

# CipherLab User Guide

1560/1562 Barcode Scanner  
3656 CRADLE

Setup barcodes included.

Version 1.21



Copyright © 2009~2017 CIPHERLAB CO., LTD.  
All rights reserved

The software contains proprietary information of CIPHERLAB CO., LTD.; it is provided under a license agreement containing restrictions on use and disclosure and is also protected by copyright law. Reverse engineering of the software is prohibited.

Due to continued product development this information may change without notice. The information and intellectual property contained herein is confidential between CIPHERLAB and the client and remains the exclusive property of CIPHERLAB CO., LTD. If you find any problems in the documentation, please report them to us in writing. CIPHERLAB does not warrant that this document is error-free.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of CIPHERLAB CO., LTD.

For product consultancy and technical support, please contact your local sales representative. Also, you may visit our web site for more information.

The CipherLab logo is a registered trademark of CIPHERLAB CO., LTD.

All brand, product and service, and trademark names are the property of their registered owners.

The editorial use of these names is for identification as well as to the benefit of the owners, with no intention of infringement.

**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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Radiation Exposure Statement:**

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

## FOR CANADA

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of Industry Canada. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

## FOR EUROPE

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- ▶ - EN 60950-1: 2006+A11:2009+A1:2010+A12:2011+A2:2013

Safety of Information Technology Equipment

- ▶ - EN 301 489-1 V2.1.1: 2016

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

- ▶ - EN 301 489-3 V2.1.0: 2016

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz

- ▶ - EN 301 489-17 V3.1.1: 2016

ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

- ▶ - EN 300 328 V2.1.1: 2016

Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

## FOR HAND-HELD PRODUCT WITH RF FUNCTIONS

The 1560/1562 unit (FCC ID: Q3N-1560) complies with FCC radiation exposure limits set forth for uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. The unit has very low level of RF energy that it is deemed to comply without testing of specific absorption ratio (SAR).

The 3656 CRADLE CRADLE unit (FCC ID: Q3N-3656CRADLE) 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 the host wirelessly, please keep the minimum distance 20 cm between machine & your body.

## FOR PRODUCT WITH LASER



## CAUTION

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

### SAFETY PRECAUTIONS

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

### CARE & MAINTENANCE

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

## RELEASE NOTES

---

Version	Date	Notes
---------	------	-------

---

- |      |               |  |
|------|---------------|--|
| 1.21 | Jul. 13, 2017 | <ul style="list-style-type: none"> <li>▶ Modified: <b>2.3.1 Activate BT SPP Master Mode</b> – settings as a single 1D barcode (SeTcOn) for connecting to a target device added</li> <li>▶ Modified: <b>3.1.1 Connect to 3656 CRADLE</b> – settings as a single 1D barcode (SeTcOn) for connecting to a target device added</li> <li>▶ New: <b>4.2.5/4.3.5/4.4.5</b> – Code 25 Security Level (1560P Only)</li> <li>▶ Modified: <b>4.21.2</b> – setting barcodes of Transmit and Do Not Transmit exchanged</li> </ul>   |
| 1.20 | Mar. 15, 2017 | <ul style="list-style-type: none"> <li>▶ Modified: <b>Symbology Supported</b> – Code 11, Trioptic Code 39 added</li> <li>▶ Modified: <b>2.1.6</b> – set “By Character” to default</li> <li>▶ Modified: <b>2.1.7</b> – set “Use Trigger Key to Show or Hide Keypad” to default</li> <li>▶ Modified: <b>2.1.8</b> – set “Fast” transmit speed to default</li> <li>▶ New: <b>2.1.10 BT HID Auto-Reconnection (1560P Only)</b></li> <li>▶ Modified: <b>2.6.5</b> – set “By Character” to default</li> <li>▶ Modified: <b>3.2.4</b> – set “Enable” (simple pairing) to default</li> <li>▶ Modified: <b>4.5.5</b> – set “Normal” (Code 39 security level) to default</li> <li>▶ New: <b>4.6 Trioptic Code 39</b></li> <li>▶ Modified: <b>4.8.1</b> – set “Normal” (Code 128 security level) to default</li> <li>▶ Modified: <b>4.10.4</b> – set “Normal” (EAN-13 security level) to default</li> <li>▶ New: <b>4.17.8 Security Level (GS1 DataBar)</b></li> <li>▶ New: <b>4.21 Code 11</b></li> <li>▶ Modified: <b>5.2.2 Symbologies for Character Substitution (All 3 Sets)</b> – Code 11, Trioptic Code 39 added</li> <li>▶ Modified: <b>5.4.1 Select Pre-defined Code ID</b> – AIM Code ID added</li> <li>▶ Modified: <b>5.4.2 Change Code ID</b> – Code 11, Trioptic Code 39 added</li> <li>▶ Modified: <b>5.5 Length Code</b> – Code 11, Trioptic Code 39 added</li> <li>▶ Modified: <b>6.3.1 Applicable Code Type</b> – Code 11, Trioptic Code 39 added</li> </ul> |
| 1.17 | Dec. 17, 2015 | <ul style="list-style-type: none"> <li>▶ Modified: <b>1.11.2</b> - setting barcodes for Auto-sense Detection, Auto-sense Detection Level, and Auto Power On added</li> <li>▶ Modified: <b>2.1.7</b> – setting barcodes for showing/hiding iPhone/iPad onscreen keypad added (1560P)</li> </ul>   |
| 1.16 | Nov. 10, 2015 | <ul style="list-style-type: none"> <li>▶ New: <b>1.11.1 Behavior of 1560</b></li> <li>▶ New: <b>1.11.2 Behavior of 1560P</b></li> <li>▶ New: <b>1.11.3 Ambient Light</b></li> <li>▶ New: <b>4.5.6 Asterisks as Data Characters</b></li> </ul>  |
| 1.15 | Aug. 21, 2015 | <ul style="list-style-type: none"> <li>▶ New: <b>2.3.6 BT SPP Master Auto-Reconnection (1560P Only)</b></li> </ul>   |
| 1.14 | Aug. 17, 2015 | <ul style="list-style-type: none"> <li>▶ New: <b>2.1.9 BT HID Slave/Master Switching</b></li> <li>▶ New: <b>2.2.4 BT SPP Slave Hardware Flow Control</b></li> <li>▶ New: <b>2.3.5 BT SPP Master Hardware Flow Control</b></li> <li>▶ Modified: descriptions relating to CD-ROM removed</li> </ul>  |

- 1.13 Mar. 14, 2014
  - ▶ Modified: **Care & Maintenance** – “Keep the scanner away from any magnets and magnetic fields to prevent the laser engine from malfunctioning.” added
  - ▶ New: **4.8.3** – GTIN-13 format barcodes added
  - ▶ New: **4.10.3** – GS1 formatting barcodes added
  - ▶ New: **4.10.4** – Application ID Mark barcodes added
  - ▶ New: **4.16.5** – Field Separator barcode added
  - ▶ New: **4.16.6** – GS1 Formatting barcodes added
  - ▶ New: **4.16.7** – Application ID Mark barcodes added
- 1.12 Oct. 09, 2013
  - ▶ New: **2.1.8 Transmit Speed** – setting barcodes (for BT HID) added
  - ▶ New: **3.2.4 Secure Simple Pairing (SSP)** setting barcodes added
  - ▶ New: **4.11.1 ISBT Concatenation** – setting barcodes added
- 1.11 Jan. 02, 2013
  - ▶ Modified: **Symbologies Supported** – Code 128 - GS1-128 (EAN-128): default value to Enabled
  - ▶ New: **1.2.3 Free Memory** barcode
  - ▶ Modified: **2.1/2.4/2.6** Add Keyboard Type: PCAT (Hungarian), PCAT (Swiss German), PCAT (Danish)
  - ▶ Modified: **2.7/3.1** Note for Driver version **5.4** or later required
  - ▶ New: **4.1.4 Security Level** (Codabar) setup barcodes
  - ▶ New: **4.5.5 Security Level** (Code 39) setup barcodes
  - ▶ New: **4.7.1 Security Level** (Code 128) setup barcodes
  - ▶ Modified: **4.10 GS1-128 (EAN-128)** - GS1-128 default to Enable
  - ▶ Modified: **Appendix II** - #@RDSN command added
- 1.10 Aug 31, 2011
  - ▶ New: “Auto Power Off Ignoring Scan Mode” is added. Sections involved are:
    - Renamed section 1.1.1 “Turn on/off the Scanner”
    - Modified section: 1.1.2 “Power Economy”.
    - Adjusted new section: 1.1.3 “Power Economy vs. WPAN Connection”
- 1.09 May 25, 2011
  - ▶ Modified: 3656 CRADLE +USB+Adaptor issue
  - ▶ Modified: 2.1 BT HID — add Inter-Character Delay
  - ▶ Modified: 2.6 USB HID via 3656 CRADLE — add Inter-Character Delay
- 1.08 Mar. 11, 2011
  - ▶ New: Quick Start — Create One-Scan Setup Barcodes (e.g. “109950” → “#@109950#”)
  - ▶ Modified: 1.11 Auto-Sense Mode (1560 Only) — add High Sensitivity behavior
  - ▶ Modified: Specifications — Power Adaptor
- 1.07 Jan. 10, 2011
  - ▶ Modified: Introduction, Product Highlights — add CipherConnect
  - ▶ Modified: 4.10 GS1-128 (EAN-128) — Cannot read when disabled since firmware v1.01
  - ▶ Modified: 5.6.1 Edit a Concatenation of Barcodes — Code type for ISBT 128
  - ▶ New: 6.4.5 Pause Field Setting
  - ▶ Modified: 6.5 Configuring Format — Define Transmission Sequence (add Pause Field, Null Character Field )

