 Bar State

By default, the signal level is set to "High" for a bar when transmitting a barcode image (= dark bars in a barcode).

***High**

100139

Low

100138

Enter Setup

2.3.4 Module Time

By default, it is set to 1 millisecond as the time span for bar and space modules. Select other value for the module time, in units of micro-second or millisecond.

250 µs

500 µs

***1 ms**

1.5 ms

2 ms

3 ms

4 ms

5 ms

Update

2.3.5 Margin Time

By default, it is set 20 milliseconds as the time span for the change in state for bar and space modules. Select other value for the margin time.

5 ms

10 ms

***20 ms**

30 ms

40 ms

60 ms

80 ms

100 ms

Note: Margin Time is applied only when the signal level for Normal State and Bar State is the same.

Enter Setup

2.3.6 Output Format

By default, the output format is set to "Normal Output" to send data to the terminal in the format of the scanned barcodes, except for GS1 DataBar. By scanning the Code 128 Output barcode below, users can determine all scanned barcodes to be send to the data terminal in the format of Code 128.

***Normal Output**

100140

Code 128 Output

100141

Update

2.4 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
Alternate Composing	No
Inter-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)

2.4.1 Activate USB HID & Select Keyboard Type

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

Activate Direct USB HID & Select Keyboard Type…

1) Read the barcode above to activate USB HID and select a keyboard type.
2) Read the "Decimal Value" barcode on page 185. 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.

Enter Setup

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)	80	Reserved
65	PCAT (French)	81	PCAT (Greek)
66	PCAT (German)	82	Reserved
67	PCAT (Italy)	83	Reserved
68	PCAT (Swedish)	84	Reserved
69	PCAT (Norwegian)	85	Reserved
70	PCAT (UK)	86	Reserved
71	PCAT (Belgium)	87	Reserved
72	PCAT (Spanish)	88	Reserved
73	PCAT (Portuguese)	89	Reserved
74	PS55 A01-2 (Japanese)	90	Reserved
75	User-defined table	91	PCAT (Slovenian)
76	PCAT (Turkish)	92	PCAT (Mexican Spanish)
77	PCAT (Hungarian)	94	PCAT (Swiss French)
78	PCAT (Swiss German)	95	PCAT (Czech)
79	PCAT (Danish)		

Update

2.4.2 Keyboard Settings

- Alphabets Layout
- Digits Layout
- Capital Lock Type
- Capital Lock Setting
- Alphabets Transmission
- Digits Transmission
- Alternate Composing

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

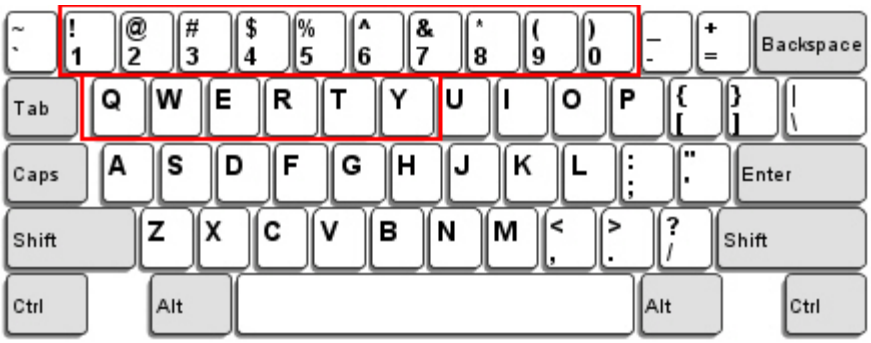
QWERTZ

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 your keyboard.

Enter Setup

US Keyboard Style – Normal

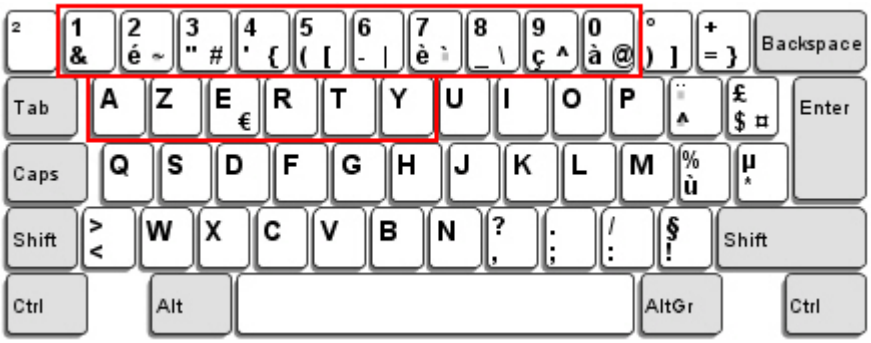
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

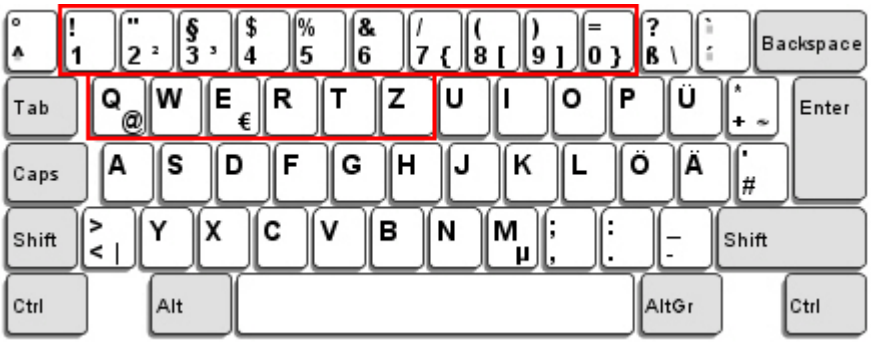
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

***Normal**

Upper Row

Lower Row

Note: This setting is meant to be used 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.

