CipherLab
User Guide

1660 Barcode Scanner

Setup labels included.

CIPHERLAB CO., LTD.
Website: http://www.cipherlab.com

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.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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 HAND-HELD PRODUCT WITH RF FUNCTIONS

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

It only operated in hand-held used. If you only transfer data to Host by Bluetooth, please keep the minimum distance 20 cm between machine & your body.

FOR PRODUCT WITH LASER

Per FDA and IEC standards, the scan engines described in this manual are not given a laser classification. However, the following precautions should be observed:

CAUTION

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

SAFETY PRECAUTIONS

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

- The use of any batteries or charging devices, which are not originally sold or manufactured by CipherLab, will void your warranty and may cause damage to human body or the product itself.
- DO NOT disassemble, incinerate or short circuit the battery.
- DO NOT expose the scanner or the battery to any flammable sources.
- For green-environment issue, it's important that batteries should be recycled in a proper way.
- Under no circumstances, internal components are self-serviceable.
- The charging and communication cradle uses an 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 mobile computer 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 as well as the cradle. DO NOT use/mix any bleach or cleaner.
- If you want to put away the scanner for a period of time, download the collected data to a host computer when in the memory mode, and then take out the battery. Store the scanner and battery separately.
- When the scanner resumes its work, make sure the battery is fully charged before use.
- If you shall find the scanner malfunctioning, write down the specific scenario and consult your local sales representative.

RELEASE NOTES

Version	Date	Notes
0.94	Mar. 19, 2008	▸ Modified: section 1.6.6 Aiming Mode – Timeout (1~15 sec) ▸ New: section 4 Changing Symbology Settings – ISBT 128
0.93	Feb. 26, 2008	▸ Modified: remove 1662
0.92	Feb. 15, 2008	▸ Modified: section 2.1.3 Keyboard Settings – illustration
0.91	Feb. 14, 2008	Separate manual for1660 for review
0.90	Jan. 25, 2008	Draft for use in pilot production
		* The documentation is subject to change without prior notice.

CONTENTS

INTRODUCTION

CipherLab's new small-form-factor 1600 Series Barcode Scanners are specifically designed to answer your mobile demands. The palm-sized 1660 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. Integrating Bluetooth technology to small-form-factor scanners, the 1660 Bluetooth scanners are ideal for carrying in your pocket, and thus give workers tether-free mobility anytime anywhere and get job done more efficiently. This line of Bluetooth scanners has a range of up to 3 meters and a prolonged battery life that provides up to 30 hours uptime to keep business running.

Owing to the compact 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!

INSIDE THE PACKAGE

The items included in the package may be different, depending on your order. Save the box and packaging material for future use in case you need to store or ship the scanner.

- 1660 Barcode Scanner
- Manual & Driver CD

Note: The Manual & Driver CD includes this manual and Windows-based *ScanMaster* software for configuration.

PRODUCT HIGHLIGHTS

- Small-form-factor and built tough to survive drop test
- Most popular barcode symbologies are supported, including Reduced Space Symbology (RSS)
- Negative barcodes are also supported
- Seven scan modes are supported, including Aiming Mode and Multi-Barcode Mode
- User feedback via LED indicator and beeper
- Beeping tone and duration are programmable for Good Read.
- Extremely low power consumption
- 128 KB flash memory for Memory mode operation, storing up to 8192 scans.
- The 1660 scanner provides up to 4 KB SRAM for reserve buffer, storing up to 256 scans while getting out of range during a Bluetooth connection.
- Bluetooth Serial Port Profile (SPP) supported – for example, the 1660 scanner can transmit the scanned data to a Bluetooth-enabled computer or PDA.
- Bluetooth Human Interface Device (HID) supported – for example, the 1660 scanner can transmit the scanned data to a Bluetooth-enabled computer or PDA, as keyboard input.
- Programmable parameters include data output format, editing format, symbologies, etc.
- Firmware upgradeable

Quick Start

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

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

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

Steps	Action	User Feedback if Successful
1	Power on the scanner…	The scanner will respond with a long beep (high tone).

Note: Upon powering up, the 1660 scanner will try to establish a connection with a Bluetooth device dongle. Refer to Chapter 3 – Setting up Bluetooth Connections for details.

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 be flashing red.
3	Read a Setup label… For example, *Enable Industrial 25  100307	The scanner will respond with two beeps (low-high tone) if reading a normal label.
4	Exit the Configuration Mode…	Same as for *Enter the Configuration Mode*.
	Update  109999 OR Abort  109998	
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 with a low tone.

ENTER CONFIGURATION MODE

For the scanner to enter the configuration mode, you must have it read the "Enter Setup" label, 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 label.

Enter Setup

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

EXIT CONFIGURATION MODE

For the scanner to exit the configuration mode, you must have it read the "Update" label, 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" label instead.

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

Update

Abort

!

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" label.

Save as User Default

109986

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" label.

- The scanner will issue two beeps after reading the label, and all the parameters of the scanner will return to their customized values.

Restore User Defaults

109987

RESTORE SYSTEM DEFAULTS

For the scanner to restore the factory defaults, you must have it read the "Restore System Defaults" label.

- The scanner will issue two beeps after reading the label, and all the parameters of the scanner will return to their default values.

Restore System Defaults

109993

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

READ A SETUP LABEL

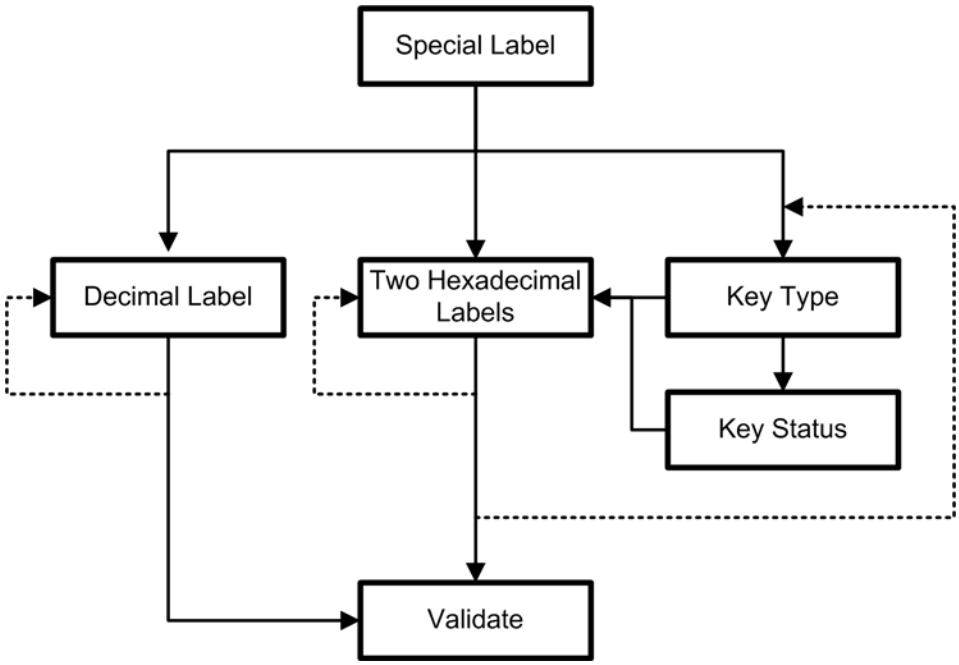
CONFIGURE PARAMETERS

For most of the scanner parameters, only one read is required to set them to new values. The scanner will respond with two beeps 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 labels. These special parameters may require reading one or more (1) numeric labels, say, for keyboard type, inter-character delay, length qualification, or (2) hexadecimal labels, say, for character strings as prefix, suffix, etc.

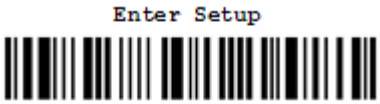
Note: When "Keyboard Wedge" is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to apply Key Status when "Normal Key" is selected for Key Type.

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

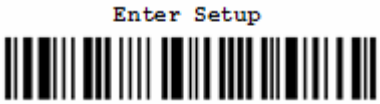
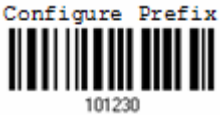
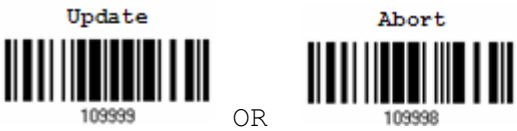


!

NUMERIC PARAMETERS

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone).
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 label... For example, **Normal label**  **Normal label**  **Special label**  **Decimal label or labels**   	The scanner will respond with two beeps (low-high tone) if reading a normal label. The scanner will respond with one short beep if reading a special label such as "Max. Length", indicating the setup requires reading more labels. 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*.

CHARACTER STRING PARAMETERS

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone).
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 label... For example, **Special label** 	The scanner will respond with one short beep if reading a special label such as "Prefix Code", indicating the setup requires reading more labels.
	 	When "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.
	Hexadecimal labels   	Read the "Hexadecimal Value" label for the desired character string. For example, read "2" and "B" for the scanner to prefix the character "+". 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*.

!

LIST THE CURRENT SETTINGS

The current settings of all scanner parameters can be sent, via RS-232 or Bluetooth SPP, to the host computer for user inspection. The listing includes ten pages as shown below. You can select the page of interest by reading the "Page x" label.

List Page 1

List settings regarding Interface, Buzzer, and Other Scanner Parameters

List Page 2

List settings regarding Prefix, Postfix, and Length Code Setting

List Page 3

List settings regarding Code ID

List Page 4

List settings regarding: Readable Symbologies

List Page 5

List settings regarding Symbology Parameters (1/3)

List Page 6

List settings regarding Symbology Parameters (2/3)

List Page 7

List settings regarding Symbology Parameters (3/3)

List Page 8

List settings regarding Editing Format 1

List settings regarding Editing Format 2

List Page 10

List settings regarding Editing Format 3

List Page 11

List settings regarding Editing Format 4

List Page 12

List settings regarding Editing Format 5

Chapter 1

UNDERSTANDING THE BARCODE SCANNER

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

IN THIS CHAPTER

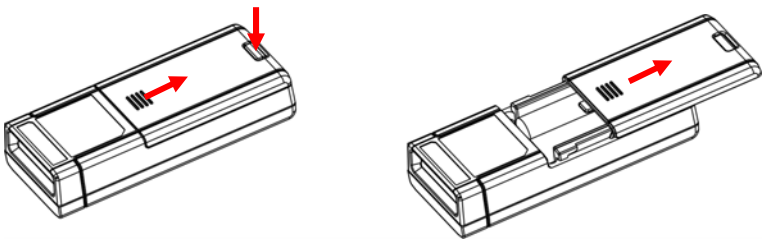
1.1 BATTERY

The scanner is powered by two AAA Alkaline batteries. During normal operation, the scanner can work for over 30 hours or 28,000 scans (based on UPC-E barcodes, 1 scan per 5 seconds). For intensive data collection, you may prepare spare batteries for non-stop operation.

Note: The 1660 scanner can be configured to save battery power. Refer to settings of "Auto Power Off", "Sniff Mode", as well as "Low Battery Alarm".

1.1.1 INSTALLING THE BATTERY

1) Hold the scanner face down in one hand.
2) Press the battery lid release and slide the battery lid.
3) Remove the battery lid by the other hand.

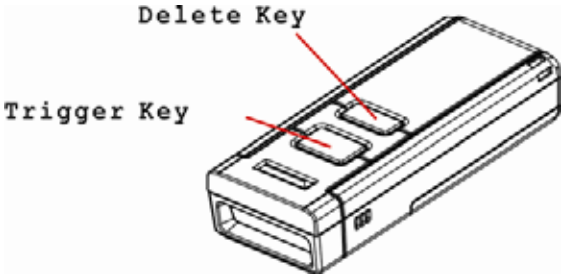


4) Install two AAA Alkaline batteries into the battery compartment, each in the right direction.

5) Replace the battery lid and lock it firmly.

1.1.2 HOW TO OPERATE THE SCANNER

- To turn on the scanner, press the [Delete] key for 3 seconds, and the scanner will respond with a long beep (high tone).
- To turn off the scanner, press the [Delete] key for 1.5 seconds. The scanner will respond with short beep (high tone) and the LED will become solid green, then go off, and finally become solid red. Release the key then.
- To delete the last collected data, press the [Delete] key. The scanner will respond with short beep (high tone) and the LED will become solid green. Before the LED goes off (within 1 second), press the [Delete] key again to confirm the deletion.