- |      |               |   |
|------|---------------|---|
| 1.06 | Nov. 30, 2010 | <ul style="list-style-type: none"> <li>▶ Modified: Introduction, Symbologies Supported — add support of more RSS symbologies</li> <li>▶ New: Introduction — Charging the Battery via Charger</li> <li>▶ Modified: 1.1.2 Auto Power Off &amp; Power-Saving</li> <li>▶ Modified: 1.4 Beeper — describe “Low Battery Alarm”</li> <li>▶ New: 2.1.6 Keypad Support for iPhone/iPad</li> <li>▶ Modified: 3.2.3 Connect to Dongle — describe random PIN in Step 12</li> <li>▶ Modified: 4.16 GS1 DataBar (RSS Family)</li> <li>▶ Modified: 4.16.2 GS1 DataBar Omnidirectional (RSS-14)</li> <li>▶ Modified: 4.16.3 GS1 DataBar Expanded (RSS Expanded)</li> <li>▶ Modified: 5.2 Character Substitution — add table for Scan Code/Normal Key</li> </ul>   |
| 1.05 | Apr. 09, 2010 | <ul style="list-style-type: none"> <li>▶ Modified: 1.1.2 Auto Power Off &amp; Power-Saving</li> <li>▶ Modified: 2.1.1 Activate BT HID &amp; Select Keyboard Type — add Turkish</li> <li>▶ Modified: 2.1.3 Keyboard Settings — BT HID supports “Alphabets Layout”</li> <li>▶ Modified: 2.1.5 HID Character Transmit Mode</li> <li>▶ Modified: 2.2 BT SPP Slave</li> <li>▶ Modified: 2.3 BT SPP Master</li> <li>▶ Modified: 2.4.1 Activate Keyboard Wedge &amp; Select Keyboard Type — add Turkish</li> <li>▶ Modified: 2.5.2 Baud Rate — add setup barcode for 4800 bps (100100)</li> <li>▶ Modified: 2.5.2 Baud Rate — change default baud rate to 115200 bps</li> <li>▶ Modified: 2.6.1 Activate USB HID &amp; Select Keyboard Type — add Turkish</li> <li>▶ Modified: 2.6.2 Keyboard Settings — USB HID supports “Alphabets Layout”</li> <li>▶ Modified: 2.6.4 HID Character Transmit Mode</li> <li>▶ New: 3.1.3 Configure Related Settings — Sniff Mode</li> <li>▶ Modified: 4.9.4 Security Level</li> <li>▶ Modified: Appendix III Keyboard Wedge Table — remove settings for user-defined scan code</li> <li>▶ Modified: Appendix III Keyboard Wedge Table — provide examples</li> </ul> |
| 1.04 | Mar. 02, 2010 | <ul style="list-style-type: none"> <li>▶ Modified: Charging the Battery via 3656 CRADLE — suggest connecting power cord for USB</li> </ul>  |



- |      |               |  |
|------|---------------|--|
| 1.03 | Oct. 30, 2009 | <ul style="list-style-type: none"> <li>▶ Modified: 1.10 Auto-Sense Mode (1560 Only) — Continuous mode as an alternative</li> <li>▶ Modified: 1.13 Symbologies Supported — ISBT 128 enabled by default</li> <li>▶ Modified: 5.2.2 Symbologies for Character Substitution (All 3 Sets) — add ISBT 128</li> <li>▶ Modified: 5.4.1 Select Pre-defined Code ID — add ISBT 128</li> <li>▶ Modified: 5.4.2 Change Code ID — add ISBT 128</li> <li>▶ Modified: 5.5 Length Code — add ISBT 128</li> <li>▶ Modified: 6.3.1 Applicable Code Type (for Editing Format) — add ISBT 128</li> </ul> |
| 1.02 | July 07, 2009 | <ul style="list-style-type: none"> <li>▶ Modified: Charging the Battery via 3656 CRADLE —charging time changed from 3 to 5 (hr)</li> <li>▶ Modified: 1.1 Battery — charging time changed from 3 to 5 (hr)</li> <li>▶ Modified: 1.1.2 Auto Power Off &amp; Power-Saving — add setup barcode for Power-Saving setting (101021)</li> <li>▶ Modified: 3.2.2 Configure Related Settings — Authentication</li> </ul>   |
| 1.01 | June 3, 2009  | <ul style="list-style-type: none"> <li>▶ Modified: 1.10 Auto-Sense Mode — Power supply cord is required.</li> <li>▶ Modified: Appendix II Host Serial Commands</li> </ul>  |
| 1.00 | Apr. 29, 2009 | Initial release  |



# CONTENTS

---

- IMPORTANT NOTICES ..... - 3 -**
  - For USA..... - 3 -
  - For Canada..... - 3 -
  - For Hand-held Product with RF Functions..... - 4 -
  - For Product with Laser..... - 4 -
  - Safety Precautions ..... - 5 -
  - Care & Maintenance..... - 5 -
  
- RELEASE NOTES ..... - 5 -**
  
- INTRODUCTION..... 1**
  - Getting Familiarized with 1560/1562 and 3656 CRADLE ..... 2
    - Installing the Battery to 1560/1562 ..... 2
    - Setting up 3656 CRADLE ..... 3
    - Charging the Battery via 3656 CRADLE ..... 5
    - Charging the Battery via Charger ..... 6
  - Inside the Package..... 8
  - Product Highlights ..... 8
  - Symbologies Supported ..... 9
  
- QUICK START..... 13**
  - Enter Configuration Mode..... 15
  - Exit Configuration Mode..... 15
  - Default Settings ..... 16
    - Save User Settings as Defaults..... 16
    - Restore User Defaults..... 16
    - Restore System Defaults ..... 16
  - Read a Setup Barcode ..... 17
    - Configure Parameters..... 17
    - List the Current Settings ..... 21
  - Create One-Scan Setup Barcodes..... 23
  
- UNDERSTANDING THE BARCODE SCANNER ..... 25**
  - 1.1 Battery ..... 25
    - 1.1.1 Turn on/off the Scanner ..... 25
    - 1.1.2 Power Economy ..... 26
    - 1.1.3 Power Economy vs. WPAN Connection ..... 29
  - 1.2 Memory..... 31
    - 1.2.1 Transmit Buffer ..... 31
    - 1.2.2 Memory Mode..... 32
    - 1.2.3 Free Memory ..... 33

1.3 LED Indicator.....	34
1.3.1 Good Read LED.....	35
1.3.2 Good Read LED Duration.....	35
1.4 Beeper.....	36
1.4.1 Beeper Volume.....	37
1.4.2 Good Read Beep.....	38
1.4.3 Low Battery Alarm.....	39
1.5 Send "NR" to Host.....	39
1.6 Scan Modes.....	40
1.6.1 Continuous Mode.....	41
1.6.2 Test Mode.....	41
1.6.3 Laser Mode.....	42
1.6.4 Auto Off Mode.....	42
1.6.5 Auto Power Off Mode.....	42
1.6.6 Alternate Mode.....	43
1.6.7 Aiming Mode.....	43
1.6.8 Multi-Barcode Mode.....	44
1.7 Scanning Timeout.....	45
1.8 Delay between Re-read.....	46
1.9 Read Redundancy for All Symbologies.....	47
1.10 Addon Security for UPC/EAN Barcodes.....	48
1.11 Auto-Sense Mode (1560/1560P Only).....	49
1.11.1 Behavior of 1560.....	49
1.11.2 Behavior of 1560P.....	50
1.11.3 Ambient Light.....	51
1.12 CCD Sensor Always Active (1560 Only).....	52
1.13 Negative Barcodes.....	52
1.14 Effective Decoding Area.....	53
1.14.1 Positioning Window.....	53
1.14.2 Adjusting Window.....	54
<b>SELECTING OUTPUT INTERFACE.....</b>	<b>55</b>
2.1 BT HID.....	56
2.1.1 Activate BT HID & Select Keyboard Type.....	57
2.1.2 Reset Connection.....	58
2.1.3 Keyboard Settings.....	59
2.1.4 Inter-Character Delay.....	66
2.1.5 Inter-Function Delay.....	66
2.1.6 HID Character Transmit Mode.....	67
2.1.7 Keypad Support for iPhone/iPad.....	68
2.1.8 Transmit Speed.....	68
2.1.9 BT HID Slave/Master Switching.....	68
2.1.10 BT HID Auto-Reconnection (1560P Only).....	69
2.2 BT SPP Slave.....	70
2.2.1 Activate BT SPP Slave Mode.....	70
2.2.2 Inter-Function Delay.....	70

2.2.3 ACK/NAK Timeout .....	71
2.2.4 BT SPP Slave Hardware Flow Control .....	71
2.3 BT SPP Master .....	72
2.3.1 Activate BT SPP Master Mode .....	72
2.3.2 Inter-Function Delay .....	74
2.3.3 ACK/NAK Timeout .....	74
2.3.4 Switch between Master/Slave Mode .....	76
2.3.5 BT SPP Master Hardware Flow Control.....	76
2.3.6 BT SPP Master Auto-Reconnection (1560P Only) .....	76
2.4 Keyboard Wedge via 3656 CRADLE.....	77
2.4.1 Activate Keyboard Wedge & Select Keyboard Type.....	78
2.4.2 Keyboard Settings.....	79
2.4.3 Inter-Character Delay.....	87
2.4.4 Inter-Function Delay .....	87
2.5 RS-232 via 3656 CRADLE .....	88
2.5.1 Activate RS-232 Interface.....	88
2.5.2 Baud Rate.....	88
2.5.3 Data Bits .....	89
2.5.4 Parity .....	89
2.5.5 Stop Bit.....	90
2.5.6 Flow Control.....	90
2.5.7 Inter-Character Delay.....	91
2.5.8 Inter-Function Delay .....	91
2.5.9 ACK/NAK Timeout .....	92
2.6 USB HID via 3656 CRADLE.....	93
2.6.1 Activate USB HID & Select Keyboard Type .....	94
2.6.2 Keyboard Settings.....	95
2.6.3 Inter-Character Delay.....	101
2.6.4 Inter-Function Delay .....	102
2.6.5 HID Character Transmit Mode.....	102
2.7 USB Virtual COM via 3656 CRADLE.....	103
2.7.1 Activate USB Virtual COM.....	103
2.7.2 Inter-Function Delay .....	103
2.7.3 ACK/NAK Timeout .....	104
<b>SETTING UP A WPAN CONNECTION.....</b>	<b>105</b>
3.1 Connecting via 3656 CRADLE.....	107
3.1.1 Connect to 3656 CRADLE.....	107
3.1.2 Change Interface .....	108
3.1.3 Configure Related Settings .....	110
3.2 Connecting via <i>Bluetooth</i> <sup>®</sup> Dongle.....	111
3.2.1 Change Interface .....	111
3.2.2 Configure Related Settings .....	112
3.2.3 Connect to Dongle.....	115
3.2.4 Secure Simple Pairing (SSP).....	122
<b>CHANGING SYMBOLOGY SETTINGS .....</b>	<b>123</b>
4.1 Codabar .....	124