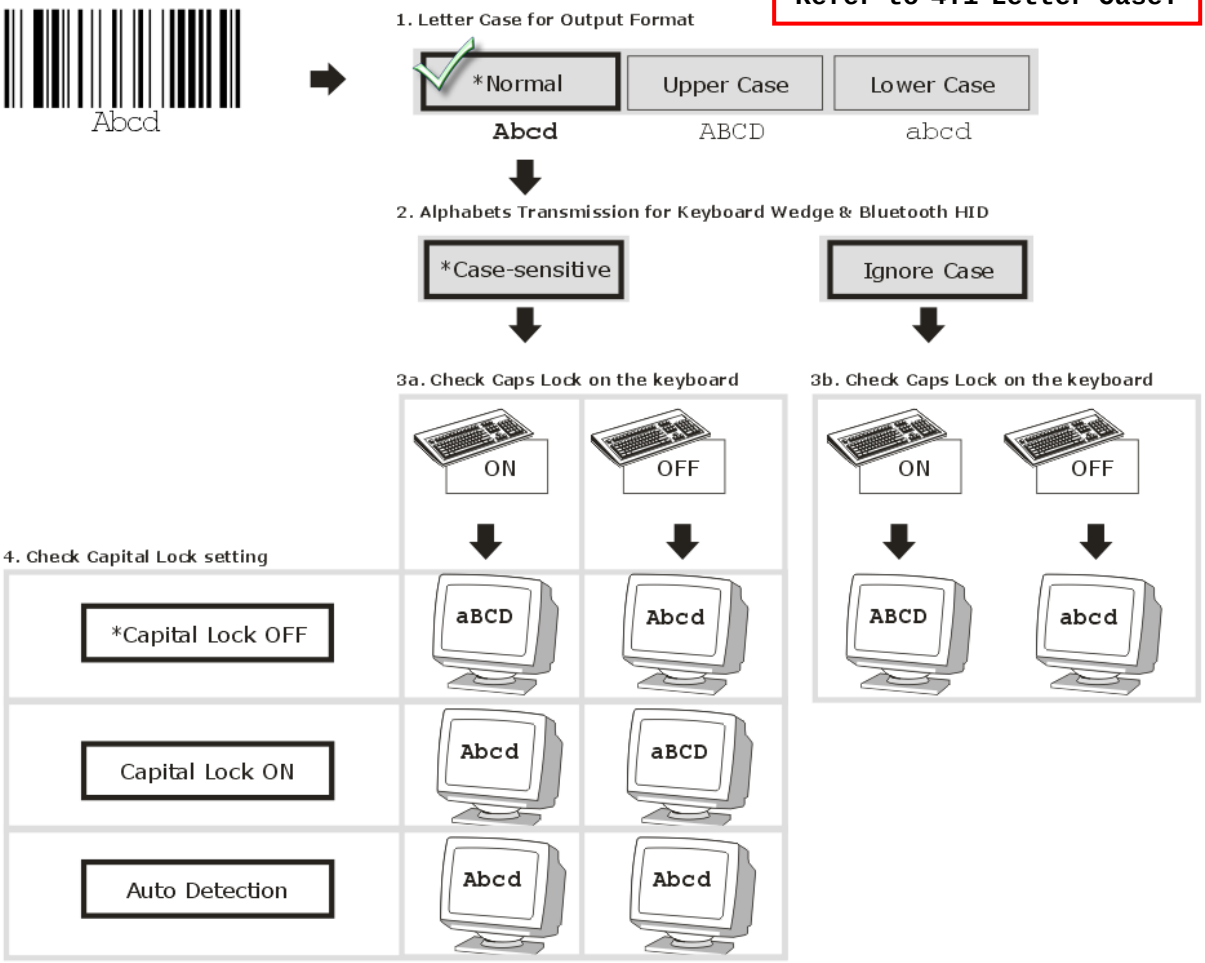
Ignore Case

100051

***Case-sensitive**

100050

Refer to 4.1 Letter Case.



Enter Setup

Digits Transmission

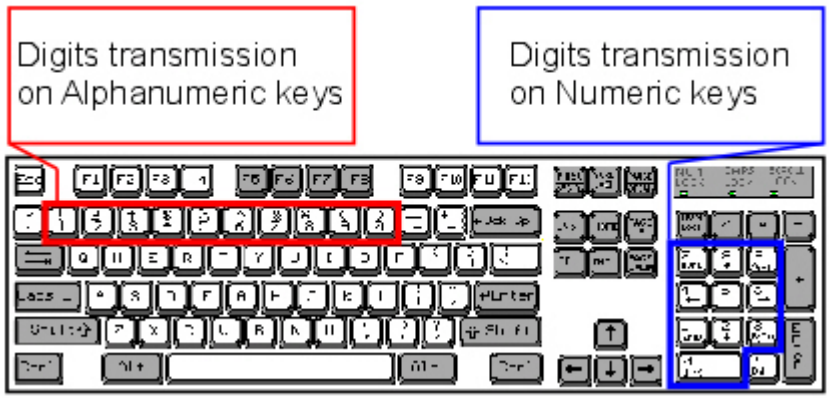
By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if you wish to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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

ALT Composing

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

Yes

100057

***No**

100056

Update

2.4.3 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 185 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

2.4.4 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 185 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

2.4.5 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

2.4.6 Special Keyboard Feature

Refer to 2.1.5 Special Keyboard Feature.

2.4.7 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(*4)

100184

1) Read the barcode above to specify the USB polling interval time.
2) Read the “Decimal Value” barcode on page 185.
3) Read the “Validate” barcode on the same page to complete this setting.