1.1.3 AUTO POWER OFF

Specify the time interval (1~254 min.; 0= disable) for the scanner to wait for a computer to establish a connection via a Bluetooth dongle. By default, the 1660 scanner will stay active for 10 minutes waiting for a connection request. If it fails to connect within the time interval, the scanner will automatically turn off in order to conserve battery power (you will hear three short beeps, tone descending from high to low). Press the [Delete] key for 3 seconds to turn it on. On your computer, you will have to search Bluetooth devices again.

Once a Bluetooth connection is established successfully, the scanner will stay active as long as the COM port is opened by a host application.

Auto Off after 0~254 minutes (*10)

101000

1) Read the label above to specify the time interval before the scanner automatically turns off.

2) Read the "Decimal Value" label on page 123. For example, read "1" and "5" for the scanner to automatically turn off after being idle for 15 minutes.

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

Enter Setup

1.2 MEMORY

The collected data can be sent back to a host computer one by one via the transmit buffer (SRAM) or stored in flash memory when the scanner is set to Memory mode.

1.2.1 TRANSMIT BUFFER

The 1 KB transmit buffer on the scanner can store up to 64 scans based on EAN-13 barcodes. When it is used up, the scanner will respond with one long beep (low tone) as a warning.

- You are advised to get back to range if using the Bluetooth scanner.

1.2.2 MEMORY MODE

The scanner keeps 128 KB flash memory for memory mode operation. When the 1660 scanner is in memory mode, it means Bluetooth connection is disabled.

Enable Memory Mode

*Disable Memory Mode

Warning: Bluetooth cannot work unless memory mode is disabled.

MEMORY DATA DELAY

You may set a delay between each data record while transmitting data back to the server.

*None

250 ms

Update

500 ms

1 sec

2 sec

3 sec

5 sec

8 sec

SEND DATA

The 128 KB flash memory on the scanner can store up to 8192 scans based on EAN-13 barcodes. When it is used up, the scanner will respond with two short beeps (low-high tone) as a warning. You are advised to send data to the server immediately. Select a desired interface for transmission. For example, disable memory mode and use Bluetooth SPP to transmit data.

Send Data

Enter Setup

CLEAR DATA & CONFIRM

Even though data has been sent back to the server, the flash memory is still occupied unless you erase the memory by having the scanner read two labels – "Clear Data" and "Confirm".

1) Read the "Clear Data" label to clear the flash memory.
2) Read the "Confirm" label to confirm the action.

Clear Data

Confirm

1.3 LED INDICATOR

The triple-color LED on top of the scanner is used to provide user feedback. For example, the LED becomes solid red and goes off quickly (= Standby mode) 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.

LED – Red/Green/Blue	Meaning
Green, and goes off quickly, and becomes red, and finally goes off when the [Delete] key is released.	Power off
Red, and goes off quickly	▸ Power on, with one long beep (high tone) ▸ Transmit buffer full, with one long beep (low tone) ▸ Memory full, with two short beeps (low-high tone) ▸ Bluetooth connection out of range, with two beeps (high-low tone)
Green, and goes off quickly	Good Read, beeper pitch and duration programmable
Flashing blue (On/Off ratio 1:1)	▸ No Bluetooth connection (flashing slowly) ▸ Dynamic PIN code request from host (flashing quickly)
Flashing blue (On/Off ratio 1:6)	Bluetooth connection established
Flashing blue and red	Dynamic PIN code input error
Flashing red	Configuration Mode

Update

1.3.1 GOOD READ LED

*Enable Good Read LED

Disable Good Read LED

1.4 BEEPER

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

1.4.1 BEEPER ON 1660

Beeping	Meaning
One long beep, high tone	Power on
One short beep, low tone	Power off
One short beep, high tone ▸ Programmable, default to 4 KHz	Good Read
Six short beeps ▸ High-low tone repeats three times	▸ Enter Configuration Mode ▸ Exit Configuration Mode
Two short beeps, low-high tone	Setup label read successfully
One short beep, high tone	More setup label required
One long beep, low tone	▸ Transmit Buffer Full ▸ Configuration Error (Wrong label…)
Two short beeps, low-high tone	Memory Mode – Memory Full
Two long beeps, high-low tone	Multi-Barcode Mode – Buffer Full
Three short beeps ▸ Tone ascending from low to high	▸ Bluetooth connection established ▸ Bluetooth connection resumed
Two beeps, high-low tone	Bluetooth connection out of range
Three short beeps, low tone	No Bluetooth connection

Enter Setup

1.4.2 BEEPER VOLUME

Mute

101009

Minimum Volume

101010

Medium Volume

101011

*Maximum Volume

101012

1.4.3 GOOD READ BEEP

FREQUENCY

8 kHz

101001

* 4 kHz

101002

2 kHz

101003

1 kHz

101004

Update

DURATION

*Shortest

Shorter

Longer

Longest

1.4.4 LOW BATTERY ALARM

By default, "2.6 V (Alkaline)" is selected for low battery level. When the battery level inside the 1660 scanner reaches 2.6 V, it will activate the beeper to give a warning. If you are using Ni-MH batteries, select "2.1 V (Ni-MH)".

No Alarm

* 2.6 V (Alkaline)

2.1 V (Ni-MH)

Enter Setup

1.5 SEND “NR” TO HOST

This feature only works when Keyboard Wedge, RS-232, Bluetooth HID, or Bluetooth SPP is selected for output interface. You may have the scanner send the “NR” string to the host to notify the No Read event.

Enable

100267

*Disable

100266

1.6 SCAN MODES

There are eight scan modes 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*	*Press trigger once*	*Barcode being read*	*Timeout*
Continuous mode	✓							
Test mode	✓							
Laser mode			✓		✓		✓	✓
Auto Off mode		✓					✓	✓
Auto Power Off mode		✓						✓
Aiming mode				✓			✓	✓
Multi-Barcode mode			✓		✓			

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

Update

1.6.1 CONTINUOUS MODE

The scanner is always scanning.

- To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.

Note: Refer to "Delay between Re-read".

Continuous Mode

100201

DECODING DELAY

Set the time interval between each decoding.

*Disable

100227

0.5 sec

100228

1 sec

100229

2 sec

100230

Enter Setup

1.6.2 TEST MODE

The scanner is always scanning.

- Capable of decoding the same barcode repeatedly, for testing purpose.

Test Mode

100207

1.6.3 LASER MODE

The scanner will start scanning once the trigger is hold 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 “Scanning Timeout”.

*Laser Mode

100206

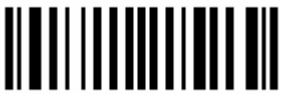
1.6.4 AUTO OFF MODE

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 “Scanning Timeout”.

Auto Off Mode



100200

Update

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 "Delay between Re-read" and "Scanning Timeout".

Auto Power Off Mode

100202

1.6.6 AIMING MODE

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

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

Aiming Mode

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 seconds (*1)

100226

1) Read the label above to specify the time interval before aiming ends. (It is set to 1 by default.)
2) Read the "Decimal Value" label on page 123. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 10 seconds.
3) Read the "Validate" label on the same page to complete this setting.

Enter Setup

1.6.7 MULTI-BARCODE MODE

The scanner will be scanning as long as the trigger is held down, capable of decoding not only one single barcode but a concatenation of unique barcodes.

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

Multi-Barcode Mode

100209

Note: (1) A barcode is considered unique when its Code Type or data is different from others.
(2) Multi-Barcode Mode cannot work with "Multi-Barcode Editor".

1.7 SCANNING TIMEOUT

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

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

Scanner Time-Out after 0~254 seconds (*10)

100235

1) Read the label above to specify the time interval before the scan engine times.

2) Read the "Decimal Value" label on page 123. For example, read "1" and "5" for the scanner to automatically shut down after being idle for 15 seconds.

3) Read the "Validate" label 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

100 ms

100216

200 ms

100217

* 400 ms

100218

800 ms

100219

1 sec

100220

2 sec

100221

3 sec

100222

5 sec

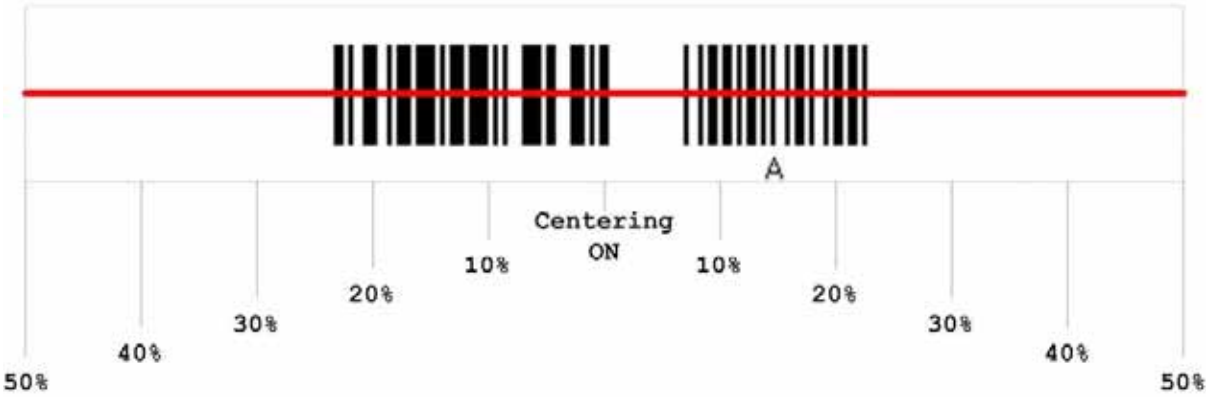
100223

Enter Setup

1.9 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 label "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.



1.9.1 POSITIONING WINDOW

Centering On

100279

*Centering Off

100278

1.9.2 ADJUSTING WINDOW

PERCENTAGE FOR LEFT HALF

*Left 50%

100280

Update

Left 40%

Left 30%

Left 20%

Left 10%

PERCENTAGE FOR RIGHT HALF

Right 10%

Right 20%

Right 30%

Right 40%

*Right 50%

Enter Setup

1.10 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

100225

*Disable

100224

1.11 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 4 Changing Symbology Settings for details of each symbology.

Codabar*		
Industrial 25*	Interleaved 25*	Matrix 25
Code 39*		
Code 93*		
Code 128*		
EAN-8*	EAN-8 Addon 2 & 5	
EAN-13*	EAN-13 Addon 2 & 5	
EAN-128		
French Pharmacode		
Italian Pharmacode		
MSI		
Plessey		
RSS-14 Limited	RSS Expanded	RSS
Telepen		
UPC-A*	UPC-A Addon 2 & 5	
UPC-E*	UPC-E Addon 2 & 5	

Note: The symbologies, followed by an asterisk mark, are enabled by default.

Update

1.11.1 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 decodings 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

1.11.2 ADDON SECURITY FOR UPC/EAN BARCODES

You may like to enforce read redundancy (0~30 times) on UPC/EAN barcodes with addons only.

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

Addon Security Level (*0 ~ 30)

100380

Enter Setup

1) Read the label above to specify the read redundancy when missing add-ons while scanning UPC/EAN barcodes. (It is set to 0 by default.)

2) Read the "Decimal Value" label on page 123. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.

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

Update

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) Install batteries and press the [Delete] key for 3 seconds to turn on the scanner.
2) Have the scanner read the "Enter Setup" label to enter the configuration mode.
3) Have the scanner read the associated label to activate the desired interface.
   See the following sections for output interfaces supported.
4) Have the scanner read the labels for related settings.
5) Have the scanner read the "Update" label to exit the configuration mode.

Note: By default, the output interface is set to "Bluetooth HID".

IN THIS CHAPTER

2.1 BLUETOOTH HID

Refer to Chapter 3 – Setting up Bluetooth Connections for related settings.

Bluetooth 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
Inter-Function Delay	0 (ms)
Send "NR" to Host	Disable

2.1.1 ACTIVATE BLUETOOTH HID & SELECT KEYBOARD TYPE

By default, Bluetooth HID is activated on the 1660 scanner, and the keyboard type is set to PCAT (US). When Bluetooth HID is re-activated, you will have to select a keyboard type to complete this setting.

Activate Bluetooth HID & Select Keyboard Type …

1) Read the label above to activate Bluetooth HID and select a keyboard type.
2) Read the "Decimal Value" label on page 123. Refer to the table below for the number of desired keyboard type.
3) Read the "Validate" label on the same page to complete this setting.

KEYBOARD TYPE

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	70	PCAT (UK)
65	PCAT (French)	71	PCAT (Belgium)
66	PCAT (German)	72	PCAT (Spanish)
67	PCAT (Italy)	73	PCAT (Portuguese)
68	PCAT (Swedish)	74	PS55 A01-2 (Japanese)
69	PCAT (Norwegian)	75	User-defined table

2.1.2 RESET CONNECTION

For Bluetooth HID, you can only have one scanner connected to your computer. If you want to connect the scanner to another computer, you must have it read the "Reset Connection" label first. The scanner will restart itself automatically. Then, go through the whole process to establish a new connection.