4.1.1 Start/Stop Characters Selection .....	124
4.1.2 Start/Stop Transmission .....	125
4.1.3 CLSI Conversion.....	125
4.1.4 Security Level .....	125
4.2 Code 25 – Industrial 25 .....	126
4.2.1 Start/Stop Pattern Selection .....	126
4.2.2 Verify Check Digit.....	126
4.2.3 Transmit Check Digit.....	127
4.2.4 Code Length Qualification .....	127
4.2.5 Security Level (1560P Only) .....	128
4.3 Code 25 – Interleaved 25 .....	129
4.3.1 Start/Stop Pattern Selection .....	129
4.3.2 Verify Check Digit.....	130
4.3.3 Transmit Check Digit.....	130
4.3.4 Code Length Qualification .....	131
4.3.5 Security Level (1560P Only) .....	131
4.4 Code 25 – Matrix 25.....	132
4.4.1 Start/Stop Pattern Selection .....	132
4.4.2 Verify Check Digit.....	133
4.4.3 Transmit Check Digit.....	133
4.4.4 Code Length Qualification .....	134
4.4.5 Security Level (1560P Only) .....	134
4.5 Code 39 .....	135
4.5.1 Start/Stop Transmission .....	135
4.5.2 Verify Check Digit.....	135
4.5.3 Transmit Check Digit.....	136
4.5.4 Standard/Full ASCII Code 39.....	136
4.5.5 Security Level .....	136
4.5.6 Asterisks (*) as Data Characters .....	137
4.6 Trioptic Code 39 .....	137
4.7 Code 93 .....	137
4.8 Code 128.....	137
4.8.1 Security Level .....	138
4.9 EAN-8 .....	138
4.9.1 Convert to EAN-13 .....	139
4.9.2 Transmit Check Digit.....	139
4.9.3 Conversion Format.....	139
4.10 EAN-13 .....	141
4.10.1 ISBN Conversion .....	142
4.10.2 ISSN Conversion .....	142
4.10.3 Transmit Check Digit .....	142
4.10.4 Security Level.....	143
4.11 GS1-128 (EAN-128).....	144
4.11.1 Code ID Transmission .....	144
4.11.2 Field Separator (GS Character).....	144
4.11.3 GS1 Formatting .....	145

4.11.4 Application ID Mark.....	145
4.12 ISBT 128.....	146
4.12.1 ISBT Concatenation .....	146
4.13 MSI .....	147
4.13.1 Verify Check Digit .....	147
4.13.2 Transmit Check Digit.....	147
4.13.3 Code Length Qualification.....	148
4.14 French Pharmacode.....	149
4.14.1 Transmit Check Digit.....	149
4.15 Italian Pharmacode .....	150
4.15.1 Transmit Check Digit.....	150
4.16 Plessey .....	151
4.16.1 Convert to UK Plessey.....	151
4.16.2 Transmit Check Digit.....	151
4.17 GS1 DataBar (RSS Family) .....	152
4.17.1 Code ID Selection .....	152
4.17.2 GS1 DataBar Omnidirectional (RSS-14).....	153
4.17.3 GS1 DataBar Expanded (RSS Expanded).....	155
4.17.4 GS1 DataBar Limited (RSS Limited).....	156
4.17.5 Field Separator (GS Character).....	157
4.17.6 GS1 Formatting .....	157
4.17.7 Application ID Mark.....	157
4.17.8 Security Level.....	158
4.18 Telepen.....	159
4.18.1 Telepen Output – Full ASCII/Numeric .....	159
4.19 UPC-A.....	160
4.19.1 Convert to EAN-13 .....	161
4.19.2 System Number Transmission .....	161
4.19.3 Transmit Check Digit.....	161
4.20 UPC-E.....	162
4.20.1 System Number Selection .....	163
4.20.2 Convert to UPC-A.....	163
4.20.3 System Number Transmission .....	164
4.20.4 Transmit Check Digit.....	164
4.21 Code 11.....	165
4.21.1 Verify Check Digit .....	165
4.21.2 Transmit Check Digit.....	166
4.21.3 Security Level.....	166
<b>DEFINING OUTPUT FORMAT .....</b>	<b>167</b>
5.1 Letter Case.....	167
5.2 Character Substitution.....	168
5.2.1 Select a Set for Character Substitution .....	169
5.2.2 Symbologies for Character Substitution (All 3 Sets).....	170
5.3 Prefix/Suffix Code.....	176
5.4 Code ID.....	177

5.4.1 Select Pre-defined Code ID .....	177
5.4.2 Change Code ID.....	180
5.4.3 Clear Code ID Settings.....	181
5.5 Length Code.....	182
5.6 Multi-Barcode Editor.....	186
5.6.1 Edit a Concatenation of Barcodes .....	187
5.6.2 Activate the Concatenation of Barcodes.....	189
5.7 Removal of Special Character.....	190
<b>APPLYING FORMATS FOR DATA EDITING .....</b>	<b>191</b>
6.1 Activating Editing Formats.....	192
6.1.1 Activate Editing Formats.....	192
6.1.2 Exclusive Data Editing .....	193
6.2 How to Configure Editing Formats .....	194
6.2.1 Select Format to Configure.....	195
6.2.2 Restore Default Format.....	196
6.3 Configuring Format — Define Data Criteria .....	197
6.3.1 Applicable Code Type.....	197
6.3.2 Data Length .....	204
6.3.3 Matching String & Location.....	205
6.4 Configuring Format — Define Data Field.....	205
6.4.1 Start Position.....	205
6.4.2 Field Adjustment.....	206
6.4.3 Total Number of Fields .....	206
6.4.4 Field Settings.....	207
6.4.5 Pause Field Setting .....	213
6.5 Configuring Format — Define Transmission Sequence.....	214
6.6 Programming Examples .....	216
6.6.1 Example I .....	216
6.6.2 Example II.....	217
<b>SPECIFICATIONS.....</b>	<b>219</b>
<b>FIRMWARE UPGRADE.....</b>	<b>221</b>
How to Upgrade 1560/1562 Firmware.....	221
Using 3656 CRADLE .....	221
Using <i>Bluetooth</i> <sup>®</sup> Dongle.....	224
How to Upgrade 3656 CRADLE Firmware.....	226
Upgrading 3656 CRADLE CPU Firmware.....	226
Upgrading 3656 CRADLE USB Bridge Firmware .....	228
<b>HOST SERIAL COMMANDS .....</b>	<b>231</b>
1560/1562 Serial Commands.....	231
Example .....	232
3656 CRADLE Setup Barcodes & Serial Commands .....	233
3656 CRADLE Setup Barcodes.....	234
Example .....	236



<b>KEYBOARD WEDGE TABLE .....</b>	<b>237</b>
Key Type & Status.....	238
Key Type.....	238
Key Status.....	238
Example.....	239
<b>NUMERAL SYSTEMS.....</b>	<b>241</b>
Decimal System .....	241
Hexadecimal System.....	242
ASCII Table.....	243
Entering PIN Code for Authentication.....	244
Use Preset PIN.....	244
Disable Authentication or Use Random PIN.....	245



# INTRODUCTION

---

CipherLab's 1560 Series Barcode Scanners are specifically designed to answer your mobile demands. The versatile 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 short-distance wireless technology to small-form-factor scanners, the 1560/1562 scanners are ideal for carrying around, and thus give workers tether-free mobility anytime anywhere and get job done more efficiently. This line of scanners deliver data over a wireless personal network at a range of up to 90 meters and a prolonged battery life to keep business running.

Owing to the slim, ergonomic design, extremely low power consumption, and powerful decoding capability, the 1560 Series 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 that you 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!



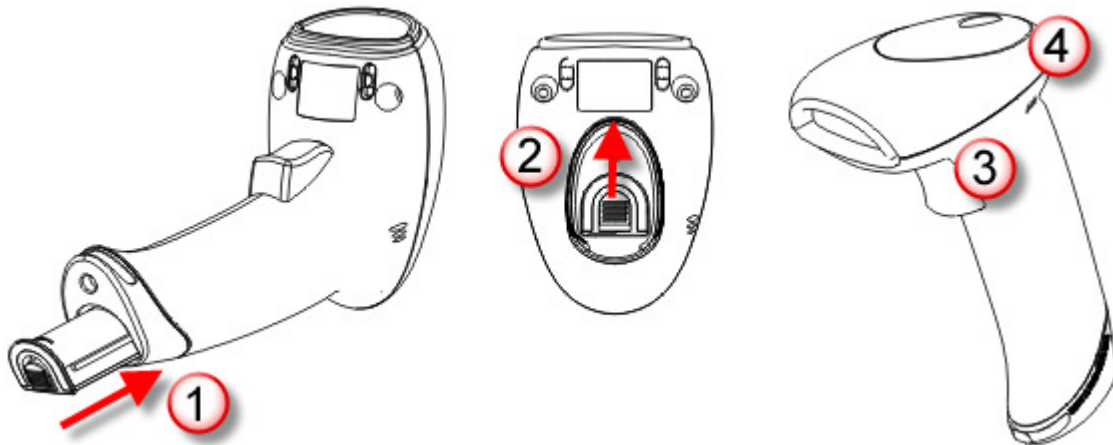
## GETTING FAMILIARIZED WITH 1560/1562 AND 3656 CRADLE

### INSTALLING THE BATTERY TO 1560/1562

When you first receive the package, the rechargeable battery is stored separately from the scanner. Insert the battery into the scanner first so that it can be charged when sitting in the Auto-Sense stand.

Note: Any improper handling may reduce the battery life.

- 1) Hold the scanner still and insert the battery into the battery compartment at the bottom of the scanner.
- 2) Slide the battery latch to lock the battery in the compartment.
- 3) Hold down the trigger about 2 seconds to turn on the scanner.
- 4) The scanner will respond with a long beep and its LED will come on-off shortly.



Note: (1) To turn off the scanner, remove the battery. Refer to settings of "[Auto Power Off](#)".

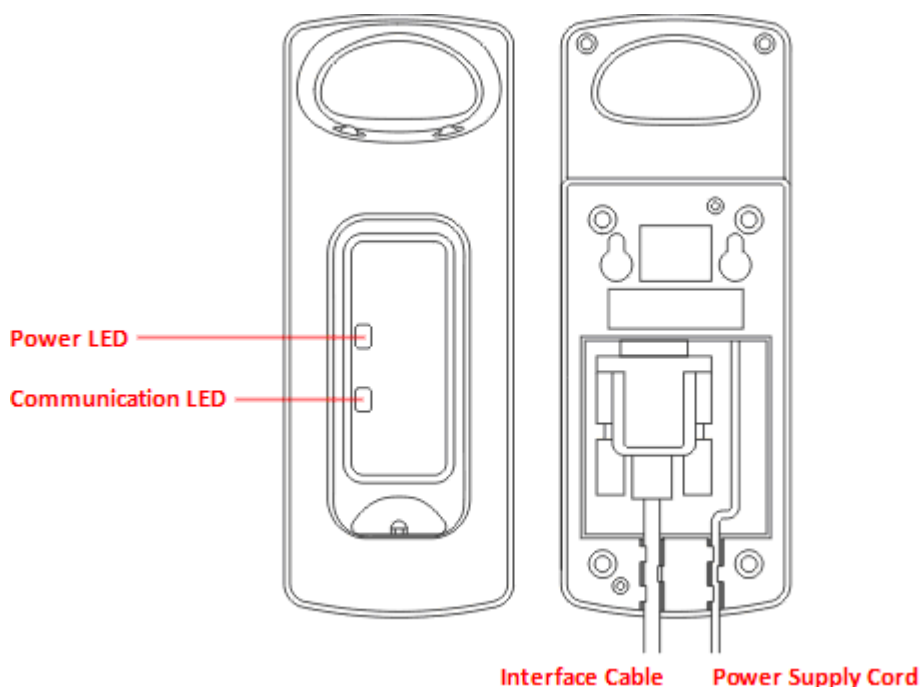
(2) For shipping and storage purposes, save the scanner and the battery separately. This will keep the battery in good condition for future use.