Update

2.5 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 2.6 Direct USB VCOM_CDC.

2.5.1 Activate USB Virtual COM

Activate Direct USB Virtual COM

2.5.2 Inter-Function Delay

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

Inter-Function Delay… (*0~254)

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 185 for the desired inter-character 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 185. 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 so that you will be notified of such data loss and have the scanner re-read data.

Update

2.6 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 USB VCOM_CDC driver beforehand.

2.6.1 Activate USB VCOM_CDC

Activate Direct USB Virtual COM_CDC

2.6.2 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 185 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

2.6.3 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 185. 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 so that you will be notified of such data loss and have the scanner re-read data.

Update

2.7 DIRECT USB OPOS

Before using the USB OPOS interface, users have to install CipherLab's scanner OPOS kit on the Windows 32/64 bits and Windows Embedded operating systems. Besides, make sure your scanner which supports OPOS has been upgraded.

Change to OPOS

The OPOS Kit (Driver & OPOS User Guide included) can be downloaded from:

http://scanmaster.cipherlab.com/download/opos/CipherLabOPOSKit-latest.exe

Please refer to the CipherLab OPOS User Guide for further details.

Enter Setup

Chapter 3

CHANGING SYMBOLOGY SETTINGS

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

*** High**

Normal

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

3.2 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

Enter Setup

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**

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

Update

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.

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

***Enable Max./Min. Length (0~127)…**

100601

Enable Fixed Length(s)…

100600

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

Repeat steps 2~4 for Min. Length or Fixed Length 2.

Max. Length (*127) or Fixed Length 1

100602

Min. Length (*4) or Fixed Length 2

100603

3) Read the “Decimal Value” barcode on page 185 for the desired length.

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

Enter Setup

3.2.5 Security Level (1500P Only)

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes.

Normal

100544

***High**

100543

3.3 CODE 25 – INTERLEAVED 25

***Enable**

100309

Disable

100308

3.3.1 Select Start/Stop Pattern

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

Industrial 25 Start/Stop Pattern

100416

***Interleaved 25 Start/Stop Pattern**

100417

Matrix 25 Start/Stop Pattern

100418

Update

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**

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

Enter Setup

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.

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

***Enable Max./Min. Length (0~127)…**

100605

Enable Fixed Length(s)…

100604

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

Repeat steps 2~4 for Min. Length or Fixed Length 2.

Max. Length (*126) or Fixed Length 1

100606

Min. Length (*4) or Fixed Length 2

100607

3) Read the “Decimal Value” barcode on page 185 for the desired length.

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

3.3.5 Security Level (1500P Only)

Security Level renders more decoding accuracy giving consideration to barcodes’ print quality. Decide the security level for reading Code 25 barcodes. Please refer to 3.2.5 Security Level.

Update

3.4 CODE 25 – MATRIX 25

Enable

100311

***Disable**

100310

3.4.1 Select Start/Stop Pattern

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

Industrial 25 Start/Stop Pattern

100420

Interleaved 25 Start/Stop Pattern

100421

***Matrix 25 Start/Stop Pattern**

100422

Enter Setup

3.4.2 Verify Check Digit

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

Verify Matrix 25 Check Digit

100433

***Do Not Verify**

100432

3.4.3 Transmit Check Digit

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

***Transmit Matrix 25 Check Digit**

100435

Do Not Transmit

100434

Update

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.

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

***Enable Max./Min. Length (0~127)…**

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 185 for the desired length.

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

3.4.5 Security Level (1500P Only)

Security Level renders more decoding accuracy giving consideration to barcodes’ print quality. Decide the security level for reading Code 25 barcodes. Please refer to 3.2.5 Security Level.

Enter Setup

3.5 CODE 39

***Enable**

100301

Disable

100300

3.5.1 Transmit Start/Stop Characters

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

Transmit Code 39 Start/Stop Characters

100403

***Do Not Transmit**

100402

3.5.2 Verify Check Digit

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

Verify Code 39 Check Digit

100405

***Do Not Verify**

100404

Update

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.

High

***Normal**

Enter Setup

3.5.6 Asterisks (*) as Data Characters

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

Enable

***Disable**

3.6 TRIOPTIC CODE 39 (1500P ONLY)

Enable

***Disable**

3.7 CODE 93

***Enable**

Disable

3.8 CODE 128

***Enable**

Disable

Update

3.8.1 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

Ultra-High

3.9 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**

Enter Setup

3.9.1 Convert to EAN-13

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

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

Convert EAN-8 to EAN-13

100461

***Do Not Convert**

100460

3.9.2 Transmit Check Digit

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

***Transmit EAN-8 Check Digit**

100471

Do Not Transmit

100470

3.9.3 Conversion Format

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

***Default Format**

100494

GTIN-13 Format

100495

Update

3.10 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

3.10.1 Convert to ISBN

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

Convert EAN-13 to ISBN

100463

***Do Not Convert**

100462

3.10.2 Convert to ISSN

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

Convert EAN-13 to ISSN

100465

***Do Not Convert**

100464

3.10.3 Transmit Check Digit

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

***Transmit EAN-13 Check Digit**

100473

Do Not Transmit

100472

Update

3.10.4 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

3.10.5 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**

Enter Setup

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**

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**

Update

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

EAN-13 491 Addon Mode

Enable

***Disable**

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

EAN-13 529 Addon Mode

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**

Enter Setup

3.11 GS1-128 (EAN-128)

***Enable**

Disable

Note: When this setting is disabled, GS1-128 barcodes used to be taken as Code 128. However, starting from firmware version 1.10, GS1-128 barcodes can be decoded only when this setting is enabled.

3.11.1 Transmit Code ID

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

Transmit Code ID

***Do Not Transmit**

3.11.2 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 186 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

3.11.3 GS1 Formatting

Decide whether to enable GS1 formatting for GS1-128.