Reset Connection

Enter Setup

2.1.3 KEYBOARD SETTINGS

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

Note: Bluetooth HID does not support these functions on PDAs – (1) Capital Lock Setting: Auto Detection (2) Digits Transmission: Numeric Key

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 and QWERTZ keyboards
Upper Row	For AZERTY keyboards

*Normal

100046

Lower Row

100048

Upper Row

100049

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

CAPITAL LOCK TYPE & SETTING

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

Update

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

Capital Lock

Shift 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). ▸ This setting is not supported on PDAs.

*Capital Lock OFF

Enter Setup

Capital Lock ON

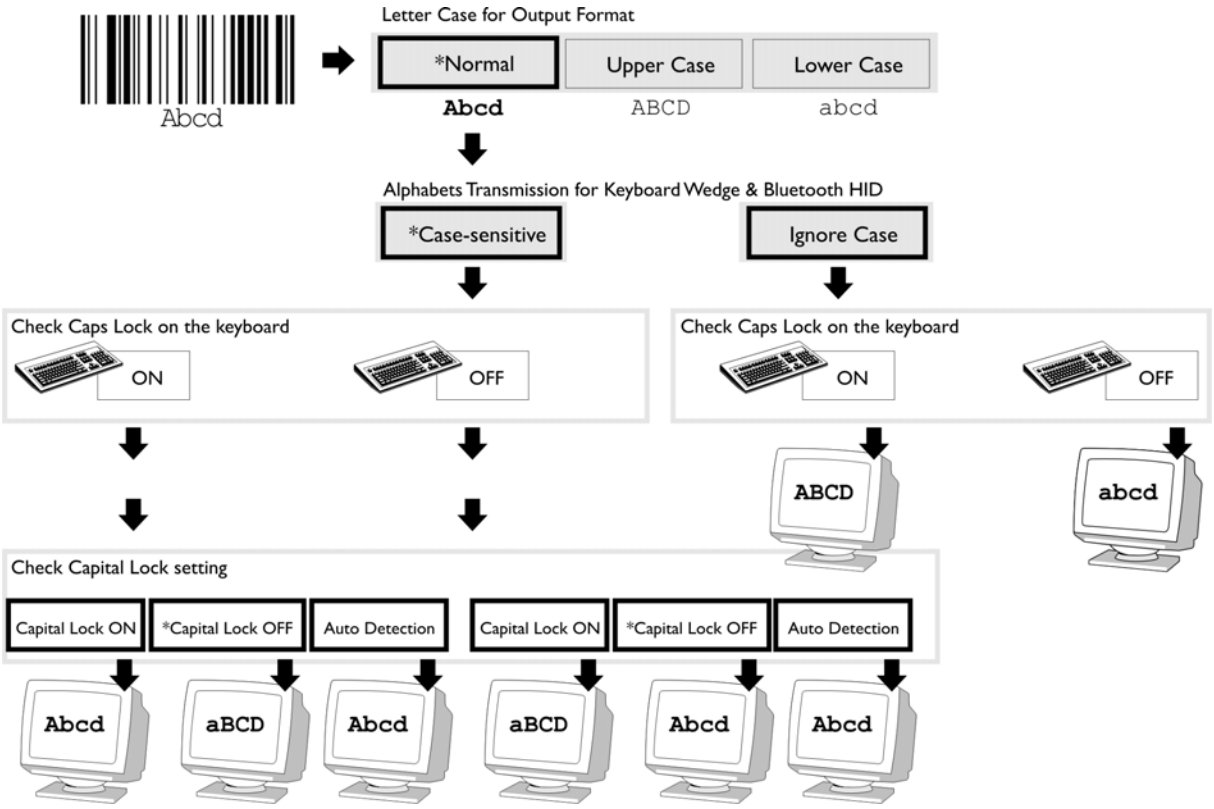
100053

Auto Detection

100054

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.



Update

*Case-sensitive

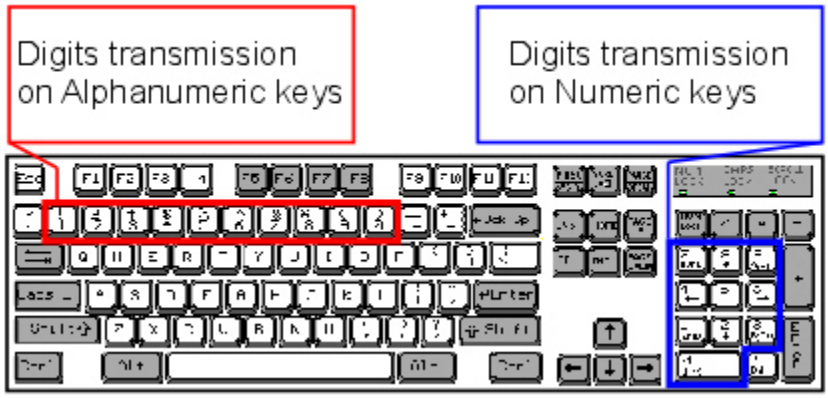
100050

Ignore Case

100051

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.



*Alphanumeric Key

100040

Numeric Key

100041

Note: If you select "Numeric Keypad", the Num Lock status of the physical keyboard should be "ON". This setting is not supported on PDAs.

2.1.4 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 255, 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.

Enter Setup

Value	Delay Time	Value	Delay Time
0	Disable	195 ~ 204	200 millisecond
1 ~ 14	10 millisecond	205 ~ 214	210 millisecond
15 ~ 24	20 millisecond	215 ~ 224	220 millisecond
25 ~ 34	30 millisecond	225 ~ 234	230 millisecond
35 ~ 44	40 millisecond	235 ~ 244	240 millisecond
45 ~ 54	50 millisecond	245 ~ 254	250 millisecond
…	…	255	260 millisecond

Inter-Function Delay … (*0 ~ 255)

1) Read the label above to specify the inter-function delay.
2) Read the "Decimal Value" label on page 123 for the desired inter-function delay (millisecond).
3) Read the "Validate" label on the same page to complete this setting.

Update

2.2 BLUETOOTH SPP

Refer to Chapter 3 – Setting up Bluetooth Connections for related settings.

2.2.1 ACTIVATE BLUETOOTH SPP

Activate Bluetooth SPP

2.2.2 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Specify a value, ranging from 0 to 255, 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.

Value	Delay Time	Value	Delay Time
0	Disable	195 ~ 204	200 millisecond
1 ~ 14	10 millisecond	205 ~ 214	210 millisecond
15 ~ 24	20 millisecond	215 ~ 224	220 millisecond
25 ~ 34	30 millisecond	225 ~ 234	230 millisecond
35 ~ 44	40 millisecond	235 ~ 244	240 millisecond
45 ~ 54	50 millisecond	245 ~ 254	250 millisecond
…	…	255	260 millisecond

Inter-Function Delay … (*0 ~ 255)

1) Read the label above to specify the inter-function delay.
2) Read the "Decimal Value" label on page 123 for the desired inter-function delay (millisecond).
3) Read the "Validate" label on the same page to complete this setting.

Enter Setup

2.2.3 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 three more times. If all the attempts fail without any notification, data loss will occur.

ACK/NAK Time-Out after … (*0 ~ 99)

100013

1) Read the label 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" label on page 123. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
3) Read the "Validate" label on the same page to complete this setting.

ACK/NAK ERROR BEEP

Enable Error Beep

100015

*Disable Error Beep

100014

Note: We suggest you to enable the error beep so that you will be notified of such data loss and have the scanner re-read data.

Update

Enter Setup

Chapter 3

SETTING UP BLUETOOTH CONNECTIONS

The Bluetooth scanner can be configured to send data to a computer via a Bluetooth dongle, or directly to a Bluetooth-enabled PDA or laptop. Upon powering up, the 1660 scanner will be ready for establishing a Bluetooth connection with a Bluetooth dongle.

Below is the procedure to configure the 1660 scanner before establishing a Bluetooth connection.

1) Have the scanner read the "Enter Setup" label to enter the configuration mode.
2) Have the scanner read the desired Bluetooth interface label – "Activate Bluetooth SPP" or "Activate Bluetooth HID & Select Keyboard Type".

   It supports PCAT – US, French, German, Italian, Swedish, Norwegian, UK, Belgium, Spanish, Portuguese, and PS55 A01-2 – Japanese.
3) Have the scanner read the labels related to Bluetooth settings, such as Device Name Broadcasting, Authentication & PIN Code, etc.
4) Have the scanner read the "Update" label to exit the configuration mode.

Once connected, be aware of the following notifications during operation –

- When getting out of range or powering off the cradle, the scanner will respond with two short beeps (high-low tone) and its LED indicator will become blue, flashing quickly.
- The power-saving feature of the scanner will automatically shut down the scanner and stop a Bluetooth connection when it is idle for a specific period of time. The scanner will respond with three beeps (tone descending from high to low) and its LED indicator will become off.

IN THIS CHAPTER

Update

3.1 CONFIGURING BLUETOOTH SETTINGS

3.1.1 SNIFF MODE (POWER-SAVING)

This is Bluetooth standard power-saving feature, also known as Sniff mode. When enabled, the scanner will listen to the piconet at a reduced rate.

Note: By default, power-saving is enabled. When connecting more than two 1660 scanners via the Bluetooth dongle, we suggest you to disable the power-saving setting for a more reliable connection.

*Enable

Disable

3.1.2 DEVICE NAME BROADCASTING

The scanner can be configured to hide itself from other Bluetooth devices. Simply disable the device name broadcasting setting so that it won't be discovered by any other computer or PDA. However, broadcasting must be enabled for establishing an initial connection with the scanner. For example, you can disable device name broadcasting after successfully connecting the scanner to WorkStation1. Such connection will be maintained automatically unless the scanner is removed from the paired device list (called unpairing) by WorkStation1 or any changes made to authentication and the PIN code. If you want WorkStation2 to connect to the scanner, you will have to enable device name broadcasting first.

Note: By default, device name broadcasting is enabled (which is required for initial connection).

*Enable

Disable

Enter Setup

3.1.3 AUTHENTICATION

For security concerns, it is suggested that you enable authentication and specify a unique PIN code, also known as the passkey used to pair two Bluetooth devices. The scanner itself allows up to 16 characters for a PIN code. This means you will have to enter exactly the same string for your computer or PDA to connect to the scanner. If the passkey is incorrect, any connection attempt will be turned down by the scanner. When any changes are made to authentication and PIN code on the scanner side, you will have to remove the scanner from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

Yes

100155

*No

100154

ENTERING PIN CODE

By default, the Bluetooth PIN code is set to "0000". Maximum 16 characters are allowed.

Note: When using Bluetooth HID, some driver of Bluetooth dongle may not support pre-defined PIN code for authentication. In this case, make sure you disable authentication before pairing. The host PIN code will be displayed on the computer screen. Have the scanner read the setup barcode "Enter PIN Code in Decimal" to input the matching PIN code quickly.

Enter PIN Code in Hexadecimal …

100150

Enter PIN Code in Decimal …

100151

1) Read one of the labels above to specify the PIN code, in decimal or hexadecimal.
2) Read the "Decimal Value" label on page 123 or the "Hexadecimal Value" label on page 124 for the desired digits or character string.
3) Read the "Validate" label on the same page to complete this setting.

Update

3.2 CONNECTING VIA BLUETOOTH DONGLE

This is called "pairing with a Bluetooth device". The procedure for connecting the scanner to a computer via a Bluetooth dongle is pretty much the same except for the software you are using.

Note: When connecting more than two Bluetooth scanners to a computer via the Bluetooth dongle, we suggest you to disable "Sniff Mode" for a more reliable connection.

If your computer is running Microsoft Windows XP Service Pack 2 (SP2) or Windows Vista, you can use the generic software support that Windows includes, or you can use the driver that the device manufacturer provides.

Now, let's try using the generic software support that Windows XP Service Pack 2 includes.

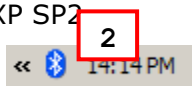
3.2.1 BLUETOOTH HID – ADD BLUETOOTH DEVICE WIZARD

By default, Bluetooth HID is activated on the 1660 scanner, and the keyboard type is set to PCAT (US). When Bluetooth HID is re-activated, you will have to select a keyboard type to complete this setting.

The procedure is the same as for Bluetooth SPP. Refer to steps 1~11 below.