(3) When the battery charge becomes low, you will find the scanner cannot emit scan beam and its power-on beep sounds differently.



## SETTING UP 3656 CRADLE

Capable of charging 1560/1562, the 3656 CRADLE stand is specifically designed for the scanner to communicate with a host computer wirelessly. The connection between the scanners and 3656 CRADLE is made easy and reliable. Refer to [3.1.1 Connect to](#). The 3656 CRADLE stand is also an Auto-Sense stand when used with the scanner set to Auto-Sense mode.



Two LED indicators are provided for power and communications status.

Power LED		Meaning
Red, solid	---	Power ON
---	---	Power OFF
Communication LED		Meaning
---	Blue, solid	Initialize
Red, solid	---	Failed to establish a USB connection
Red, solid	Blue, flashing	Serial command mode with USB Virtual COM or RS-232: wait 3 seconds for starting a serial command
Red, flashing	Blue, flashing	Serial command mode with USB HID: wait 3 seconds for pressing [Num Lock] or [Caps Lock] 5 times via keyboard
---	Blue,	Wait for connection request from the scanner (Slow flash at 0.5 Hz)



	flashing	
---	Blue, flashing	Connected with the scanner (Fast flash at 1 Hz)
Red, solid	Blue, flashing	Failed to send data to host via USB Virtual COM (Fast flash at 1 Hz)
Red, flashing	---	Enter Download Mode



## CHARGING THE BATTERY VIA 3656 CRADLE

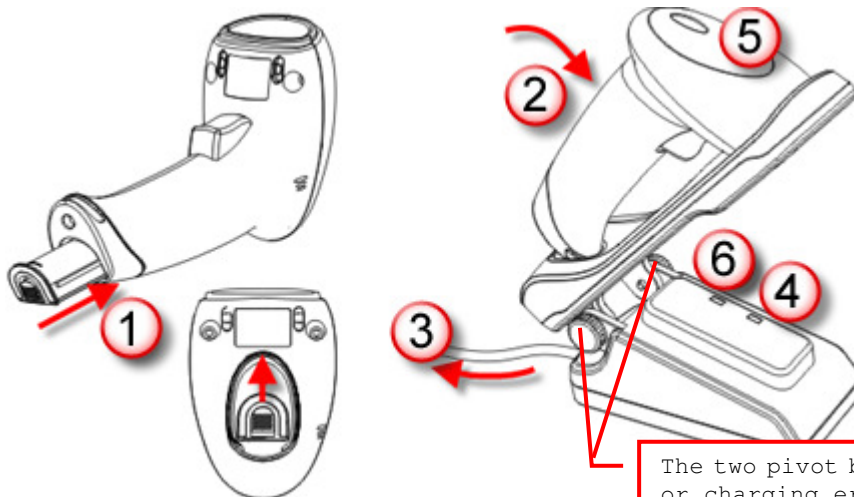
The battery may not be charged to full for shipment. When you first receive the package, you will need to charge the battery to full before using the scanner. When using the RS-232 cable, it takes approximately 5 hours to charge the battery to full (from the power adaptor).

Note: Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.

- 1) Install the battery to the scanner.
- 2) Seat the scanner in the 3656 CRADLE stand.
- 3) Connect the 3656 CRADLE stand to your computer or notebook via the USB or RS-232 cable.
- 4) Connect the power supply cord from 3656 CRADLE to a proper power outlet.

Warning: RS-232/USB interface both require connecting the power supply cord. When the stand is solely on USB power, the current may be insufficient for it to function normally. You must connect the power supply cord.

- 5) The LED for power indication on 3656 CRADLE will become solid red.
- 6) The scanner LED will be flashing red during charging.  
When the charging is done, the LED will turn off.  
When charging error occurs, the LED will turn solid red.
- 7) The LED for communications on 3656 CRADLE will first become solid blue while initializing. Refer to the table above for details on different stage of communications.



The two pivot bolts need to be tightened, or charging error may occur.



**Warning:** If the two pivot bolts are not tightened properly, charging error may occur.

---

## CHARGING THE BATTERY VIA CHARGER

The battery charger is provided for charging the battery only. You may purchase the charger separately. It takes approximately 3 hours to charge the battery to full.

---

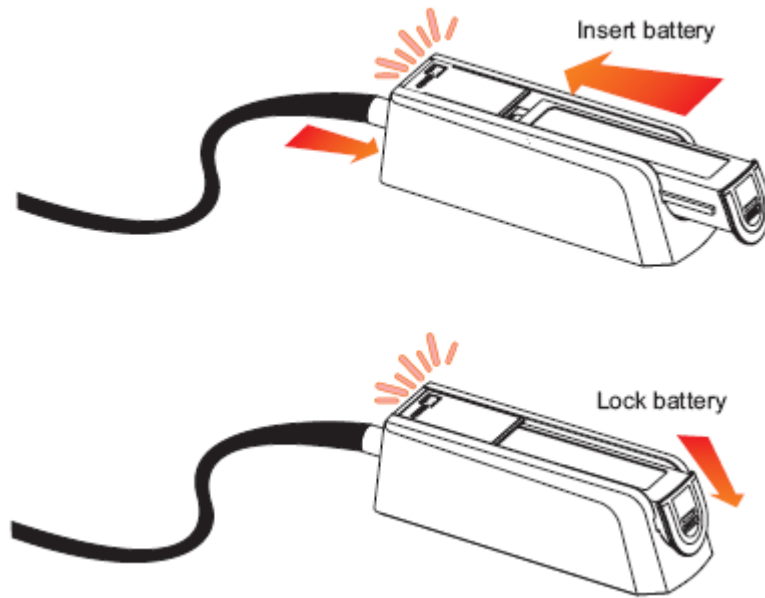
**Note:** Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.

---

- 1) Insert the battery.
- 2) Lock the battery.
- 3) Connect the power supply cord to the charger.
- 4) Connect the other end of the power cord to a suitable power outlet.







Status LED		Meaning
Red, solid	---	Charger power ON (LED on for 0.5 second)
Red, solid	---	Charging battery
---	Green, solid	Charging done
Red, solid	Green, solid	Pre-charging when battery voltage under 3V (Typical)
---	---	Power or battery not ready



## 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.

- ▶ Barcode Scanner (1560, 1560P, or 1562)
- ▶ BT Base (3656 CRADLE)
- ▶ Rechargeable Li-ion battery

## PRODUCT HIGHLIGHTS

- ▶ Small-form-factor and built tough to survive drop test
- ▶ Extremely low power consumption
- ▶ Firmware upgradeable
- ▶ Supports most popular barcode symbologies, including GS1-128 (EAN-128), GS1 DataBar (RSS), etc.
- ▶ Supports negative barcodes
- ▶ Supports different scan modes, including Aiming Mode and Multi-Barcode Mode
- ▶ User feedback via LED indicator and beeper
- ▶ Beeping tone and duration programmable for Good Read
- ▶ 512 KB flash memory for Memory Mode operation, storing up to 32,768 scans based on EAN-13 barcodes
- ▶ Provides up to 4 KB SRAM for reserve buffer while getting out of range over a wireless personal area network (WPAN), storing up to 256 scans based on EAN-13 barcodes
- ▶ Capable of transmitting scanned data, emulating a serial cable (BT SPP) or as keyboard input (BT HID), to a notebook computer or PDA with *Bluetooth*® wireless technology
- ▶ Programmable parameters include data output format, editing format, symbologies, etc.
- ▶ Easy configuration through ScanMaster
- ▶ Easy connection through CipherConnect, available via online marketplace for mobile devices running on Android 2.x, BlackBerry 5.x, or Windows Mobile 6.x



## 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.

Symbologies Supported: Enable/Disable		Default	
<b>Codabar</b>		Enabled	
<b>Code 93</b>		Enabled	
<b>MSI</b>			Disabled
<b>Plessey</b>			Disabled
<b>Telepen</b>			Disabled
<b>Code 128</b>	Code 128	Enabled	
	GS1-128 (EAN-128)	Enabled	
	ISBT 128	Enabled	

Note: Starting from firmware version 1.01, ISBT 128 is enabled by default.

<b>Code 2 of 5</b>	Industrial 25	Enabled	
	Interleaved 25	Enabled	
	Matrix 25		Disabled
<b>Code 3 of 9</b>	Code 39	Enabled	
	Italian Pharmacode		Disabled
	French Pharmacode		Disabled
	Trioptic Code 39		Disabled
<b>EAN/UPC</b>	EAN-8	Enabled	
	EAN-8 Addon 2		Disabled
	EAN-8 Addon 5		Disabled
	EAN-13	Enabled	
	EAN-13 & UPC-A Addon 2		Disabled
	EAN-13 & UPC-A Addon 5		Disabled
	ISBN		Disabled
	UPC-E0	Enabled	
	UPC-E1		Disabled
	UPC-E Addon 2		Disabled
	UPC-E Addon 5		Disabled
	UPC-A	Enabled	



<b>GS1 DataBar (RSS)</b>	GS1 DataBar Omnidirectional (RSS-14)		Disabled
	GS1 DataBar Truncated		Disabled
	GS1 DataBar Stacked		Disabled
	GS1 DataBar Stacked Omnidirectional		Disabled
	GS1 DataBar Limited (RSS Limited)		Disabled
	GS1 DataBar Expanded (RSS Expanded)		Disabled
	GS1 DataBar Expanded Stacked		Disabled
<b>Code 11</b>			Disabled



錯誤! 使用 [常用] 索引標籤將 Heading 1 套用到您想要在此處顯示的文字。

---





# QUICK START

---

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

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

## Configuration Mode

---

1. Hold down the trigger about 2 seconds to turn on the scanner. It will respond with a long beep and its LED will come on-off shortly.
2. Have the scanner read the "Enter Setup" barcode. It will respond with six beeps and its LED indicator will become flashing red after reading the barcode.
3. Have the scanner read more setup barcodes... Most of the setup barcodes are normal. The scanner will respond with two beeps (low-high tone). For special setup barcodes, it requires reading more than one setup barcode to complete the setting.
4. Have the scanner read the "Update" or "Abort" barcode. It will respond with six beeps and its LED indicator will become flashing red after reading the barcode.
5. The scanner will restart automatically upon reading the "Update" or "Abort" barcode. It will respond with a long beep and its LED will come on-off shortly.