Enable

***Disable**

3.11.4 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 Value" barcode on page 186 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

3.12 ISBT 128

***Enable**

Disable

3.12.1 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

3.13 MSI

Enable

100345

***Disable**

100344

3.13.1 Verify Check Digit

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

***Single Modulo 10**

100448

Double Modulo 10

100449

Modulo 10 & 11

100450

3.13.2 Transmit Check Digit

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

***Last Digit Not Transmitted**

100452

Both Digits Transmitted

100453

Both Digits Not Transmitted

100454

Enter Setup

3.13.3 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 (0~127)…**

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 185 for the desired length.

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

Update

3.14 FRENCH PHARMACODE

Enable

***Disable**

3.14.1 Transmit Check Digit

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

***Transmit French Pharmacode Check Digit**

Do Not Transmit

Enter Setup

3.15 ITALIAN PHARMACODE

Enable

***Disable**

3.15.1 Transmit Check Digit

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

***Transmit Italian Pharmacode Check Digit**

Do Not Transmit

Update

3.16 PLESSEY

Enable

***Disable**

3.16.1 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**

3.16.2 Transmit Check Digit

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

***Transmit Plessey Check Digits**

Do Not Transmit

Enter Setup

3.17 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

3.17.1 Select Code ID

Select a desired Code ID to use:

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

Use "]C1"

100517

***Use "]e0"**

100516

Update

3.17.2 GS1 DataBar Omnidirectional (RSS-14)

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

Disable

The settings below apply to Group I symbologies only:

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

Transmit Code ID

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

Transmit RSS-14 Code ID

***Do Not Transmit**

Transmit Application ID

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

***Transmit RSS-14 Application ID**

Do Not Transmit

Enter Setup

Transmit Check Digit

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

***Transmit RSS-14 Check Digit**

Do Not Transmit

Update

3.17.3 GS1 DataBar Expanded (RSS Expanded)

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

Disable

The settings below apply to Group II symbologies only:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Transmit Code ID

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

Transmit RSS Expanded Code ID

***Do Not Transmit**

Enter Setup

3.17.4 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

3.17.5 Field Separator (GS Character)

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

Enable Field Separator…

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal Value" barcode on page 186 for the desired character string.
3) Read the "Validate" barcode to complete this setting.

3.17.6 GS1 Formatting

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

Enable

***Disable**

3.17.7 Application ID Mark

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

AIMark1

AIMark2

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
2) Read the "Hexadecimal Value" barcode on page 186 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

3.17.8 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

Update

3.18 TELEPEN

Enable Telepen

***Disable**

3.18.1 Telepen Output – Full ASCII/Numeric

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

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

Original Telepen (Numeric)

***AIM Telepen**

Enter Setup

3.19 UPC-A

UPC-A

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

Disable

UPC-A Addon 2

Enable UPC-A Addon 2

***Disable**

UPC-A Addon 5

Enable UPC-A Addon 5

***Disable**

Update

3.19.1 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**

3.19.2 Transmit System Number

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

***Transmit UPC-A System Number**

Do Not Transmit

3.19.3 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

3.20 UPC-E

UPC-E

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

Disable

UPC-E Addon 2

Enable UPC-E Addon 2

***Disable**

UPC-E Addon 5

Enable UPC-E Addon 5

***Disable**

3.20.1 Select System Number

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

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

System Number 0 & 1

***System Number 0 Only**

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.

3.20.2 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

100457

***Do Not Convert**

100456

3.20.3 Transmit System Number

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

Transmit UPC-E System Number

100475

***Do Not Transmit**

100474

3.20.4 Transmit Check Digit

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

***Transmit UPC-E Check Digit**

100467

Do Not Transmit

100466

3.21 CODE 11 (1500P ONLY)

Enable

***Disable**

3.21.1 Verify Check Digit

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

None

Double

Single

***Auto**

Update

3.21.2 Transmit Check Digit

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

***Transmit Check Digit**

Do Not Transmit

3.21.3 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**

Enter Setup

Chapter 4

DEFINING OUTPUT FORMAT

You may configure in which format the collected data will be output to the host computer. Barcode 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]`

In This Chapter

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4.2 Character Substitution 120
4.3 Prefix/Suffix Code 130
4.4 Code ID 131
4.5 Length Code 136
4.6 Multi-Barcode Editor 140
4.7 Removal of Special Character 144

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, every occurrence of that character in the barcode will be taken away.

- The first character will be replaced by the second character(s).
- Up to three sets of character substitution can be configured.
- If “Keyboard Wedge” 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	Only 1 scan code value is allowed. Refer to 4.2.1 Single Character Substitution.	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 Single Character Substitution

Please follow steps below to replace a single character with one or more characters.

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 186 for the desired character substitution. The first character specified is the target one to be replaced; then the character(s) specified after the first one will be the replacement character(s). 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

If you want to 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

If you want to 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 Multiple Characters Substitution

Users can replace a string up to 16 characters with another one.

Configure Set 1

Set 1 Target String

Set 1 Replacement String

Configure Set 2

Set 2 Target String

Set 2 Replacement String

Configure Set 3

Set 3 Target String

Set 3 Replacement String

Please follow steps below:

1) Respectively read the “Target String” and “Replacement String” barcodes above to enable string substitution by set.

   For example, have the scanner read the “Target String” barcode of “Set 1” to specify the target characters to be replaced. Then the scanner will respond with one short beep indicating users to proceed with barcode reading for target characters.

   Read the “Hexadecimal Value” barcode on page 186 for the desired characters.