3.2.2 BLUETOOTH SPP – ADD BLUETOOTH DEVICE WIZARD

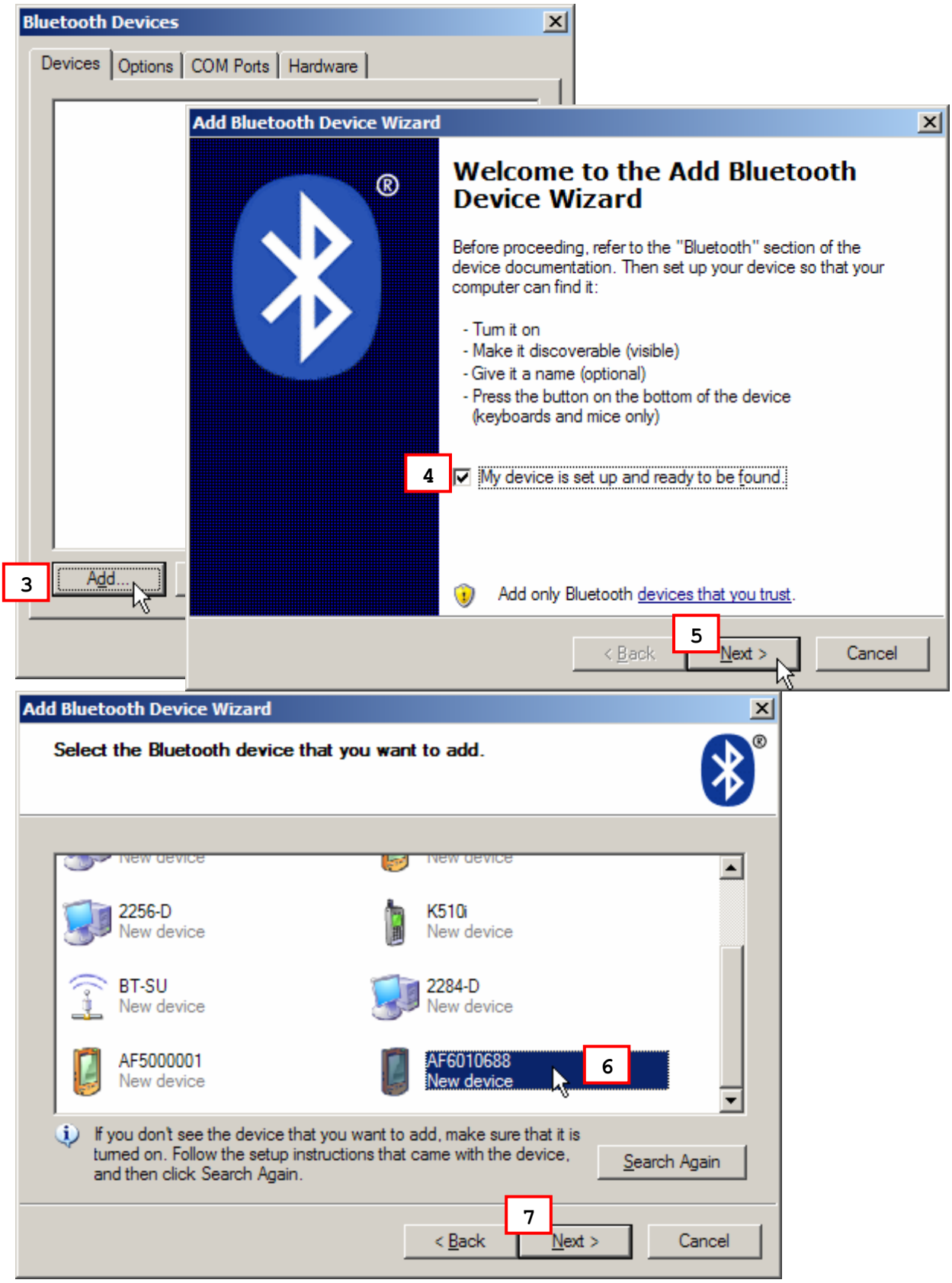
1) Connect a Bluetooth dongle to your computer, running Windows XP SP2.
2) Double-click the Bluetooth icon fro the lower right of the taskbar.



   Alternatively, you may go to **Control Panel** > **Bluetooth Devices**.
3) Click [Add] to search Bluetooth devices nearby.
4) Select the check box of [My device is set up and ready to be found] when the Bluetooth scanner is ready – having battery inserted or USB cable connected, Bluetooth settings such as select Bluetooth SPP or Bluetooth HID, broadcasting enabled, authentication enabled, and PIN code specified, etc.
5) Click [Next].
6) Wait for a few seconds for the Wizard to search available Bluetooth devices nearby.

   The scanner will appear with its "serial number" as the device name. You may double-check the "Serial Number" label on the scanner to ensure connecting with the correct scanner. Select the target scanner. If the target scanner does not appear on the list, click [Search Again] to refresh the list. The scanner might enter Suspend Mode now, and you can press the trigger to have it active again (=discoverable). It will then stay active for one minute and wait for PC to establish a connection.
7) Click [Next].

Enter Setup

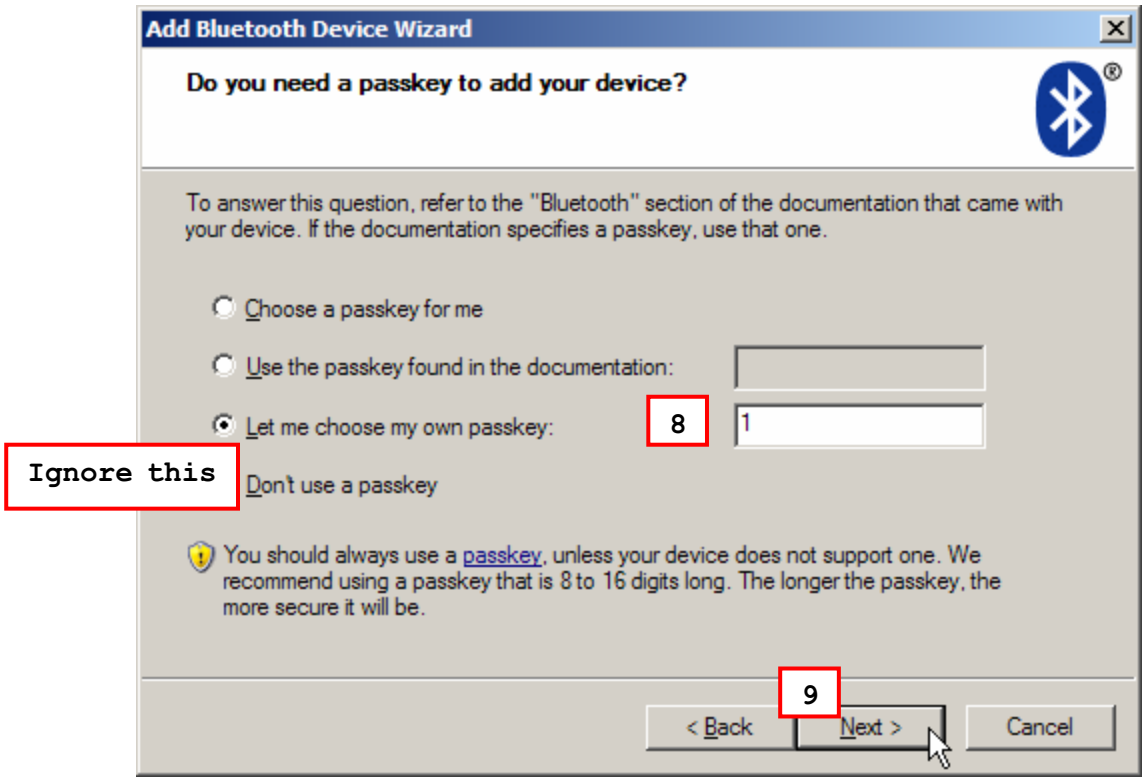

Bluetooth Devices
Devices
Options
COM Ports
Hardware
Add Bluetooth Device Wizard
Welcome to the Add Bluetooth Device Wizard
Before proceeding, refer to the "Bluetooth" section of the device documentation. Then set up your device so that your computer can find it:
- Turn it on
- Make it discoverable (visible)
- Give it a name (optional)
- Press the button on the bottom of the device (keyboards and mice only)
4
My device is set up and ready to be found
3
Add...
Add only Bluetooth devices that you trust.
5
< Back
Next >
Cancel
Add Bluetooth Device Wizard
Select the Bluetooth device that you want to add.
2256-D
New device
K510i
New device
BT-SU
New device
2284-D
New device
AF5000001
New device
AF6010688
New device
6
If you don't see the device that you want to add, make sure that it is turned on. Follow the setup instructions that came with the device, and then click Search Again.
Search Again
7
< Back
Next >
Cancel

8) Enter the passkey for authentication, which must be exactly the same as configured for the scanner.

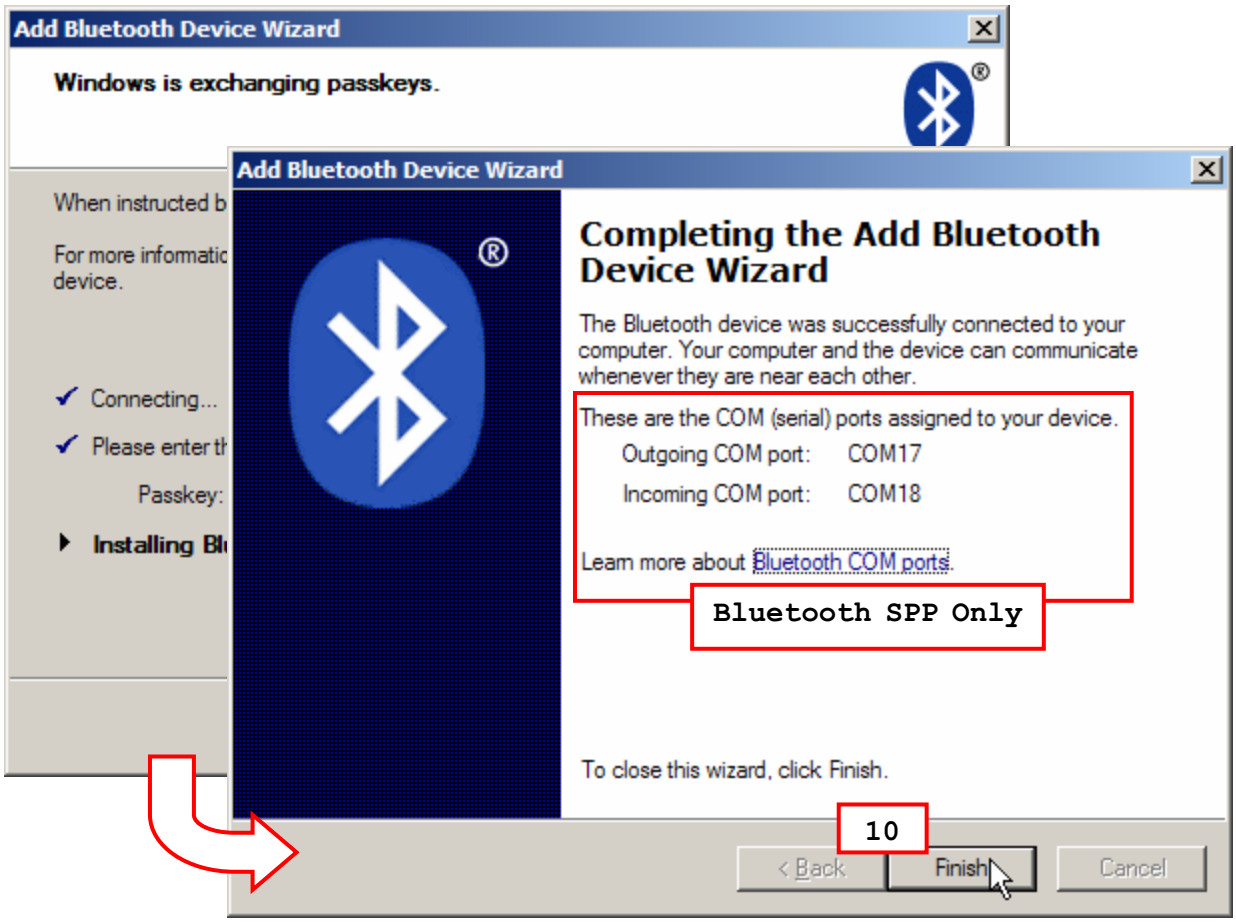
9) Click [Next].

Wait for a few seconds for Windows to exchange passkeys.

10) Click [Finish].