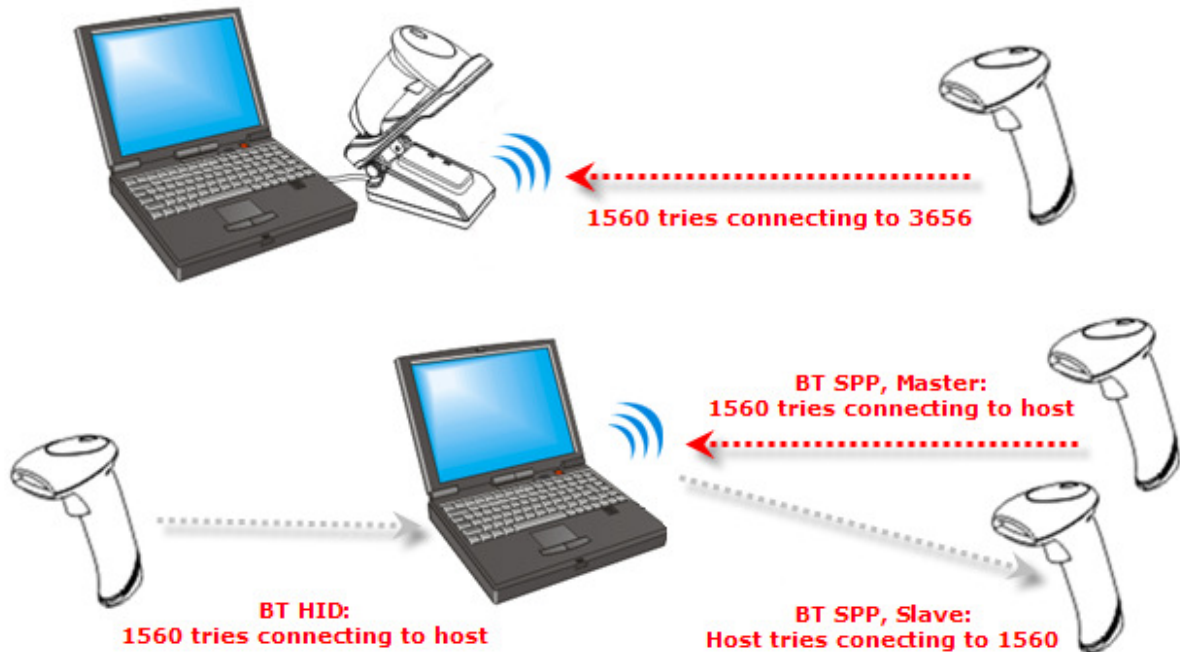
Note: Refer to [Appendix II Host Serial Commands](#) for how to configure the 3656 CRADLE stand by having the scanner read 3656 CRADLE -related setup barcodes or using serial commands.

---



### Working Mode

Upon powering up, the 1560/1562 scanner will try to establish a connection with 3656 CRADLE or a computer with *Bluetooth*<sup>®</sup> wireless technology. Refer to [Chapter 3 – Setting up a WPAN Connection](#) for details. The connection between the scanners and 3656 CRADLE is made easy and reliable.



---

Note: If RS-232, USB Virtual COM or BT SPP is selected for output interface, the host can directly send serial commands to configure the scanner. For example, run HyperTerminal.exe and type the 6-digit command located under each setup barcode. Refer to [Appendix II Host Serial Commands](#).

---





## ENTER CONFIGURATION MODE

For the scanner to enter the configuration mode, you must have it read the “Enter Setup” barcode, which can be located at the bottom of almost every even page of this manual.

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

Enter Setup



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

## EXIT CONFIGURATION MODE

For the scanner to save settings and exit the configuration mode, you must have it read the “Update” barcode, which can be located at the bottom of almost every odd page of this manual. If you want to exit the configuration mode without saving any changes, have the scanner read the “Abort” barcode instead.

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

Update



109999

Abort



109998



## DEFAULT SETTINGS

### SAVE USER SETTINGS AS DEFAULTS

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

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

Save as User  
Defaults



### RESTORE USER DEFAULTS

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

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

Restore User  
Defaults



### RESTORE SYSTEM DEFAULTS

For the scanner to restore the factory defaults, you must have it read the "Restore System Defaults" barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone). For 3656 CRADLE to restore factory defaults, refer to 3656 CRADLE [Setup Barcodes & Serial Commands](#).

- ▶ After reading the "Update" barcode, all the parameters of the scanner will return to their default values. The current connection record will be cleared as well.

Restore System  
Defaults



---

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

---



## READ A SETUP BARCODE

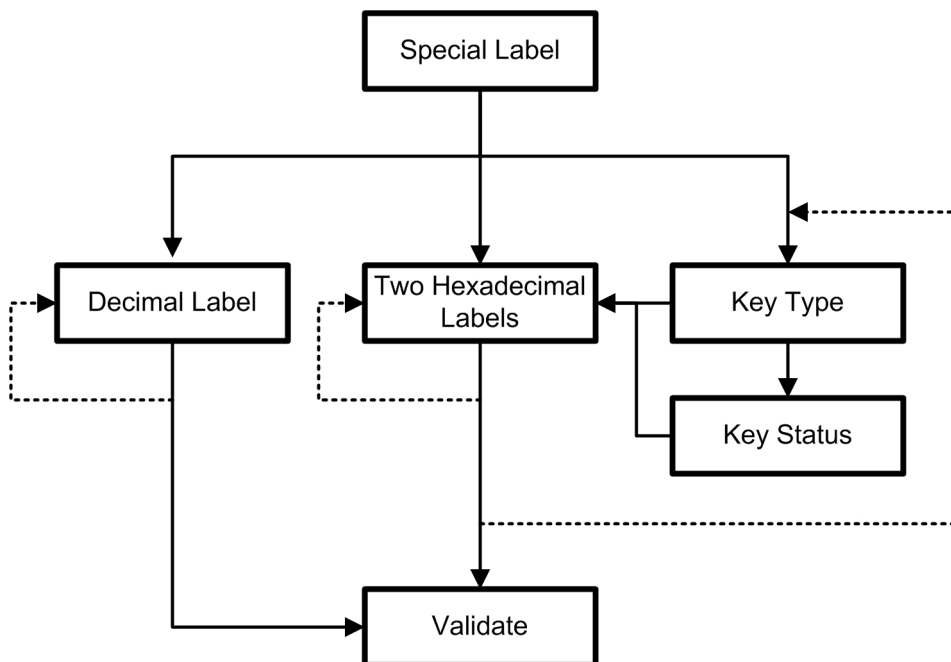
### CONFIGURE PARAMETERS

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






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

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

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












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

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode...	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will be flashing red.
3	Read a Setup barcode... For example,	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.
<p style="text-align: center;">Enter Setup</p>  <p style="text-align: center;">*Enable Industrial 25</p>  <p style="text-align: center;">100307</p> <p style="text-align: center;">Save as User Default</p>  <p style="text-align: center;">109986</p>		
4	Exit the Configuration Mode...	Same as for <i>Enter the Configuration Mode</i> .
<p style="text-align: center;">Update                      Abort</p>  <p style="text-align: center;">109999                      OR                      109998</p> 		
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .
*	When any configuration error occurs...	The scanner will respond with one long beep (low tone).

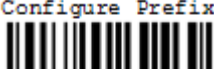







The example below shows how to set numeric parameters:

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



The example below shows how to set string parameters:

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode...	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode... For example,	The scanner will respond with one short beep if reading a special setup barcode such as "Prefix Code", indicating the setup requires reading more barcodes.
<div style="border: 1px solid red; padding: 2px; display: inline-block;">Special setup barcodes</div>	<p style="text-align: center;">Configure Prefix</p>  <p style="text-align: center;">101230</p>	<p>When "BT HID", "USB HID" or "Keyboard Wedge" is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to change key status when "Normal Key" is selected for Key Type.</p> <p>▶ Refer to Appendix III</p>
	<p style="text-align: center;">*Normal</p>  <p style="text-align: center;">109926</p>	
	<p style="text-align: center;">Add Left Alt</p>  <p style="text-align: center;">109932</p>	
<div style="border: 1px solid red; padding: 2px; display: inline-block;">Hexadecimal barcodes</div>	<p style="text-align: center;">2</p>  <p style="text-align: center;">109902</p>	<p>Read the "Hexadecimal Value" barcodes for the desired character string. For example, read "2" and "B" for the scanner to prefix the character "+".</p> <p>▶ Refer to Appendix IV "Hexadecimal System"</p>
	<p style="text-align: center;">B</p>  <p style="text-align: center;">109911</p>	
	<p style="text-align: center;">Validate</p>  <p style="text-align: center;">109994</p>	
4	Exit the Configuration Mode...	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .



## LIST THE CURRENT SETTINGS

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

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

List Page 1



List settings regarding Prefix, Suffix, and Length Code Setting

List Page 2



List settings regarding Code ID

List Page 3



List settings regarding: Readable Symbologies

List Page 4



List settings regarding Symbology Parameters (1/3)

List Page 5



List settings regarding Symbology Parameters (2/3)

List Page 6



List settings regarding Symbology Parameters (3/3)

List Page 7



List settings regarding Editing Format 1

List Page 8



List settings regarding Editing Format 2

List Page 9



List settings regarding Editing Format 3

List Page 10



List settings regarding Editing Format 4

List Page 11



109937

List settings regarding Editing Format 5

List Page 12



109938





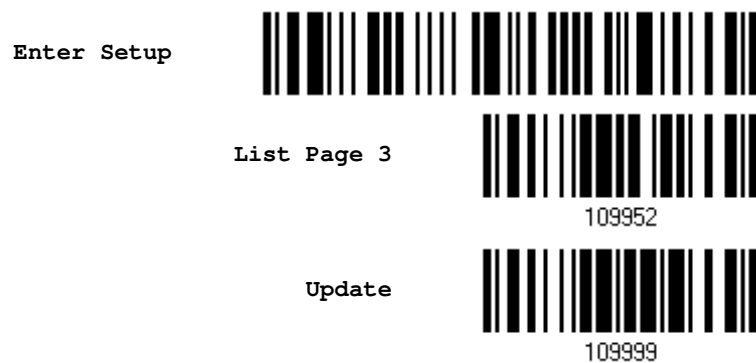
## CREATE ONE-SCAN SETUP BARCODES

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

The requirements of a One-Scan setup barcode are:

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

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



Now, it requires only one read:



Note: The scanner will restart automatically upon reading the One-Scan setup barcode for (1) changing the interface or (2) setting memory mode, enable or disable. It will respond with a long beep and its LED will come on-off shortly.