2) After specifying the target characters, have the scanner read the “Replacement String” barcode of “Set 1” to specify the replacement characters. Read the “Hexadecimal Value” barcode on page 186 for the desired characters. For example,

Enter Setup

KEY TYPE = NORMAL

Replace the character “0-0” with “***”:

1. Read the Target String barcode.
2. Read “3”, “0”, “2”, “D”, “3”, and “0” barcodes to specify the target string “0-0” (zero, dash, zero).
3. Read the Replacement String barcode.
4. Read “2”, “A”, “2”, “A”, “2”, and “A” barcodes to specify the replacement string “***” (stars).

KEY TYPE = SCAN CODE

Replace the character “0-0” with “***” (“*” = “3E” on the scan code table):

1. Read the Target String barcode.
2. Read “3”, “0”, “2”, “D”, “3”, and “0” barcodes to specify the target string “0-0” (zero, dash, zero).
3. Read the Replacement String barcode.
4. Read the “Scan Code” barcode.
5. Read “3”, “E”, “3”, “E”, “3”, and “E” barcodes to specify the replacement string “***” (stars).

KEY TYPE = NORMAL + KEY STATUS = SHIFT

Replace the character “0-0” with “!!!” (“!” = “Shift” + “1” on keyboard):

1. Read the Target String barcode.
2. Read “3”, “0”, “2”, “D”, “3”, and “0” barcodes to specify the target string “0-0” (zero, dash, zero).
3. Read the Replacement String barcode.
4. Read the “Add Shift” barcode.
5. Read “3”, “1”, “3”, “1”, “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

4.2.3 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 Trioptic Code 39 (1500P Only)

***Apply**

Do Not Apply

Character Substitution for Code 93

***Apply**

Do Not Apply

Character Substitution for Code 128

Enter Setup

***Apply**

Do Not Apply

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

Update

Character Substitution for EAN-8 Addon 5

*Apply

Do Not Apply

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

Enter Setup

Character Substitution for Italian Pharmacode

*Apply

Do Not Apply

Character Substitution for Industrial 25

*Apply

Do Not Apply

Character Substitution for Interleaved 25

*Apply

Do Not Apply

Character Substitution for Matrix 25

*Apply

Do Not Apply

Character Substitution for MSI

*Apply

Do Not Apply

Update

Character Substitution for Plessey

*Apply

Do Not Apply

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

Enter Setup

Character Substitution for UPC-A Addon 5

*Apply

Do Not Apply

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 (1500P Only)

*Apply

Do Not Apply

Update

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 you will have the string appear in front of the barcode read, like this – “Barcode_1234567890”.

- If “Keyboard Wedge” 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 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

Configure Suffix

1) Read the barcode above to apply prefix code or suffix code separately, and follow steps 2~3. (Max. 8 characters each)
2) Read the “Hexadecimal Value” barcode on page 186 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 you can select one and make necessary changes on it.

- If "Keyboard Wedge" 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	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
Trioptic Code 39	A	C	Y	M	X
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

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 (1500P only).

Apply AIM Code ID

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

Enter Setup

Code 39	A	0: No check character validation nor full ASCII processing. All data transmitted as decoded. 1: Modulo 43 check character validated and transmitted 3: Modulo 43 check character validated but not transmitted 4: Full ASCII character conversion performed. No check character validation. 5: Full ASCII character conversion performed. Modulo 43 check character validated and transmitted. 7: Full ASCII character conversion performed. Modulo 43 check character validated but not transmitted.
Code 93	G	No options specified. Always transmit 0.
Code 128	C	0: Standard data packet. No FNC1 in first or second symbol character position after start character. 1: EAN/UCC-128 data packet. FNC1 in first symbol character position after start character. 2: FNC1 in second symbol character position after start character. 4: Concatenation according to International Society for Blood Transfusion specifications has been performed. Concatenated data follows.
GS1 DataBar Family	e	No option specified at this time. Always transmit 0. GS1 DataBar and GS1 DataBar Limited transmit with an Application Identifier “01”.
Interleaved 25	I	0: No check character validation 1: Modulo 10 symbol check character validated and transmitted 3: Modulo 10 symbol check character validated but not transmitted
MSI	M	0: Modulo 10 symbol check character validated and transmitted 1: Modulo 10 symbol check character validated but not transmitted
Matrix 25	X	No options specified. Always transmit 0.
Plessey	P	No options specified. Always transmit 0.
Industrial 25	S	No options specified. Always transmit 0.
Telepen	B	No options specified. Always transmit 0.
UPC/EAN	E	0: Standard data packet in full EAN format (13 digits for EAN-13, UPC-A, and UPC-E; does not include add-on data) 3: Combined data packet comprising 13 digits from EAN-13, UPC-A, or UPC-E symbol and 2 or 5 digits from add-on symbol 4: EAN-8 data packet

Update

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 186 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

(1500P only) Configure Code ID for Trioptic Code 39

101484

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

Enter Setup

Configure Code ID for Industrial 25

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

(1500P only) Configure Code ID for Code 11

4.4.3 Clear Code ID Settings

Clear All Code ID Settings

Update

4.5 LENGTH CODE

A two-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 Trioptic Code 39 (1500P only)

Apply

***Do Not Apply**

Length Code for Code 93

Apply

***Do Not Apply**

Length Code for Code 128

Enter Setup

Apply

***Do Not Apply**

Length Code for GS1-128 & GS1 DataBar

Apply

***Do Not Apply**

Length Code for ISBT 128

Apply

***Do Not Apply**

Length Code for EAN-8

Apply

***Do Not Apply**

Length Code for EAN-13

Apply

***Do Not Apply**

Update

Length Code for French Pharmacode

Apply

***Do Not Apply**

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**

Enter Setup

Length Code for MSI

Apply

101429

***Do Not Apply**

101428

Length Code for Plessey

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

Update

Length Code for Code 11 (1500P only)

Apply

***Do Not Apply**

4.6 MULTI-BARCODE EDITOR

The Multi-Barcode Editor allows you to decide the output sequence of a concatenation of barcodes. Up to five barcodes can be specified. When you enable this mode, it will force the scanner to apply Laser mode as the scan mode.