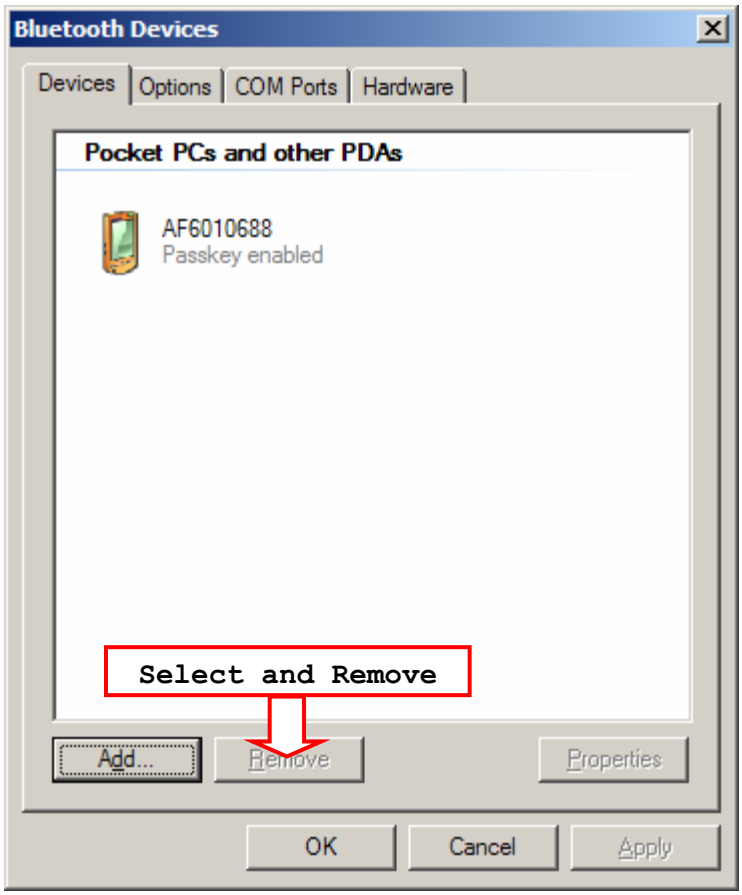
Enter Setup



11) Now the target scanner will be listed as shown below.

For Bluetooth SPP, you can have up to seven scanners connected to your computer.

It is possible for another computer to connect to one these scanners as long as it is in Suspend Mode and the authentication and PIN code settings are matching.

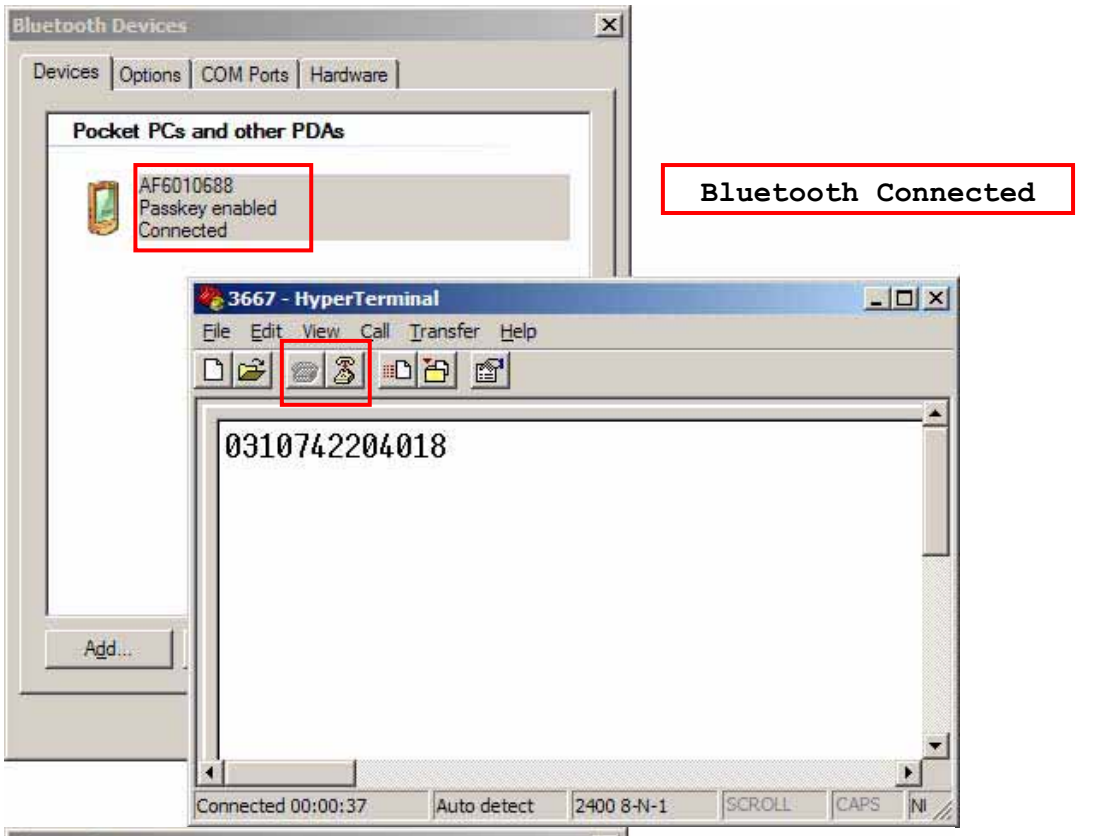


Note: When any changes are made to authentication and PIN code on the scanner side, or you want to change to use Bluetooth HID, it is suggested that you remove the scanner from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

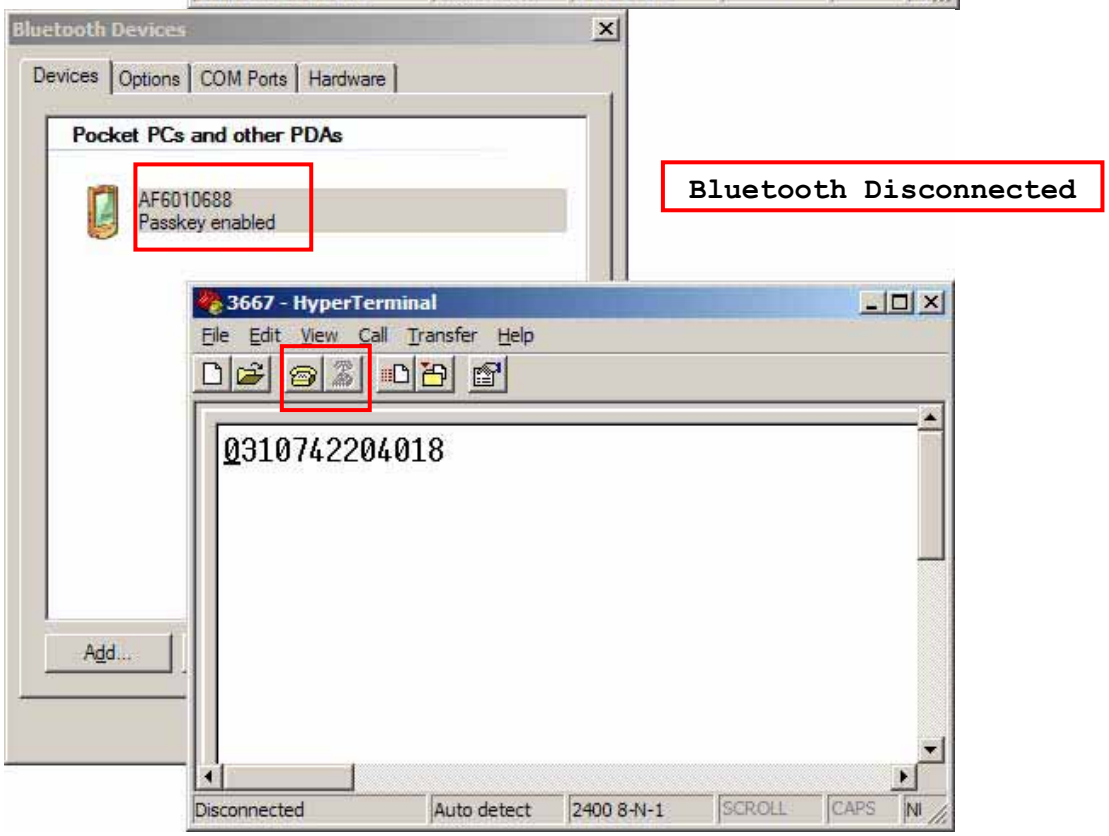
12) Run the desired application, such as HyperTerminal, on your computer.

The status of the scanner listed on the device list will be updated to "Connected", indicating the Bluetooth connection is established successfully via the outgoing COM port.

Enter Setup



Bluetooth Connected



Bluetooth Disconnected

Enter Setup

Chapter 4

CHANGING SYMBOLOGY SETTINGS

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

IN THIS CHAPTER

4.1 CODABAR

*Enable Codabar

Disable Codabar

4.1.1 START/STOP CHARACTERS SELECTION

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

* abcd/abcd

abcd/tn*e

ABCD/ABCD

ABCD/TN*E

4.1.2 START/STOP TRANSMISSION

Decide whether or not to include the start/stop characters in the data being transmitted.

Transmit Codabar Start/Stop Characters

Enter Setup

*Do Not Transmit

100440

4.1.3 CLSI CONVERSION

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

Apply CLSI Editing

100443

*Do Not Apply

100442

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

Update

4.2 CODE 25 – INDUSTRIAL 25

*Enable Industrial 25

Disable Industrial 25

4.2.1 START/STOP PATTERN SELECTION

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

4.2.2 CHECKSUM VERIFICATION

Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.

Verify Industrial 25
Checksum

Enter Setup

*Do Not Verify

100424

4.2.3 CHECKSUM TRANSMISSION

Decide whether to include the checksum in the data being transmitted.

*Transmit Industrial 25 Checksum

100427

Do Not Transmit

100426

4.2.4 CODE LENGTH QUALIFICATION

Because of the weak structure of the 2 of 5 symbologies, it is possible to make a "short scan" error. 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.

I) Read the label to enable either Max. /Min. length qualification or fixed length qualification.

*Enable Max./Min. Length (0 ~ 127) …

100601

Enable Fixed Length(s) …

100600

Update

2) Read the labels for Max. /Min or fixed length separately.

Max. Length (*127)
Or Fixed Length 1

100602

Min. Length (*4)
Or Fixed Length 2

100603

3) Read the "Decimal Value" label on page 123 for the desired length.

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

Enter Setup

4.3 CODE 25 – INTERLEAVED 25

*Enable Interleaved 25

Disable Interleaved 25

4.3.1 START/STOP PATTERN SELECTION

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

4.3.2 CHECKSUM VERIFICATION

Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.

Verify Interleaved 25
Checksum

Update

*Do Not Verify

100428

4.3.3 CHECKSUM TRANSMISSION

Decide whether to include the checksum in the data being transmitted.

*Transmit Interleaved 25 Checksum

100431

Do Not Transmit

100430

4.3.4 CODE LENGTH QUALIFICATION

Because of the weak structure of the 2 of 5 symbologies, it is possible to make a "short scan" error. 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.

I) Read the label to enable either Max. /Min. length qualification or fixed length qualification.

*Enable Max./Min. Length (0 ~ 127) …

100605

Enter Setup

Enable Fixed Length(s) …

100604

2) Read the labels for Max. /Min or fixed length separately.

Max. Length (*126)
Or Fixed Length 1

100606

Min. Length (*4)
Or Fixed Length 2

100607

3) Read the "Decimal Value" label on page 123 for the desired length.

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

Update

4.4 CODE 25 – MATRIX 25

Enable Matrix 25

100311

*Disable Matrix 25

100310

4.4.1 START/STOP PATTERN SELECTION

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

4.4.2 CHECKSUM VERIFICATION

Decide whether to verify the checksum. If the checksum is incorrect, the barcode will not be accepted.

Verify Matrix 25
Checksum

100433

Enter Setup

*Do Not Verify

100432

4.4.3 CHECKSUM TRANSMISSION

Decide whether to include the checksum in the data being transmitted.

*Transmit Matrix 25 Checksum

100435

Do Not Transmit

100434

4.4.4 CODE LENGTH QUALIFICATION

Because of the weak structure of the 2 of 5 symbologies, it is possible to make a "short scan" error. 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.

I) Read the label to enable either Max. /Min. length qualification or fixed length qualification.

*Enable Max./Min. Length (0 ~ 127) …

100609

Update

Enable Fixed Length(s) …

100608

2) Read the labels for Max. /Min or fixed length separately.

Max. Length (*127)
Or Fixed Length 1

100610

Min. Length (*4)
Or Fixed Length 2

100611

3) Read the "Decimal Value" label on page 123 for the desired length.

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

Enter Setup

4.5 CODE 39

*Enable Code 39

100301

Disable Code 39

100300

4.5.1 START/STOP TRANSMISSION

Decide whether or not to include the start/stop characters in the data being transmitted.