## UNDERSTANDING THE BARCODE SCANNER

---

This chapter will guide you through the features of the barcode scanner and how it can function for you.

### IN THIS CHAPTER

---

1.1 Battery .....	25
1.2 Memory .....	31
1.3 LED Indicator .....	34
1.4 Beeper.....	36
1.5 Send "NR" to Host.....	39
1.6 Scan Modes.....	40
1.7 Scanning Timeout .....	45
1.8 Delay between Re-read.....	46
1.9 Read Redundancy for All Symbologies .....	47
1.10 Addon Security for UPC/EAN Barcodes .....	48
1.11 Auto-Sense Mode (1560/1560P Only) .....	49
1.12 CCD Sensor Always Active (1560 Only).....	52
1.13 Negative Barcodes.....	52
1.14 Effective Decoding Area .....	53

### 1.1 BATTERY

The scanner is powered by a rechargeable 3.7 V/800 mAh Li-ion battery, and it takes approximately 5 hours to charge the battery to full (via 3656 CRADLE from the power adaptor). However, the charging time may vary by working condition. For intensive data collection, you may need to purchase a spare battery for non-stop operation.

---

Note: See also "[Power Economy](#)", "[CCD Sensor Always Active](#)", "[Sniff Mode](#)", as well as "[Low Battery Alarm](#)".

---

#### 1.1.1 TURN ON/OFF THE SCANNER

##### Turn on the scanner...

---

After installing the battery, pull down the trigger for about 2 seconds. The scanner will respond with a long beep (high tone), then the LED will become solid red and go off quickly.

##### Turn off the scanner...

---

Remove the battery directly or let it turn off automatically in specific circumstances.



### 1.1.2 POWER ECONOMY

The scanner features "Power-Saving", "Auto Power Off" and "Auto Power Off Ignoring Scan Mode" giving consideration to the power issue that is generally critical for Bluetooth-enabled devices. By the scanner's support of power economy, its power consumption may progress by the following transition:

- 1) running at full CPU speed at power-on
- 2) shifting to low CPU speed (Power-Saving)
- 3) finally shutting down automatically (Auto Power Off)

In the following content of this section, you will be guided through the configurations for the scanner's power economy.

#### 1.1.2.1 POWER-SAVING

For the scanner to save power, you need to appoint the timing for the scanner to shift to power-saving mode. Make the configuration that best suits your application while noting the following points:

- ▶ Power-Saving: 1~254 minutes configurable. 0= Disable.

By default, the scanner stands by at full-speed for 2 minutes after power-on and before entering low-speed mode. If Power-Saving isn't desired, set it to 0 to disable it. Read the setup barcode in the following to achieve the setup.

---

Note: Power-Saving setting won't take effect when the WPAN connection is established successfully whether via BT HID or SPP.

---

Power-Saving after  
0~254 min. (\*2)



101021

- 1) Read the barcode above to enable the scanner to enter low-speed "Power-Saving".
- 2) Assign the time for the scanner to enter low-speed mode by reading the "[Decimal Value](#)" barcode on page 241. For example, read "5" for the scanner to enter low-speed mode after idleness of 5 minutes.
- 3) Read the "Validate" barcode on the same page to complete this setting.



Note: Power-Saving won't take effect when one of the following conditions is met:

- (1) the scanner has already established a BT HID/SPP connection,
  - (2) the scanner is in the configuration mode,
  - (3) the scan mode is set to Test, Continuous or Alternate Mode,
  - (4) 1560 is in Auto-Sense mode and seated in the 3656 CRADLE stand, or
  - (5) the setting value of Power-Saving is greater than that of Auto Power Off.
- 

### 1.1.2.2 AUTO POWER OFF

For the scanner to save power, further to setting up "Power-Saving" mode, you may also need to enable "Auto Power Off", which deals with a time for the scanner to automatically power off after power-on. Make the configuration that best suits your application while noting the following points:

- ▶ Auto Power Off: 1~254 minutes configurable. 0= Disable.
  1. By default, the scanner automatically shuts down 10 minutes after power-on.
  2. If Auto Power Off isn't desired, set the parameter to 0 to disable it.
  3. When the scan mode is set to any of Continuous Mode, Test Mode, and Alternate Mode, you need to enable "Auto Power Off Ignoring Scan Mode" in addition to enabling "Auto Power Off". See the following section [1.1.2.3 Auto Power Off Ignoring Scan Mode](#) to achieve auto power off.

---

Note: When the scanner is set to any scan mode other than Continuous Mode, Test Mode and Alternate Mode, you can skip "Auto Power Off Ignoring Scan Mode".

---

Auto Power Off after  
0~254 min. (\*10)



- 1) Read the barcode above to enable the scanner to automatically turn off at a specified time after power-on.
- 2) Assign the auto power off time by reading the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "5" for the scanner to automatically turn off after idleness of 15 minutes.
- 3) Read the "Validate" barcode on the same page to complete this setting.



Note: "Auto Power Off" will not take effect when one of the following conditions is met:  
(1) the scanner is in the configuration mode, or  
(2) 1560 is in Auto-Sense mode and seated in the 3656 CRADLE stand.

---

### 1.1.2.3 AUTO POWER OFF IGNORING SCAN MODE

This mode is intended only for Continuous Mode, Test Mode, and Alternate Mode. To force a scanner that is set to one of these three modes to automatically power off to save power, you need the following settings:

1. Enable "Auto Power Off" as detailed in the foregoing section [1.1.2.2 Auto Power Off](#). And set a time for the scanner to automatically power off after power-on.
2. Enable "Auto Power Off Ignoring Scan Mode" by reading the barcode below:

Enable



101027

\*Disable



101026

Read the barcode above to enable/disable automatic power-off for Continuous Mode, Test Mode, and Alternate Mode.

---

Note: "Auto Power Off Ignoring Scan Mode" only features enabling and disabling. It doesn't feature the setting of auto power-off time. Such setting should be configured in the preceding setup of "Auto Power Off".

---



### 1.1.3 POWER ECONOMY VS. WPAN CONNECTION

Before the scanner can communicate with the host computer, Bluetooth connection (or WPAN connection) needs to be established. The scanner's power economy always accommodates itself to the establishment of the WPAN connection.

The following describes how the scanner carries out power economy before and after the establishment of the WPAN connection:

#### Before establishing a WPAN connection successfully...

1. The scanner stays active for a specified period of time (2 minutes by default) for the following scenarios. The CPU runs at full speed, and the LED blinks blue (On/Off ratio 0.5 s: 0.5 s).
  - (a) waiting for a connection request from the host (BT SPP Slave Mode)
  - (b) trying to connect to the host (BT HID or BT SPP Master Mode)
  - (c) trying to connect to 3656 CRADLE
2. If the scanner fails to connect within 2 minutes, it becomes inactive to save power for the remaining period of time (the specified "Auto Power Off" value minus 2 minutes). The CPU starts to run at low speed, and the LED begins to blink red (On/Off ratio 0.3 s: 2.5 s).

Pull the trigger to wake up the scanner when it becomes inactive, and the scanner will become active again.
3. If it fails to connect again and again, and finally stays inactive until the specified Auto Power Off time elapses, the scanner will automatically turn off in order to conserve battery power.

Pull down the trigger for about 2 seconds to turn it on again.

Note: For scenarios (a) and (b) in step 1, you may need to search for the scanner again on your computer.

#### After establishing a WPAN connection successfully...

1. Once a WPAN connection is established successfully, the scanner will stay active for a specified period of time (2 minutes by default) for data transmission. The CPU runs at full speed, and the LED blinks blue (On/Off ratio 0.02 s: 3 s).
2. If the scanner stays idle for 2 minutes (default), it will then turn inactive to save power for the remaining period of time (the specified "Auto Power Off" value minus 2 minutes). The CPU runs at low speed, and the LED is blinking red (On/Off ratio 0.3 s: 2.5 s).

Pull the trigger to wake up the scanner when it becomes inactive, then the scanner will stay active again.

  - ▶ For BT HID or SPP, the scanner automatically shuts down after the configured "Auto Power Off" time without the transition from full CPU speed to low CPU speed. However, when connecting with 3656 CRADLE, the scanner will go through the transition in order to save power.
3. If the scanner first becomes idle and finally stays inactive until the specified Auto Power Off time is up, the scanner will automatically turn off in order to conserve battery power. You will hear three short beeps, tone descending from high to low.

Pull down the trigger for about 2 seconds to turn it on again.

  - ▶ For BT HID, the scanner resumes the connection with the host upon powering on again, as long as the host application is running. You will hear three short beeps, tone ascending



from low to high upon the resumption. If the scanner fails to resume the connection, it will try every 5 seconds to re-connect to the host unless you have the scanner read the "Reset Connection" barcode.

- ▶ For BT SPP Slave Mode, the scanner waits for the host to re-connect.
- ▶ For BT SPP Master Mode, the scanner resumes the connection with the host upon powering on again as long as the host application is running. You will hear three short beeps, tone ascending from low to high upon resumption. If the scanner fails to resume the connection, it will try every 5 seconds to re-connect to the host unless you have the scanner read the "Reset Connection" or "Restore System Defaults" barcode.
- ▶ With the use of 3656 CRADLE, the scanner tries to re-connect 3656 CRADLE unless you turn off the scanner.





## 1.2 MEMORY

The collected data can be sent back to a host computer one by one via the WPAN connection or stored in flash memory when the scanner is set to Memory mode.

### 1.2.1 TRANSMIT BUFFER

By default, transmit buffer is enabled and for use when the scanner is out of range. Upon reading a barcode successfully within range, the scanner responds with one short beep (high tone) and its LED indicator becomes solid green and goes off quickly. However, the host computer may not receive the data immediately if getting out of range. With the 4 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full.

#### When transmit buffer is enabled...

If the scanner is out of range, it will respond with two short beeps, high-low tone, upon reading a barcode successfully.

When transmit buffer is full, the scanner will respond with one long beep (low tone) and its LED indicator will become solid red and go off quickly. You are advised to get back to range.

#### When transmit buffer is disabled...

If the scanner is out of range, it will respond with one long beep (low tone) and its LED indicator will become solid red and go off quickly. You are advised to get back to range.

\*Enable



Disable



Note: The 4 KB transmit buffer on the scanner can hold as many as 256 scans based on EAN-13 barcodes. Data will be cleared out once the scanner is turned off or running out of battery power!