Note: The Multi-Barcode Editor has nothing to do with 1.6.8 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

100650

I) Read the barcode above to start editing a concatenation of barcodes.

2) Code Type setting – read the "Hexadecimal Value" barcode on page 186 for Code Type of the (first) barcode. For example, read "4" and "1" for Code 39.

Update

Code Type	Symbology	Code Type	Symbology
40 (@)	ISBT 128	4F (O)	EAN-8 with Addon 5
41 (A)	Code 39	50 (P)	EAN-13
42 (B)	Italian Pharmacode	51 (Q)	EAN-13 with Addon 2
43 (C)	French Pharmacode	52 (R)	EAN-13 with Addon 5
44 (D)	Industrial 25	53 (S)	MSI
45 (E)	Interleaved 25	54 (T)	Plessey
46 (F)	Matrix 25	55 (U)	GS1-128 (EAN-128)
47 (G)	Codabar (NW7)	56 (V)	UPC-A
48 (H)	Code 93	57 (W)	UPC-A with Addon 2
49 (I)	Code 128	58 (X)	UPC-A with Addon 5
4A (J)	UPC-E0 / UPC-E1		
4B (K)	UPC-E with Addon 2	5A (Z)	Telepen
4C (L)	UPC-E with Addon 5	5B ([ )	GS1 DataBar (RSS)
4D (M)	EAN-8	65 (e)	Trioptic Code 39
4E (N)	EAN-8 with Addon 2	67 (g)	Code 11

3) Barcode Length setting – read the "Decimal Value" barcode on page 185 for the 4-digit length of the (first) barcode. For example, read "0065" for barcode length of 65 characters or read "0000" for any length.

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

4) Matching Character setting – read the "Hexadecimal Value" barcode on page 186 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 186 ("FF") to complete the setting of each barcode.

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

Enter Setup

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).

***Ignore Output Sequence**

Enforce Output Sequence

Apply Output Sequence

Warning: When you 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 your application.

Update

4.7 REMOVAL OF SPECIAL CHARACTER

You can only specify 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 186 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.

[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

If you have already configured any editing format before, you may directly apply the editing format. If not, you must start with configuring an editing format first, and then, activate the editing format when it is desired in use.

Editing Format 1

Enable

***Disable**

Editing Format 2

Enable

***Disable**

Editing Format 3

Enable

***Disable**

Editing Format 4

Enable

***Disable**

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.

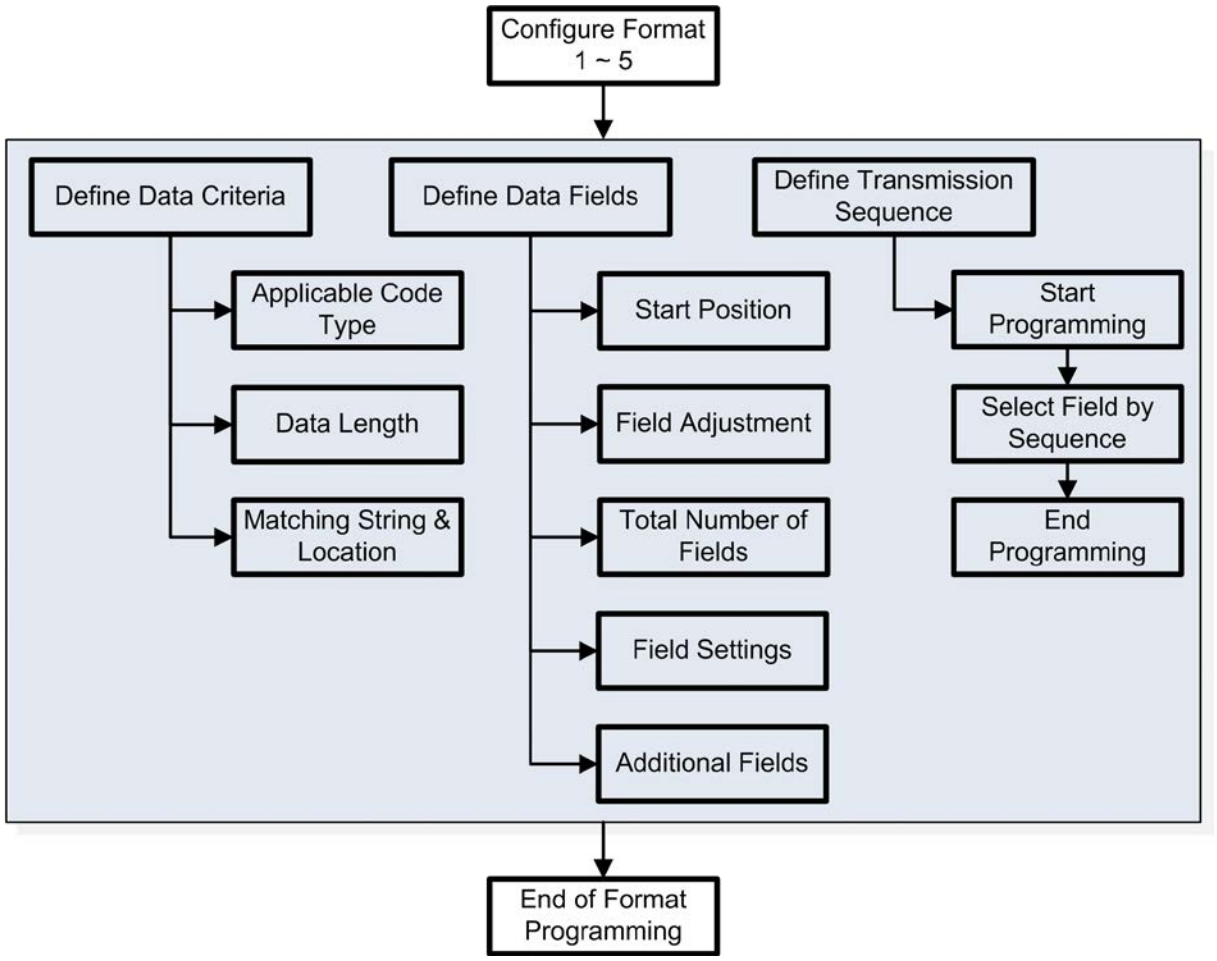
When “Exclusive Data Editing” is enabled, all barcodes read by the scanner must be processed by the editing formats. If data is found excluded from all enabled editing formats (= not meeting with the specified criteria), the scanner will not accept the reading, and therefore, data will not be transmitted.