Transmit Code 39
Start/Stop Characters

100403

*Do Not Transmit

100402

4.5.2 CHECKSUM VERIFICATION

Decide whether or not to perform checksum verification when decoding barcodes.

- If enabled and the checksum found incorrect, the barcode will not be accepted.

Verify Code 39
Checksum

100405

*Do Not Verify

100404

Update

4.5.3 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit Code 39 Checksum

Do Not Transmit

4.5.4 STANDARD/FULL ASCII CODE 39

Decide whether or not to support Code 39 Full ASCII that includes all the alphanumeric and special characters.

Code 39 Full ASCII

*Standard Code 39

Enter Setup

4.6 CODE 93

You can only configure the scanner to read this symbology or not.

*Enable Code 93

Disable Code 93

4.7 CODE 128

You can only configure the scanner to read this symbology or not.

*Enable Code 128

Disable Code 128

Update

4.8 EAN-8

*Enable EAN-8
(No Addon)

Disable EAN-8
(No Addon)

Enable EAN-8
Addon 2

*Disable EAN-8
Addon 2

Enable EAN-8
Addon 5

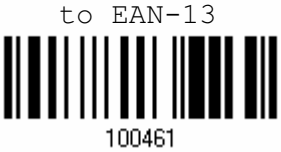
*Disable EAN-8
Addon 5

4.8.1 CONVERT TO EAN-13

Decide whether or not to expand the read EAN-8 barcode into EAN-13.

- If enabled, the next processing will follow the parameters configured for EAN-13.

Convert EAN-8
to EAN-13



Enter Setup

*Do Not Convert

100460

4.8.2 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit EAN-8 Checksum

100471

Do Not Transmit

100470

Update

4.9 EAN-13

*Enable EAN-13
(No Addon)

100333

Disable EAN-13
(No Addon)

100332

Enable EAN-13
Addon 2

100335

*Disable EAN-13
Addon 2

100334

Enable EAN-13
Addon 5

100337

*Disable EAN-13
Addon 5

100336

4.9.1 ISBN CONVERSION

Decide whether or not to convert the EAN-13 barcode, starting with 978 and 979, to ISBN.

Convert EAN-13 to ISBN

100463

Enter Setup

*Do Not Convert

100462

4.9.2 ISSN CONVERSION

Decide whether or not to convert the EAN-13 barcode, starting with 977 to ISSN.

Convert EAN-13 to ISSN

100465

*Do Not Convert

100464

4.9.3 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit EAN-13 Checksum

100473

Do Not Transmit

100472

Update

4.10 EAN-128

Enable EAN-128

*Disable EAN-128

4.10.1 CODE ID TRANSMISSION

Decide whether or not to include the Code ID ("]C1") in the data being transmitted.

Transmit EAN-128 Code ID

*Do Not Transmit

4.10.2 FIELD SEPARATOR (GS CHARACTER)

Decide whether or not to apply a field separator (to convert the FNC1 control character to human readable character).

Enable Field Separator …

1) Read the label above to enable field separator.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

Enter Setup

Note: EAN-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 EAN-128 barcodes.

4.11 ISBT 128

You can only configure the scanner to read this symbology or not.

Enable ISBT 128

*Disable ISBT 128

Update

4.12 MSI

Enable MSI

*Disable MSI

4.12.1 CHECKSUM VERIFICATION

Select one of the three checksum calculations to perform checksum verification when decoding barcodes.

- If enabled and the checksum found incorrect, the barcode will not be accepted.

*Single Modulo 10

Double Modulo 10

Modulo 10 & 11

4.12.2 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Last Digit Not Transmitted

Enter Setup

Both Digits Transmitted

100453

Both Digits Not Transmitted

100454

4.12.3 CODE LENGTH QUALIFICATION

Because of the weak structure of the symbology, it is possible to make a "short scan" error. 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 label to enable either Max. /Min. length qualification or fixed length qualification.

*Enable Max./Min. Length (0 ~ 127) …

100613

Enable Fixed Length(s) …

100612

2) Read the labels for Max. /Min or fixed length separately.

Max. Length (*127) Or Fixed Length 1

100614

Min. Length (*4) Or Fixed Length 2

100615

Update

3) Read the "Decimal Value" label on page 123 for the desired length.
4) Read the "Validate" label on the same page to complete this setting.

Enter Setup

4.13 FRENCH PHARMACODE

Enable French Pharmacode

100305

*Disable French Pharmacode

100304

4.13.1 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit French Pharmacode Checksum

100411

Do Not Transmit

100410

Update

4.14 ITALIAN PHARMACODE

Enable Italian Pharmacode

100303

*Disable Italian Pharmacode

100302

4.14.1 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit Italian Pharmacode Checksum

100409

Do Not Transmit

100408

Enter Setup

4.15 PLESSEY

Enable Plessey

100347

*Disable Plessey

100346

4.15.1 CONVERT TO UK PLESSEY

Decide whether or not to change each occurrence of the character 'A' to character 'X' in the decoded data.

Convert to UK Plessey

100447

*Do Not Convert

100446

4.15.2 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum characters (two digits) in the data being transmitted.

*Transmit Plessey Checksum

100445

Do Not Transmit

100444

Update

4.16 RSS FAMILY

4.16.1 CODE ID SELECTION

Select a desired Code ID to use – RSS Code ID "]e0" or EAN-128 Code ID "]C1".

"]C1" for RSS Code ID

"]e0" for RSS Code ID (Default)

4.16.2 RSS-14

Enable RSS-14 & RSS Expanded

*Disable RSS-14 & RSS Expanded

CODE ID TRANSMISSION

Decide whether or not to include the Code ID in the data being transmitted.

*Transmit RSS-14 Code ID

Do Not Transmit

Enter Setup

APPLICATION ID TRANSMISSION

Decide whether or not to include the Application ID ("01") in the data being transmitted.

*Transmit RSS-14 Application ID

Do Not Transmit

CHECKSUM TRANSMISSION

Decide whether or not to include the check digit in the data being transmitted.

*Transmit RSS-14 Checksum

Do Not Transmit

4.16.3 RSS EXPANDED

Enable RSS-14 & RSS Expanded

*Disable RSS-14 & RSS Expanded

CODE ID TRANSMISSION

Decide whether or not to include the Code ID in the data being transmitted.

Update

*Transmit RSS Expanded Code ID

100527

Do Not Transmit

100526

4.16.4 RSS LIMITED

Enable RSS Limited

100351

*Disable RSS Limited

100350

CODE ID TRANSMISSION

Decide whether or not to include the Code ID in the data being transmitted.

*Transmit RSS Limited Code ID

100525

Do Not Transmit

100524

APPLICATION ID TRANSMISSION

Decide whether or not to include the Application ID ("01") in the data being transmitted.

Enter Setup

*Transmit RSS Limited Application ID

100531

Do Not Transmit

100530

CHECKSUM TRANSMISSION

Decide whether or not to include the check digit in the data being transmitted.

*Transmit RSS Limited Checksum

100483

Do Not Transmit

100482

Update

4.17 TELEPEN

Enable Telepen

*Disable Telepen

4.17.1 TELEPEN OUTPUT – FULL ASCII/NUMERIC

Decide whether or not 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

4.18 UPC-A

*Enable UPC-A
(No Addon)

100339

Disable UPC-A
(No Addon)

100338

Enable UPC-A
Addon 2

100341

*Disable UPC-A
Addon 2

100340

Enable UPC-A
Addon 5

100343

*Disable UPC-A
Addon 5

100342

4.18.1 CONVERT TO EAN-13

Decide whether or not to expand the read UPC-A barcode into EAN-13.

- If enabled, the next processing will follow the parameters configured for EAN-13.

Convert UPC-A
to EAN-13

100459

Update

*Do Not Convert

100458

4.18.2 SYSTEM NUMBER TRANSMISSION

Decide whether or not to include the system number in the data being transmitted.

*Transmit UPC-A System Number

100477

Do Not Transmit

100476

4.18.3 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

*Transmit UPC-A Checksum

100469

Do Not Transmit

100468

Enter Setup

4.19 UPC-E

*Enable UPC-E
(No Addon)

100321

Disable UPC-E
(No Addon)

100320

Enable UPC-E
Addon 2

100323

*Disable UPC-E
Addon 2

100322

Enable UPC-E
Addon 5

100325

*Disable UPC-E
Addon 5

100324

4.19.1 SYSTEM NUMBER SELECTION

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

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

System Number 0 & 1

100479

Update

* System Number 0 Only

100478

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.

4.19.2 CONVERT TO UPC-A

Decide whether or not to expand the read UPC-E barcode into UPC-A.

- If enable, the next processing will follow the parameters configured for UPC-A.

Convert UPC-E to UPC-A

100457

*Do Not Convert

100456

4.19.3 SYSTEM NUMBER TRANSMISSION

Decide whether or not to include the system number in the data being transmitted.

Transmit UPC-E System Number

100475

*Do Not Transmit

100474

4.19.4 CHECKSUM TRANSMISSION

Decide whether or not to include the checksum character in the data being transmitted.

Enter Setup

*Transmit UPC-E Checksum

Do Not Transmit

Update

Enter Setup

Chapter 5

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.
4) Add Prefix Code and Suffix Code before transmission: [Prefix Code][Processed Data][Suffix Code]

IN THIS CHAPTER

5.1 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

101202

Upper Case

101203

Lower Case

101204

Update

5.2 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.

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.

5.2.1 SELECT A SET FOR CHARACTER SUBSTITUION

Configure Set 1

101232

Configure Set 2

101233

Configure Set 3

101234

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

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

2) Read the "Hexadecimal Value" label on page 124 for the desired character string.

   For example, have the scanner read (1) "3", "0", "2" and "D" to replace the character [0] with a dash [-] for Set 1, and (2) "3", "0", "2", "D", "3" and "0"to replace the character [0] with a dash [- 0] for Set 2.

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

Enter Setup

5.2.2 SYMBOLOGIES FOR CHARACTER SUBSTITUTION (ALL 3 SETS)

By default character substitution will be performed on all symbologies. If the character substitution is not desired with one or more symbologies, read the "Ignore" label for each undesired symbologies and all the three sets will not be applied to them.

CODABAR

*Apply to Codabar

101253

Do Not Apply

101252

CODE 39

*Apply to Code 39

101241

Do Not Apply

101240

CODE 93

*Apply to Code 93

101255

Do Not Apply

101254

CODE 128

*Apply to Code 128

101257

Do Not Apply

101256

EAN-128

*Apply to EAN-128

101259

Do Not Apply

101258

Update

EAN-8 (NO ADDON)

*Apply to EAN-8

101267

Do Not Apply

101266

EAN-8 ADDON 2

*Apply to EAN-8 Addon 2

101269

Do Not Apply

101268

EAN-8 ADDON 5

*Apply to EAN-8 Addon 5

101271

Do Not Apply

101270

EAN-13 (NO ADDON)

*Apply to EAN-13

101273

Do Not Apply

101272

EAN-13 ADDON 2

*Apply to EAN-13 Addon 2

101275

Do Not Apply

101274

EAN-13 ADDON 5

*Apply to EAN-13 Addon 5

101277

Do Not Apply

101276

Enter Setup

FRENCH PHARMACODE

*Apply to French Pharmacode

Do Not Apply

ITALIAN PHARMACODE

*Apply to Italian Pharmacode

Do Not Apply

INDUSTRIAL 25

*Apply to Industrial 25

Do Not Apply

INTERLEAVED 25

*Apply to Interleaved 25

Do Not Apply

MATRIX 25

*Apply to Matrix 25

Do Not Apply

MSI

*Apply to MSI

Do Not Apply

Update

PLESSEY

*Apply to Plessey

Do Not Apply

RSS FAMILY

*Apply to RSS Family

Do Not Apply

TELEPEN

*Apply to Telepen

Do Not Apply

UPC-A (NO ADDON)

*Apply to UPC-A

Do Not Apply

UPC-A ADDON 2

*Apply to UPC-A Addon 2

Do Not Apply

UPC-A ADDON 5

*Apply to UPC-A Addon 5

Do Not Apply

Enter Setup

UPC-E (NO ADDON)

*Apply to UPC-E

101261

Do Not Apply

101260

UPC-E ADDON 2

*Apply to UPC-E Addon 2

101263

Do Not Apply

101262

UPC-E ADDON 5

*Apply to UPC-E Addon 5

101265

Do Not Apply

101264

Update

5.3 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 – each requires two hexadecimal values.	N/A
Normal Key	Up to 8 character strings are allowed – each requires two hexadecimal values. ▸ Default setting	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt ▸ Add Break For example, read labels for [Add Shift], [A], [Add Shift], and [B].