## 1.2.2 MEMORY MODE

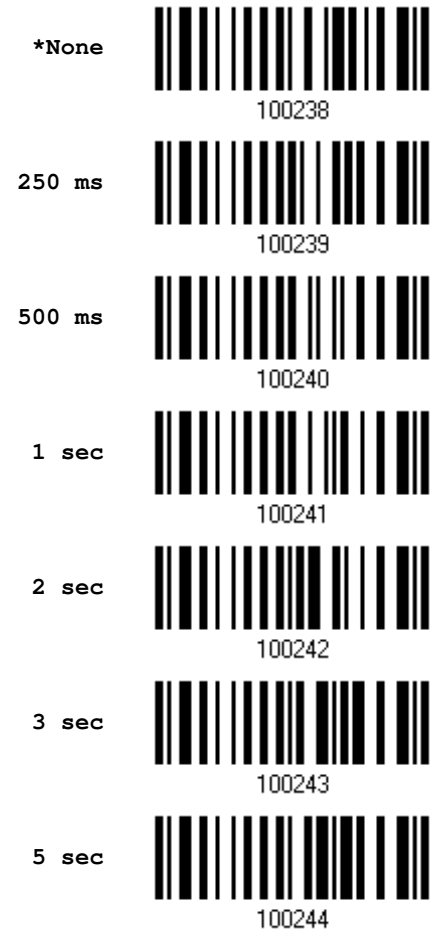
The scanner keeps 512 KB flash memory for memory mode operation. When the scanner is in memory mode, it means any real-time connection established with the host is disabled.



Warning: No real-time connection is allowed unless the memory mode is disabled.

### Memory Data Delay

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



8 sec



100245

### Send Data

The 512 KB flash memory on the scanner can store up to 32,768 scans based on EAN-13 barcodes. When it is used up, the scanner will respond with two short beeps (high-low tone) as a warning.

You are advised to send data to the host immediately by having the scanner read the "Send Data" barcode below. It will resume the previous WPAN connection with the host temporarily.

Send Data



109918

### Clear Data & Confirm

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

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

Clear Data



109916

Confirm



109917

### 1.2.3 FREE MEMORY

In memory mode, you can scan the barcode below to show the available capacity of the flash memory in percentage terms.

Spare memory



109931



### 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 upon powering on or running out of transmit buffer. You may tell the difference by the beeps – you will hear a long beep of high tone when powering on the scanner, and a long beep of low tone when the transmit buffer becomes full.

Scanner LED			Meaning
Red, flashing	---	---	<ul style="list-style-type: none"> <li>▶ Charging (On/Off ratio 0.5 s: 0.5 s)</li> <li>▶ Configuration Mode (On/Off ratio 0.5 s: 0.5 s)</li> </ul>
Red, solid	---	---	Charging error
Red, flashing	---	---	Flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive and its CPU running at low speed to save power — <ul style="list-style-type: none"> <li>▶ No WPAN connection is established after waiting for two minutes</li> </ul>
Red, on-off	---	---	<ul style="list-style-type: none"> <li>▶ Power on, with one long beep (high tone, LED on for 1 second)</li> <li>▶ Data saved to buffer when transmit buffer is enabled and the scanner is out of range, with two short beeps (high-low tone)</li> <li>▶ Transmit buffer full, with one long beep (low tone)</li> <li>▶ Transmit buffer disabled, with one long beep (low tone)</li> <li>▶ Memory full in memory mode, with two short beeps (high-low tone)</li> </ul>
---	---	Green, on-off	Good Read, with one short beep (high tone) and beeper pitch and duration programmable
---	Blue, flashing	---	First, flashing blue (On/Off ratio 0.5 s: 0.5 s) for two minutes indicates the scanner is waiting for connection, and goes off if no connection is established, then flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive. It is ready for connection only while the LED is flashing blue — <ul style="list-style-type: none"> <li>▶ SPP Slave: waiting host to connect</li> <li>▶ HID or SPP Master: trying to connect to host</li> <li>▶ Using 3656 CRADLE: trying to connect to 3656 CRADLE</li> </ul>
---	Blue, flashing	---	Flashing blue (On/Off ratio 0.1 s: 0.1 s) indicates the scanner receives a PIN code request from host (flashing more quickly than waiting connection).
---	Blue, flashing	---	Flashing blue (On/Off ratio 0.02 s: 3 s) indicates the scanner has established a WPAN connection successfully.
---	Blue, flashing	Green, flashing	Flashing blue and green (On/Off ratio 0.1 s: 0.1 s) indicates an error occurs while entering the PIN code. Press the trigger to get ready for re-connecting.



### 1.3.1 GOOD READ LED

\*Enable  
Good Read LED



Disable  
Good Read LED



### 1.3.2 GOOD READ LED DURATION

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

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



- 1) Read the barcode above to specify the time interval before the Good Read LED goes off.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "5" for the Good Read LED to go off after 150 milliseconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 1.4 BEEPER

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

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone ▶ Programmable, default to 4 KHz	Good Read, with green LED on-off quickly
Six short beeps ▶ High-low tone repeats three times	<ul style="list-style-type: none"> <li>▶ Enter Configuration Mode, with red LED flashing</li> <li>▶ Exit Configuration Mode</li> </ul>
Two short beeps, low-high tone	Setup barcode read successfully
One short beep, high tone	<ul style="list-style-type: none"> <li>▶ More setup barcode required</li> <li>▶ Input PIN code</li> <li>▶ Clear PIN code</li> </ul>
One short beep, low tone	More barcodes required to complete the "output sequence" requirements of Multi-Barcode Editor, with green LED on-off quickly (Upon completion, same as Good Read.)
One long beep, low tone	<ul style="list-style-type: none"> <li>▶ Transmit buffer full, with red LED on-off quickly</li> <li>▶ Transmit buffer disabled, with red LED on-off quickly</li> <li>▶ Configuration error (Wrong barcode...)</li> <li>▶ PIN code input error</li> <li>▶ Reject random PIN request</li> <li>▶ Fail to send data in memory mode</li> </ul>
Two short beeps, high-low tone	<ul style="list-style-type: none"> <li>▶ Data saved to buffer when transmit buffer is enabled and the scanner is out of range, with red LED on-off quickly</li> <li>▶ Memory Mode – Memory full, with red LED on-off quickly</li> </ul>
Two short beeps, high tone	Low Battery Alarm
Two long beeps, high-low tone	Multi-Barcode Mode – Buffer full
Three short beeps, tone ascending from low to high	<ul style="list-style-type: none"> <li>▶ WPAN connection established, with blue LED flashing</li> <li>▶ WPAN connection resumed, with blue LED flashing</li> </ul>
Three short beeps, tone ascending from high to low	WPAN connection out of range or suspended



## 1.4.1 BEEPER VOLUME

Mute



101009

Minimum Volume



101010

Medium Volume



101011

\*Maximum Volume



101012



## 1.4.2 GOOD READ BEEP

### Frequency

8 kHz



\*4 kHz



2 kHz



1 kHz



### Duration

\*Shortest



Shorter



Longer



Longest





### 1.4.3 LOW BATTERY ALARM

By default, it will activate the beeper to give a warning when the battery charge gets low. In order to prevent data loss, you are advised to replace the battery immediately when you hear two short beeps (high tone).

No Alarm



101017

\*Low Battery Alarm



101018

### 1.5 SEND "NR" TO HOST

The scanner can send the "NR" string to the host to notify the No Read event.

Enable



100267

\*Disable



100266



## 1.6 SCAN MODES

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

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		✓						✓
Alternate mode		✓				✓		
Aiming mode				✓			✓	✓
Multi-Barcode mode			✓		✓			

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



## 1.6.1 CONTINUOUS MODE

The scanner is always scanning.

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

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

Continuous Mode



### Decoding Delay

Set the time interval between each decoding.

\*Disable



0.5 sec



1 sec



2 sec



## 1.6.2 TEST MODE

The scanner is always scanning.

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

Test Mode



### 1.6.3 LASER MODE

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

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

---

Note: Refer to "Scanning Timeout".

---

\*Laser Mode



### 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



### 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



## 1.6.6 ALTERNATE MODE

The scanner will start scanning once the trigger is pressed

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

Alternate Mode



## 1.6.7 AIMING MODE

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

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

Aiming Mode



### Aiming Timeout

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

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



1. Read the barcode above to specify the time interval before aiming ends. (It is set to 1 by default.)
2. Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for the scanner to automatically shut down after idleness for 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.



## 1.6.8 MULTI-BARCODE MODE

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

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



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

---



## 1.7 SCANNING TIMEOUT

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

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

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



- 1) Read the barcode above to specify the time interval before the scan engine times out.
- 2) Read the ["Decimal Value"](#) barcode on page 241. For example, read "1" and "5" for the scanner to automatically shut down after idleness of 15 seconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 1.8 DELAY BETWEEN RE-READ

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

- ▶ Continuous mode
- ▶ Auto Power Off mode
- ▶ Alternate mode



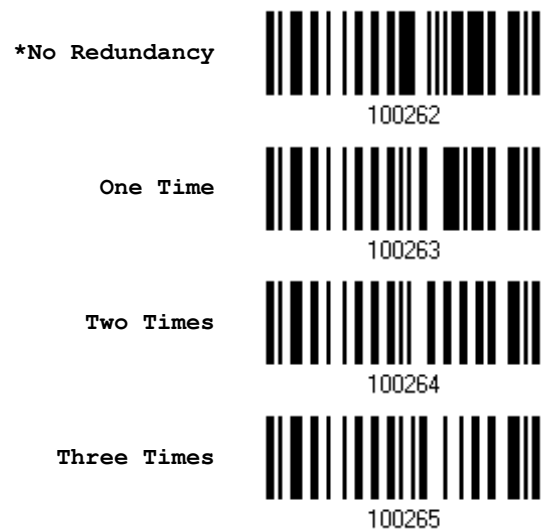


## 1.9 READ REDUNDANCY FOR ALL SYMBLOGIES

Select the level of reading security. For example,

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

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



## 1.10 ADDON SECURITY FOR UPC/EAN BARCODES

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

---

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

---

Addon Security Level  
(\*0~30)



100380

- 1) Read the barcode above to specify the read redundancy for UPC/EAN barcodes. (It is set to 0 by default.)
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.
- 3) Read the "Validate" barcode on the same page to complete this setting.



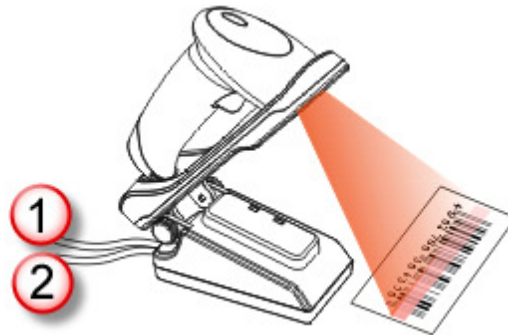
## 1.11 AUTO-SENSE MODE (1560/1560P ONLY)

### 1.11.1 BEHAVIOR OF 1560

For 1560, this mode is available when you seat the scanner in the Auto-sense stand and scan the Enable barcode. When you enable this mode, it will force the scanner to apply Laser mode as the scan mode. However, it works slightly different from the original Laser mode. Now the scanner will be expecting barcodes as long as it is seated in the Auto-sense stand, as shown below. Whenever a barcode is brought within range, the scanner will be able to decode it.