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 you complete the programming of an editing format, if you have the scanner read any barcode for parameters other than those pertaining to the editing format, it will automatically abort the programming process.

End Programming Format

Having configured all the desired parameters, you must 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

You may 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, you may first clear all, and then select the desired symbologies.

Note: You must have at least one symbology selected.

***Apply to All**

Clear All

Update

Editing Format for Codabar

***Apply**

Do Not Apply

Editing Format for Code 39

***Apply**

Do Not Apply

Editing Format for Trioptic Code 39 (1500P only)

***Apply**

Do Not Apply

Editing Format for Code 93

***Apply**

Do Not Apply

Editing Format for Code 128

***Apply**

Do Not Apply

End Programming Format

Editing Format for GS1-128 & GS1 DataBar

***Apply**

Do Not Apply

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

Update

Editing Format for EAN-13

***Apply**

Do Not Apply

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

End Programming Format

Editing Format for Industrial 25

***Apply**

Do Not Apply

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

Update

Editing Format for Telepen

*Apply

Do Not Apply

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

End Programming Format

Editing Format for UPC-E Addon 2

***Apply**

Do Not Apply

Editing Format for UPC-E Addon 5

***Apply**

Do Not Apply

Editing Format for Code 11 (1500P only)

***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.

- You may specify a value from 0 to 254.
- When zero is given to both, the scanner will not perform the length qualification.

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

Max. Length

Min. Length

2) Read the "Decimal Value" barcode on page 185 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. You may 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.
- You may specify a value from 1 to 254 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 186 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 185 for the desired location.
6) Read the "Validate" barcode on the same page to complete this setting.

Update

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

You may 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 185 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.

Update

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. You may discard it.

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 186 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 185 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 186 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 185 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

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 186 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 185 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 186 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 185 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

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 186 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 185 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" 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.

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

Additional Field 1…

Additional Field 2…

Additional Field 3…

Additional Field 4…

Additional Field 5…

2. Read the “Hexadecimal Value” barcode on page 186 for the desired additional field.
3. Read the “Validate” barcode to complete this setting.

Update

5.4.5 Pause Field Setting

Pause Field Time

You can 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 185. 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

Update

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:

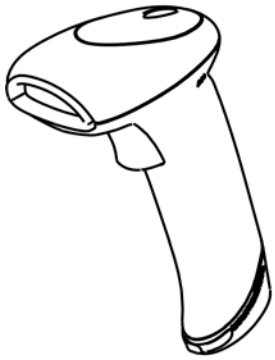
- The item number goes first, then a TAB character, followed by the date code, then another TAB character, and finally the quantity information.

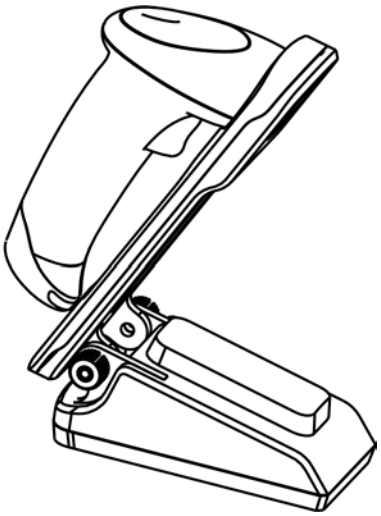
The editing format should be configured as follows:

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		1500	1500WA	1500P	1502
Scan Engine		Non-contact type			
Optical Sensor		CCD, 2500 pixels			Laser
Light Source		Red LED 625nm		Red LED 618~626nm	Visible laser diode
Physical Characteristics					
Switch		Tactile switch			
Indication		Dual-color LED (Red/Green) and beeper			
Weight		Approx. 145 g		Approx. 149 g	Approx. 148 g
Power Adaptor					
Input		AC 100~240 V, 50/60 Hz			
Output		DC 5V, 1A			
Power Consumption	Standby	30 mA	50 mA	20 mA	35 mA
	Operating	170 mA	265 mA	286 mA	210 mA
Operating Temperature		0 °C to 40 °C			

Update

Environmental Characteristics			
Temperature	Operating Storage	0 °C to 50 °C -20 °C to 60 °C	
Humidity (Non-condensing)	Operating Storage	10% to 90% 5% to 95%	
Resistance			
Impact Resistance (5 drops per sides)		1.5 m	1.2 m
Splash / Dust Resistance		IP 30	
Electrostatic Discharge		± 15 kV air discharge, ± 8 kV contact discharge	
Programming Support			
Configuration via Setup Barcodes		Use setup barcodes or host serial commands.	
Software		Windows®-based ScanMaster	
Firmware upgradeable		Download firmware updates via the download utility.	
Accessories (√ means "supported")		**1500, 1500WA**	**1500P**	**1502**
USB			√	
USB HID Cable (307)		√	√*	√
USB Virtual COM Cable (308)		√	√*	√
IBM 4683/4694 Cable (346)		√		√
Auto-Sense Stand		√	√	√
RS-232 Cable		√	√	√
Keyboard Wedge Cable		√	√	√
Wand Emulation Cable		√		√

*With the Cable Auto-detection function disabled, USB HID Cable (307) and USB Virtual COM Cable also support 1500P. For further details, please refer to 1.14 Cable Auto-Detection.