Configure Prefix

Configure Suffix

1) Read the label above to apply prefix code or suffix code separately. (Max. 8 characters each)

2) Read the "Hexadecimal Value" label on page 124 for the desired character string. For example, read "2" and "B" for the scanner to prefix or suffix the character [+].

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

Enter Setup

5.4 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	Up to 1 scan code values are allowed – each requires two hexadecimal values.	N/A
Normal Key	Up to 2 character strings are allowed – each requires two hexadecimal values. ▸ Default setting	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt ▸ Add Break For example, read labels for [Add Shift] and the character [A].

Note: "]C1" is the Code ID of EAN-128 barcodes; "]e0" is the default Code ID of RSS barcodes.

5.4.1 SELECT PRE-DEFINED CODE ID

Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Italian Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S

Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
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	---	---	---	---

Apply Code ID Set 1

Apply Code ID Set 2

Apply Code ID Set 3

Apply Code ID Set 4

Apply Code ID Set 5

5.4.2 CHANGE CODE ID

1) Read the label of a specific symbology below to change its code ID.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string. For example, read "4" and "4" for applying the character [D] for Code ID.
3) Read the "Validate" label on the same page to complete this setting.

Enter Setup

Configure Code ID for Codabar

101456

Configure Code ID for Code 39

101450

Configure Code ID for Code 93

101457

Configure Code ID for Code 128

101458

Configure Code ID for EAN-8

101460

Configure Code ID for EAN-13

101461

Configure Code ID for French Pharmacode

101452

Configure Code ID for Italian Pharmacode

101451

Configure Code ID for Industrial 25

101453

Configure Code ID for Interleaved 25

101454

Update

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

5.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID Settings

Enter Setup

5.5 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.

CODABAR

Apply to Codabar

101413

*Do Not Apply

101412

CODE 39

Apply to Code 39

101401

*Do Not Apply

101400

CODE 93

Apply to Code 93

101415

*Do Not Apply

101414

CODE 128

Apply to Code 128

101417

*Do Not Apply

101416

EAN-128 & RSS

Apply to EAN-128 & RSS

101419

*Do Not Apply

101418

EAN-8

Apply to EAN-8

101423

*Do Not Apply

101422

Update

EAN-13

Apply to EAN-13

101425

*Do Not Apply

101424

FRENCH PHARMACODE

Apply to French Pharmacode

101405

*Do Not Apply

101404

ITALIAN PHARMACODE

Apply to Italian Pharmacode

101403

*Do Not Apply

101402

INDUSTRIAL 25

Apply to Industrial 25

101407

*Do Not Apply

101406

INTERLEAVED 25

Apply to Interleaved 25

101409

*Do Not Apply

101408

MATRIX 25

Apply to Matrix 25

101411

*Do Not Apply

101410

MSI

Apply to MSI

101429

*Do Not Apply

101428

Enter Setup

PLESSEY

Apply to Plessey

101431

*Do Not Apply

101430

TELEPEN

Apply to Telepen

101433

*Do Not Apply

101432

UPC-A

Apply to UPC-A

101427

*Do Not Apply

101426

UPC-E

Apply to UPC-E

101421

*Do Not Apply

101420

Update

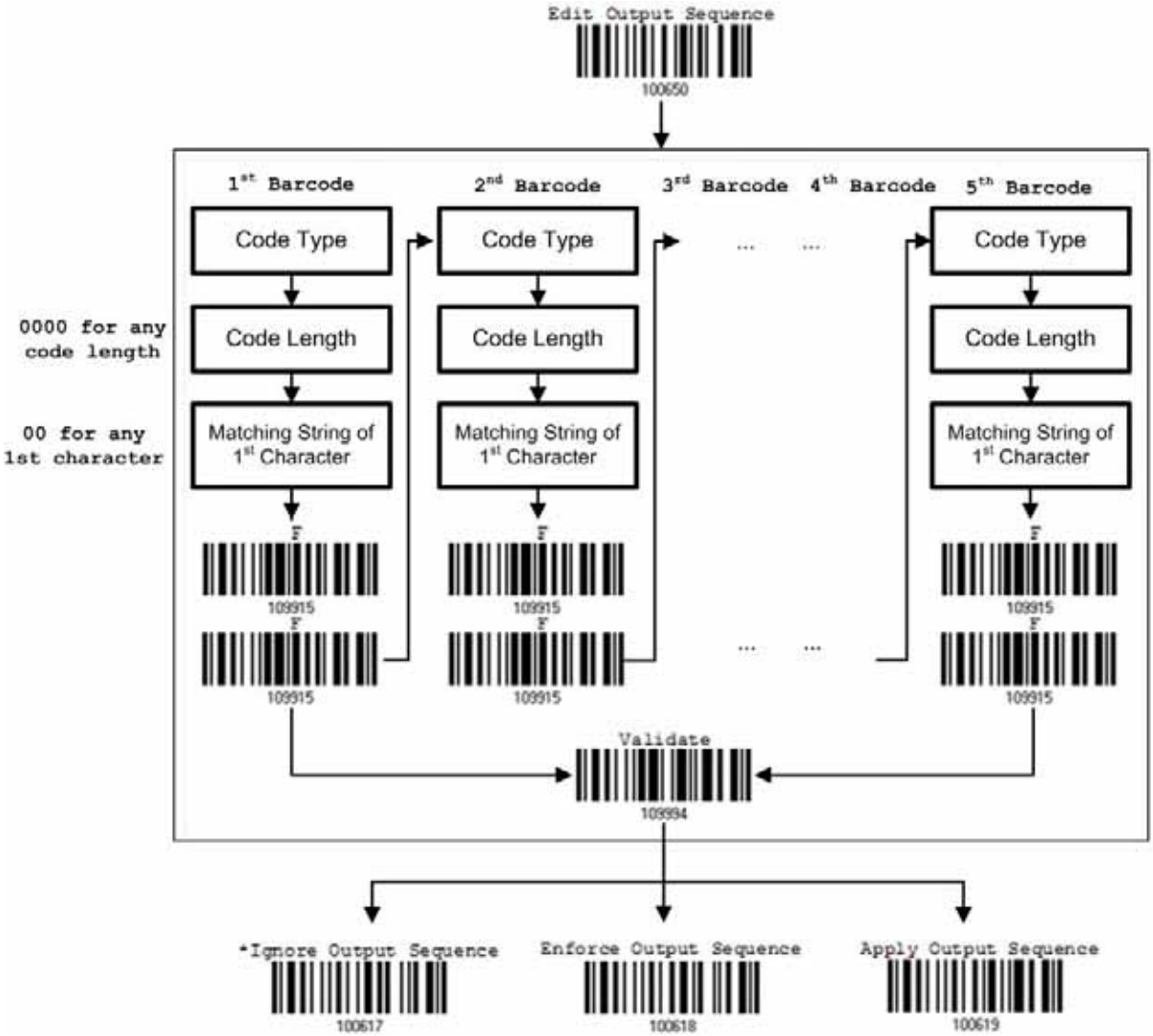
5.6 MULTI-BARCODE EDITOR

The Multi-Barcode Editor allows you to decide the output sequence of a concatenation of barcodes.

Note: Multi-Barcode Editor cannot work with "Multi-Barcode Mode".

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

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



Enter Setup

5.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence

100650

1) Read the label above to start editing a concatenation of barcodes.

2) Code Type setting – read the "Hexadecimal Value" label on page 124 for Code Type of the (first) barcode. For example, read "4" and "1" for Code 39.

Code Type	Symbology	Code Type	Symbology
41 (A)	Code 39	4F (O)	EAN-8 with Addon 5
42 (B)	Italian Pharmacode	50 (P)	EAN-13
43 (C)	French Pharmacode)	51 (Q)	EAN-13 with Addon 2
44 (D)	Industrial 25	52 (R)	EAN-13 with Addon 5
45 (E)	Interleaved 25	53 (S)	MSI
46 (F)	Matrix 25	54 (T)	Plessey
47 (G)	Codabar (NW7)	55 (U)	EAN-128
48 (H)	Code 93	56 (V)	UPC-A
49 (I)	Code 128	57 (W)	UPC-A with Addon 2
4A (J)	UPC-E0 / UPC-E1	58 (X)	UPC-A with Addon 5
4B (K)	UPC-E with Addon 2		
4C (L)	UPC-E with Addon 5	5A (Z)	Telepen
4D (M)	EAN-8	5B ([ )	RSS-14
4E (N)	EAN-8 with Addon 2		

3) Code Length setting – read the "Decimal Value" label on page 123 for the 4-digit total length of the (first) barcode. For example, read 0065 for 65 characters or read "0000" for any length.

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

4) Matching Character setting – read the "Hexadecimal Value" label on page 124 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" label on page 124 ("FF") to complete the setting of each barcode.

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

Update

5.6.2 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.

*Ignore Output Sequence

Enforce Output Sequence

Apply Output Sequence

Enter Setup

Chapter 6

APPLYING FORMATS FOR DATA EDITING

The scanner allows advanced data editing by applying user-configured editing formats. Data is 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.

IN THIS CHAPTER

6.1 FORMAT SELECTION

6.1.1 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 Format 1

101301

*Disable Format 1

101300

EDITING FORMAT 2

Enable Format 2

101303

*Disable Format 2

101302

EDITING FORMAT 3

Enable Format 3

101305

*Disable Format 3

101304

End Programming Format

EDITING FORMAT 4

Enable Format 4

101307

*Disable Format 4

101306

EDITING FORMAT 5

Enable Format 5

101309

*Disable Format 5

101308

6.1.2 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

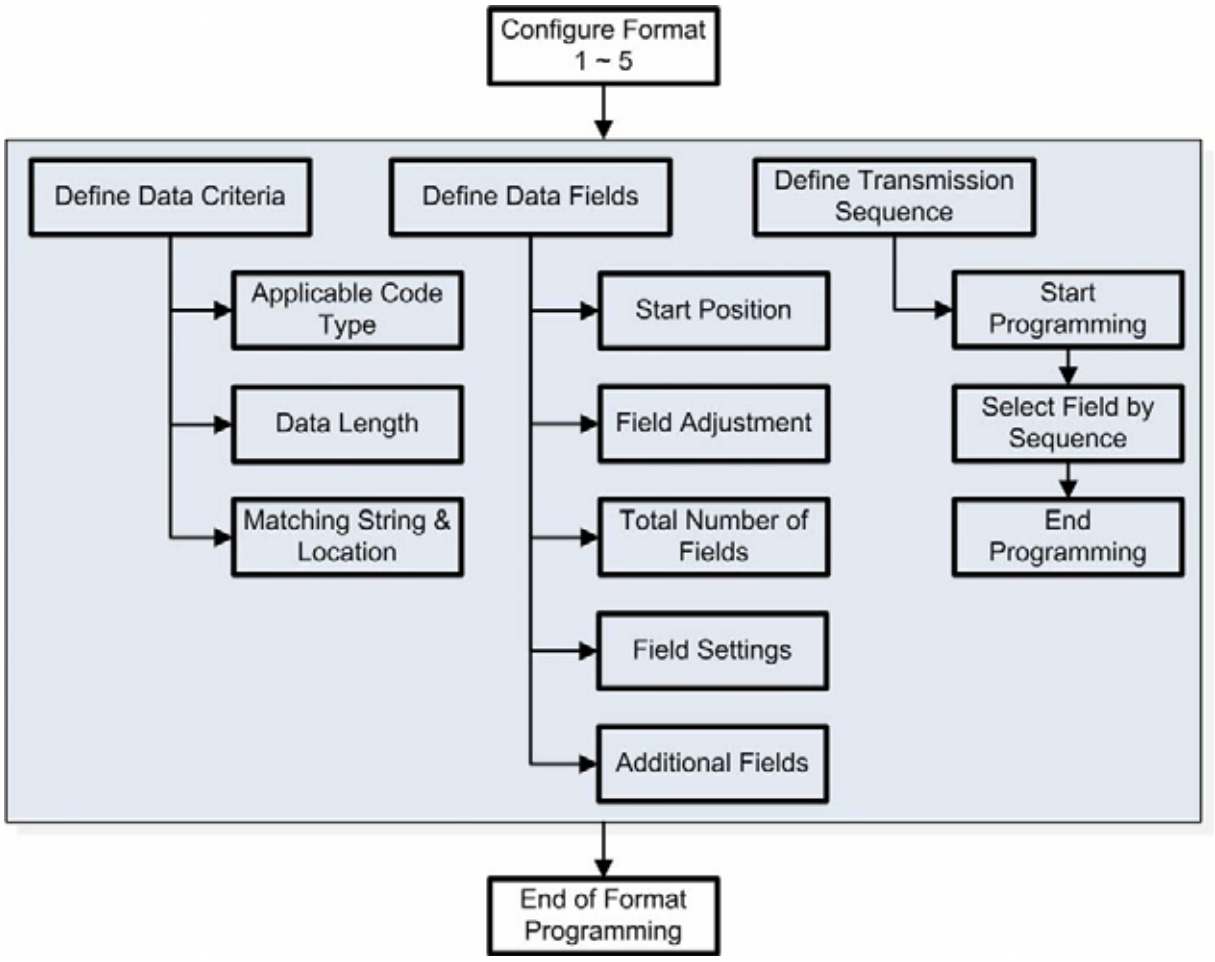
101201

*No

101200

Update

6.2 EDITING FORMAT



6.2.1 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, total number of fields, field settings (field-dividing rule), additional fields, and field transmission sequence.