Enter Setup

Appendix I

FIRMWARE UPGRADE

THROUGH RS-232 INTERFACE

1) Use the RS-232 or USB VCOM (308) cable between the scanner and the computer, and join the power supply cord.

2) 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.

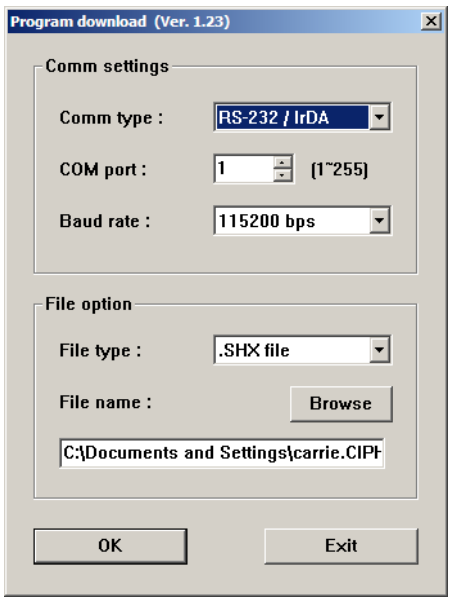
Enter Setup

Download

109997

3) Run the download utility “ProgLoad.exe” on your computer.

Kernel Program	User Program
K1500_V*.shx	STD1500_V*.shx



- For the communication settings, select “RS-232” and the correct COM port.
- Select 115200 bps for the baud rate setting.
- For the file option, click [Browse] to select the target file for firmware update.
- Click [OK].

Note: The output interface will be reset to your previous settings, which may be Keyboard Wedge, RS-232 or Wand Emulation.

Update

THROUGH USB VIRTUAL COM INTERFACE (1500P ONLY)

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

Update

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

Update

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.

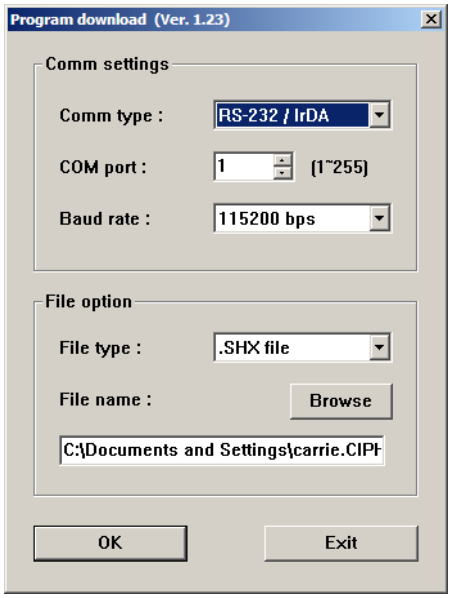
Enter Setup

Download

4) Run the download utility “ProgLoad.exe” on the computer.

Enter Setup

Kernel Program	User Program
K1500_V*.shx	STD1500_V*.shx



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

5) After upgrading kernel, it 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

109952

Serial Command

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

Note: After configuring the scanner, you may 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

You may run HyperTerminal.exe on the host computer to send serial commands to the scanner via RS-232.

- 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: You can configure more than one scanner connected to the host via RS-232. To identify the scanner, you may send the serial command to have it respond with a beep.

Enter Setup

Appendix III

KEYBOARD WEDGE TABLE

	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

KEY TYPE & STATUS

Key Type

If "Keyboard Wedge" is configured for interface, Key Type and Key Status will then become applicable.

***Normal**

Scan Code

Key Status

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

Add Shift

Add Left Ctrl

Add Right Ctrl

Add Left Alt

Add Right Alt

Enter Setup

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 186 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 186 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 186 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 186 for "4", "1" (= "A").
4. Read the "Add Left Ctrl" barcode.
5. Read the "Hexadecimal Value" barcode on page 186 for "2", "4" (= "$").
6. Read the "Validate" barcode to complete this setting.

Update

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

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

PS55 001-8A

PS55 002-1, 003-1

PS55 002-81, 003-81

PS55 002-2, 003-2

PS55 002-82, 003-82

PS55 002-3, 003-3

PS55 002-8A, 003-8A

IBM 3477 Type 4 (Japanese)

PS2-30

IBM 34XX/319X, Memorex Telex 122 Keys

User-defined table

PCAT (Turkish)

PCAT (Hungarian)

PCAT (Swiss German)

PCAT (Danish)

PCAT (Greek)

PCAT (Slovenian)

PCAT (Mexican Spanish)

PCAT (Swiss French)

PCAT (Czech)

DIRECT USB HID

PCAT (US)

PCAT (French)

PCAT (German)

PCAT (Italian)

PCAT (Swedish)

PCAT (Norwegian)

PCAT (UK)

PCAT (Belgium)

PCAT (Spanish)

PCAT (Portuguese)

PS55 A01-2 (Japanese)

User-defined table

PCAT (Turkish)

PCAT (Hungarian)

PCAT (Swiss German)

PCAT (Danish)

PCAT (Greek)

PCAT (Slovenian)

PCAT (Mexican Spanish)

PCAT (Swiss French)

PCAT (Czech)