- Up to five different formats can be specified.

Configure Format 1

109981

End Programming Format

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 label for parameters other than those pertaining to the editing format, it will automatically abort the programming process.

END PROGRAMMING FORMAT

After having configured all the desired parameters, you must have the scanner read the "End Programming Format" label, which can be located at the bottom of every even page in this chapter.

End Programming Format

6.2.2 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

Update

Total Number of Fields	1
Field Setting – field-dividing rule	Not configured.
Additional Fields	None
Field Transmission Sequence	F1

Restore Default Format

109990

6.2.3 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.

APPLICABLE CODE TYPE

By default, barcodes of all the supported symbologies will be processed by any editing format, if having been configured and enabled.

*Apply to All Code Types

109992

Clear All

109991

Codabar Applicable

101513

Code 39 Applicable

101501

Code 93 Applicable

101515

Code 128 Applicable

101517

EAN-8 Applicable

101527

EAN-8 Addon 2 Applicable

101529

End Programming Format

EAN-8 Addon 5 Applicable

101531

EAN-13 Applicable

101533

EAN-13 Addon 2 Applicable

101535

EAN-13 Addon 5 Applicable

101537

EAN-128 & RSS Applicable

101519

French Pharmacode Applicable

101505

Italian Pharmacode Applicable

101503

Industrial 25 Applicable

101507

Interleaved 25 Applicable

101509

Matrix 25 Applicable

101511

MSI Applicable

101545

Plessey Applicable

101547

Telepen Applicable

101549

UPC-A Applicable

101539

UPC-A Addon 2 Applicable

101541

UPC-A Addon 5 Applicable

101543

Update

UPC-E Applicable

101521

UPC-E Addon 2 Applicable

101523

UPC-E Addon 5 Applicable

101525

DATA LENGTH

By default, barcodes of any length (character count) are eligible for data editing.

- You may specify a value from 0 to 255.
- When zero is given to both, the scanner will not perform the length qualification.

1) Read the labels for Max. /Min length separately.

Max. Length

101561

Min. Length

101560

2) Read the "Decimal Value" label on page 123 for the desired length.
3) Read the "Validate" label on the same page to complete this setting.

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 255 to indicate where the matching string starts in the barcode data.

End Programming Format

1) Read the label to specify a matching string.

Matching String …

101562

2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

4) Read the label to specify the location of the matching string.

Location of
Matching String …

101563

5) Read the "Decimal Value" label on page 123 for the desired location.
6) Read the "Validate" label on the same page to complete this setting.

6.2.4 DIVIDE DATA INTO FIELDS

START POSITION

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

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

*From Head

101600

From Tail

101601

FIELD ADJUSTMENT

You may apply equal length to all fields, if necessary. It will add "Space" (0x20) to field when data is found shorter than specified.

Update

*No Adjustment

101602

Set Length to adjust fields … (*0)

101603

1) Read the label above to adjust field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

TOTAL NUMBER OF FIELDS

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

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

*One Field

101590

Two Fields

101591

Three Fields

101592

Four Fields

101593

Five Fields

101594

End Programming Format

Six Fields

101595

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

6.2.5 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 label to divide field by a specified terminating string.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

Select Field Separator to Divide Field 1 …

101567

*Include Separator

101565

Discard Separator

101564

1) Read the label to divide field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

Update

Divide Field 1 by Length …

101566

FIELD 2 SETTING

1) Read the label to divide field by a specified terminating string.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

Select Field Separator to Divide Field 2 …

101571

*Include Separator

101569

Discard Separator

101568

1) Read the label to divide field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

Divide Field 2 by Length …

101570

FIELD 3 SETTING

1) Read the label to divide field by a specified terminating string.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

Select Field Separator to Divide Field 3 …

101575

End Programming Format

*Include Separator

Discard Separator

1) Read the label to divide field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

Divide Field 3 by Length …

FIELD 4 SETTING

1) Read the label to divide field by a specified terminating string.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.

Select Field Separator
to Divide Field 4 …

*Include Separator

Discard Separator

1) Read the label to divide field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

Divide Field 4 by Length …

FIELD 5 SETTING

1) Read the label to divide field by a specified terminating string.
2) Read the "Hexadecimal Value" label on page 124 for the desired character string.

Update

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

Select Field Separator to Divide Field 5 …

101583

*Include Separator

101581

Discard Separator

101580

1) Read the label to divide field by length.
2) Read the "Decimal Value" label on page 123 for the desired field length.
3) Read the "Validate" label on the same page to complete this setting.

Divide Field 5 by Length …

101582

ADDITIONAL FIELDS

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

1) Read the label to specify an additional field, one at a time.
2) Read the "Hexadecimal Value" label on page 124 for the desired additional field.
3) Read the "Validate" label on the same page to complete this setting.

Additional Field 1 …

101584

Additional Field 2 …

101585

End Programming Format

Additional Field 3 …

Additional Field 4 …

Additional Field 5 …

- 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 – each requires two hexadecimal values.	N/A
Normal Key	Up to 4 character strings are allowed – each requires two hexadecimal values. ▸ Default setting	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt ▸ Add Break For example, read labels for [Add Shift], [A], [Add Shift], and [B].

6.2.6 FIELD 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.

I) Read the "Start" label to begin with programming the field transmission sequence.

Start (Programming) …

Update

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

Field 1

109901

Field 2

109902

Field 3

109903

Field 4

109904

Field 5

109905

Field 6

109906

Additional Field 1

109907

Additional Field 2

109908

Additional Field 3

109909

Additional Field 4

109910

Additional Field 5

109911

3) Read the "End" label on the same page to complete this setting.

End

109994

End Programming Format

6.3 PROGRAMMING EXAMPLES

6.3.1 EXAMPLE I

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

The editing format should be configured as follows:

- Total Number of Fields – 3.
- Field 1 Setting – Divide Field by Field Length, and set length to 9.
  Field 1 data starts from the 1st character to the 9th character.
- Field 2 Setting – Divide Field by Field Length, and set length to 10.
  Field 2 data starts from the 10th character to the 19th character.
- Field Transmission Sequence – F2.

6.3.2 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 "-" character is the item number.
- After the "-" character is the quantity information.

Data will be transmitted like this:

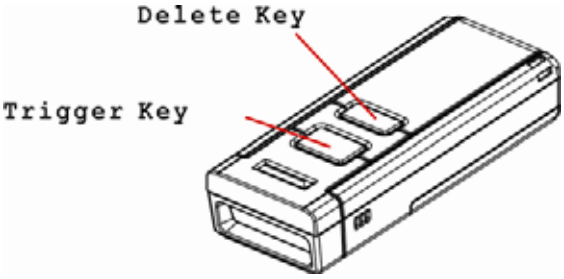
- The item number goes first, then a TAB character, followed by the date code, then another TAB character, and finally the quantity information.

The editing format should be configured as follows:

- Total Number of Fields – 3.
- Field 1 Setting – Divide Field by Field Length, and set length to 6.
  Field 1 data starts from the 1st character to the 6th character.
- Field 2 Setting – Divide Field by Field Terminating String, and set the character string to [-].
  Field 2 data starts from the 7th character until the [-] character is met.
- Additional Field 1 created and set to one [TAB] character.
- Field Transmission Sequence – F2 A1 F1 A1 F3.

End Programming Format

SPECIFICATIONS



Optical Characteristics	1660
Scan Engine	Non-contact type
Optical Sensor	CCD, 2500 pixels
Light Source	Red LED
Wavelength	625 nm

RF Characteristics	
Bluetooth Module	Bluetooth Specification Version 2.0, Class 3
Coverage (line-of-sight)	Up to 3 meters
Profiles Supported	Serial Port Profile (SPP), Human Interface Device Profile (HID)
Connected Devices	1 for Bluetooth HID and up to 7 scanners for Bluetooth SPP

Physical Characteristics	
Color	Dark grey
Switch	Push-button switch, plus [Delete] key
Dimensions	95 mm (L) 35 mm (W) 20 mm (H)
Weight	Approx. 50 g

Electrical Characteristics	
Battery	2 AAA Alkaline batteries

Environmental Characteristics

Temperature	Operating	0 °C to 50 °C
	Storage	-20 °C to 60 °C
Humidity (Non-condensing)	Operating	10% to 90%
	Storage	5% to 95%
Electrostatic Discharge		± 15 kV air discharge, ± 8 kV direct discharge
EMC Regulation		FCC, CE, C-Tick, MIC, BSMI TELEC, NCC, RSS-210

Programming Support

Configuration via Setup Labels	Use setup labels or host serial commands.
Software	Windows-based ScanMaster
Firmware upgradeable	Download firmware updates via the download utility.

Enter Setup

Appendix I

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

ENTERING PIN CODE FOR BLUETOOTH CONNECTION

By default, the Bluetooth PIN code is set to "0000". Maximum 16 characters are allowed.

Note: When using Bluetooth HID, some driver of Bluetooth dongle may not support pre-defined PIN code for authentication. In this case, make sure you disable authentication before pairing. The host PIN code will be displayed on the computer screen. Have the scanner read the setup barcode "Enter PIN Code in Decimal" to input the matching PIN code quickly.

Enter PIN Code in Hexadecimal …

100150

Enter PIN Code in Decimal …

100151

1) Read one of the labels above to specify the PIN code, in decimal or hexadecimal.
2) Read the "Decimal Value" label on page 123 or the "Hexadecimal Value" label on page 124 for the desired digits or character string.
3) Read the "Validate" label on the same page to complete this setting.

Update

Abort

Enter Setup

Appendix II

KEYBOARD WEDGE TABLE & ASCII TABLE

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*/Send/ENTER*: ENTER key on the numeric keypad.

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 Left Alt

Add Right Ctrl

Add Right Alt

Enter Setup

USER-DEFINED SCAN CODE

1) Read the "Set Scan Code" label to define new scan code.

Set Scan Code

2) Read the "Hexadecimal Value" label on page 124 for the desired character string.
3) Read the "Validate" label on the same page to complete this setting.
4) Read the "Confirm" label to confirm the action.

Confirm

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

Enter Setup

Appendix III

HOST SERIAL COMMANDS

SERIAL COMMANDS

#@NNNNNN<CR>

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

List Page 3

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

#@----<CR>

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

#@....<CR>

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

#@////<CR>

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

#@TRIGOFF<CR>

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

#@TRIGON<CR>

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

EXAMPLE

Send the serial commands via RS-232 interface or Bluetooth SPP. For example, run HyperTerminal on the host computer.

- 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>

Enter Setup

Appendix IV

UPGRADING FIRMWARE

You can only upgrade firmware of one Bluetooth scanner at a time. For example, you must turn off each of the rest 1660 scanner when there is more than one scanner connected to your computer via a Bluetooth dongle.

Note: In case it fails downloading due to low battery, make sure the targe scanner is loaded with a fully charged battery.

1) Connect the Bluetooth dongle to your computer via the USB port.

2) Refer to 3.2 Connecting via Bluetooth Dongle for the target scanner to establish a connection with your computer via the dongle.

   Read the following labels in sequence to configure the scanner to use Bluetooth Serial Port as output interface.

Enter Setup

Activate Bluetooth SPP
(and read labels for PIN code …)

100003

Update

109999

3) Read the following labels in sequence for the scanner to enter the download mode.

   The scanner will respond with beeps to indicate it is ready for downloading.

Update

Enter Setup

Download

109997

4) Run the download utility "ProLoad.exe" or "Download.exe" on your computer.

   (Download.exe requires version 2.3 or later!)

   Open the firmware update "*.shx", and select the correct COM port.

   - Baud rate – 115,200 bps
   - Data bit – 8
   - Parity – None
   - Flow control – None

5) The scanner will automatically restart itself when upgrading firmware is completed successfully.

Enter Setup