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



Note: To get Auto-sense mode work, you must connect both the power supply cord and the interface cable to the stand; supplying the only USB power is insufficient.



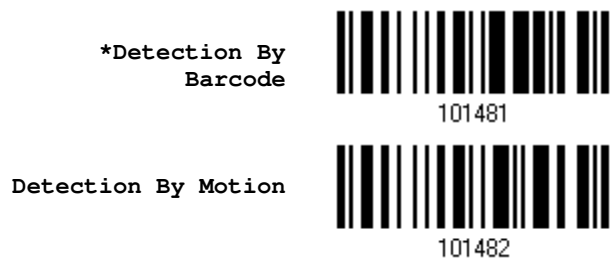
### 1.11.2 BEHAVIOR OF 1560P

For 1560P, Auto-sense is only available when the scanner is working in [Laser Mode](#). 1560P will be expecting barcodes as long as it is seated in the Auto-sense stand. Whenever a barcode is brought within range, the scanner will be able to decode it.

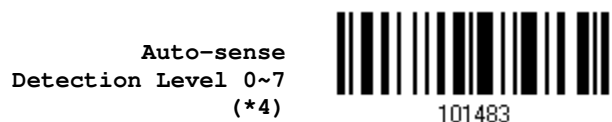
To stop this mode, just remove the scanner from the stand.



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



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



- 1) Read the barcode above to specify the Auto-sense Detection level.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" to set the Auto-sense Detection Level on 1.
- 3) Read the "Validate" barcode on the same page to complete this setting.



For your convenience, 1560P is designed to power on automatically in Auto-sense mode when you seat it in the stand connecting to the power socket. By default, this mechanism is disabled. You have to enable it by having the scanner read the Enable barcode below.



### 1.11.3 AMBIENT LIGHT

When the ambient light is too dim to activate the sensor, you may have the scanner read the "High Sensitivity" barcode to improve performance. Starting from firmware version 1.23, it will emit scan beam every 300 milliseconds when "High Sensitivity" is enabled.



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

---



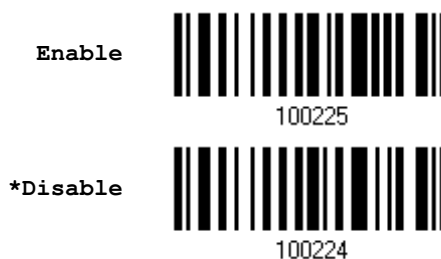
### 1.12 CCD SENSOR ALWAYS ACTIVE (1560 ONLY)

This feature is used to keep the CCD sensor always active so that the scanner can decode more efficiently. However, you may disable it in order to save battery power.



### 1.13 NEGATIVE BARCODES

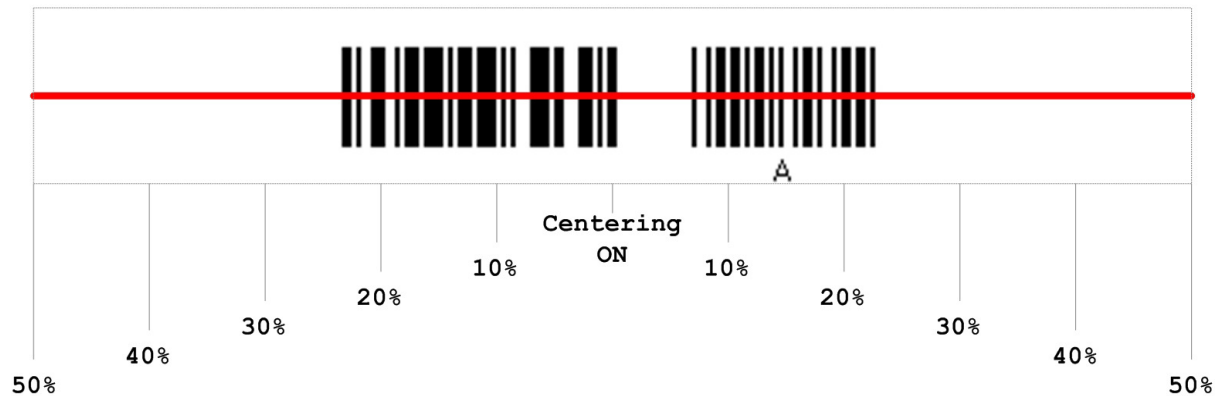
Normally, barcodes are printed with the color of the bars darker than that of the spaces. But for negative barcodes, they are printed in the opposite sense just like negative films. The spaces of negative barcodes are printed with a color darker than that of the bars. You can configure the scanner to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



## 1.14 EFFECTIVE DECODING AREA

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

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



### 1.14.1 POSITIONING WINDOW

Centering On



\*Centering Off



### 1.14.2 ADJUSTING WINDOW

#### Percentage for Left Half

<b>*Left 50%</b>	 100280
<b>Left 40%</b>	 100281
<b>Left 30%</b>	 100282
<b>Left 20%</b>	 100283
<b>Left 10%</b>	 100284

#### Percentage for Right Half

<b>Right 10%</b>	 100288
<b>Right 20%</b>	 100289
<b>Right 30%</b>	 100290
<b>Right 40%</b>	 100291
<b>*Right 50%</b>	 100292





## 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 the battery and hold down the trigger for about 2 seconds to turn on the scanner.
- 2) Have the scanner read the “Enter Setup” barcode to enter the configuration mode.
- 3) Have the scanner read the associated barcodes to activate the desired interface.  
See the following sections for output interfaces supported.
- 4) Have the scanner read the barcodes for related settings.
- 5) Have the scanner read the “Update” barcode to exit the configuration mode.
- 6) Turn on your computer or laptop and establish a WPAN connection with the scanner.  
Refer to [Chapter 3 – Setting up a WPAN Connection](#).

---

Note: By default, the output interface is set to “BT HID”.

---

### IN THIS CHAPTER

---

2.1 BT HID .....	56
2.2 BT SPP Slave.....	68
2.3 BT SPP Master .....	72
2.4 Keyboard Wedge via .....	77
2.5 RS-232 via .....	88
2.6 USB HID via .....	93
2.7 USB Virtual COM via .....	103



## 2.1 BT HID

For BT HID, refer to [Chapter 3 – Setting up a WPAN Connection](#) for related connection settings. Run any text editor on your computer, and the scanned data will be transmitted to the computer.

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



### 2.1.1 ACTIVATE BT HID & SELECT KEYBOARD TYPE

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

Activate BT HID &  
Select Keyboard  
Type...



- 1) Read the barcode above to activate BT HID and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 241. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

#### BT HID

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	72	PCAT (Spanish)
65	PCAT (French)	73	PCAT (Portuguese)
66	PCAT (German)	74	PS55 A01-2 (Japanese)
67	PCAT (Italy)	75	User-defined table
68	PCAT (Swedish)	76	PCAT (Turkish)
69	PCAT (Norwegian)	77	PCAT (Hungarian)
70	PCAT (UK)	78	PCAT (Swiss German)
71	PCAT (Belgium)	79	PCAT (Danish)



## 2.1.2 RESET CONNECTION

For BT HID, you can only have the scanner connected to one computer at a time. If you want to connect the scanner to another host, you must have it read the "Reset Connection" barcode so that the current connection record will be cleared. Then, the scanner will restart itself automatically. Go through the whole process in [3.2.3 Connect to Dongle](#) to establish a new connection.

Reset Connection



109919

---

Note: The "Restore System Defaults" barcode will have the current connection record cleared as well.

---



### 2.1.3 KEYBOARD SETTINGS

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

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

#### Alphabets Layout

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

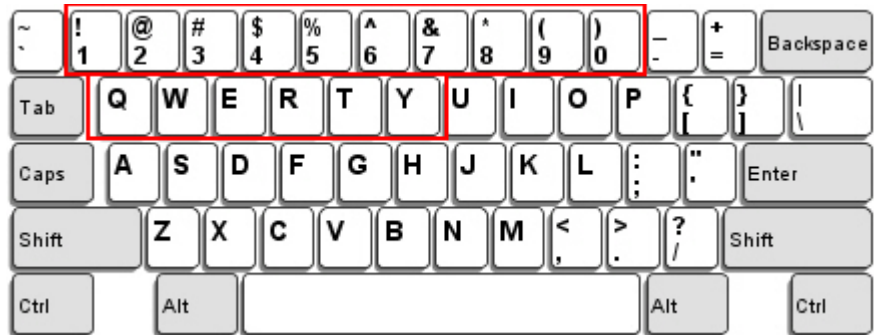


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match your keyboard.



**US Keyboard Style – Normal**

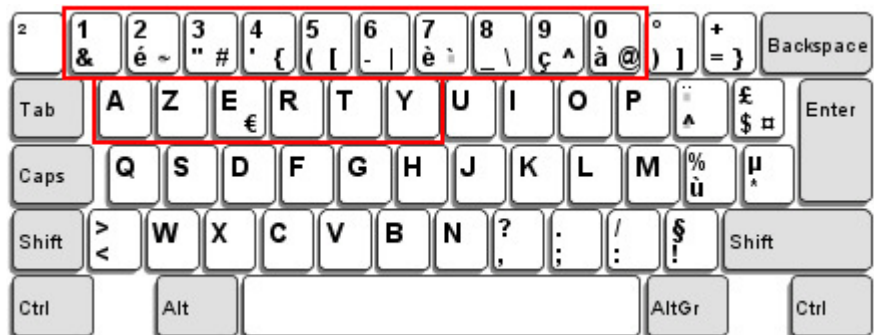
QWERTY layout, which is normally used in western countries.



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

**French Keyboard Style – AZERTY**

French layout; see below for French Keyboard Style.



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

**German Keyboard Layout – QWERTZ**

German layout; see below for German Keyboard Style.



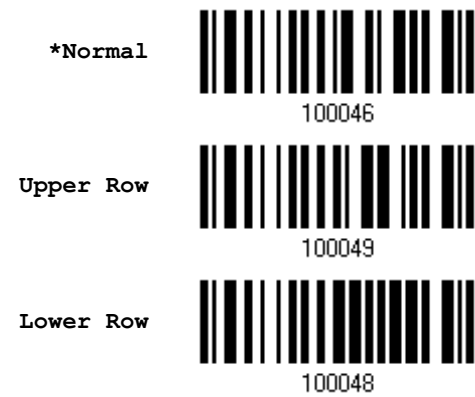
- ▶ Select "Lower Row" for the "Digits Layout" setting for the upper row is for special characters.



### Digits Layout

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

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



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



**Capital Lock Type & Setting**

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

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



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

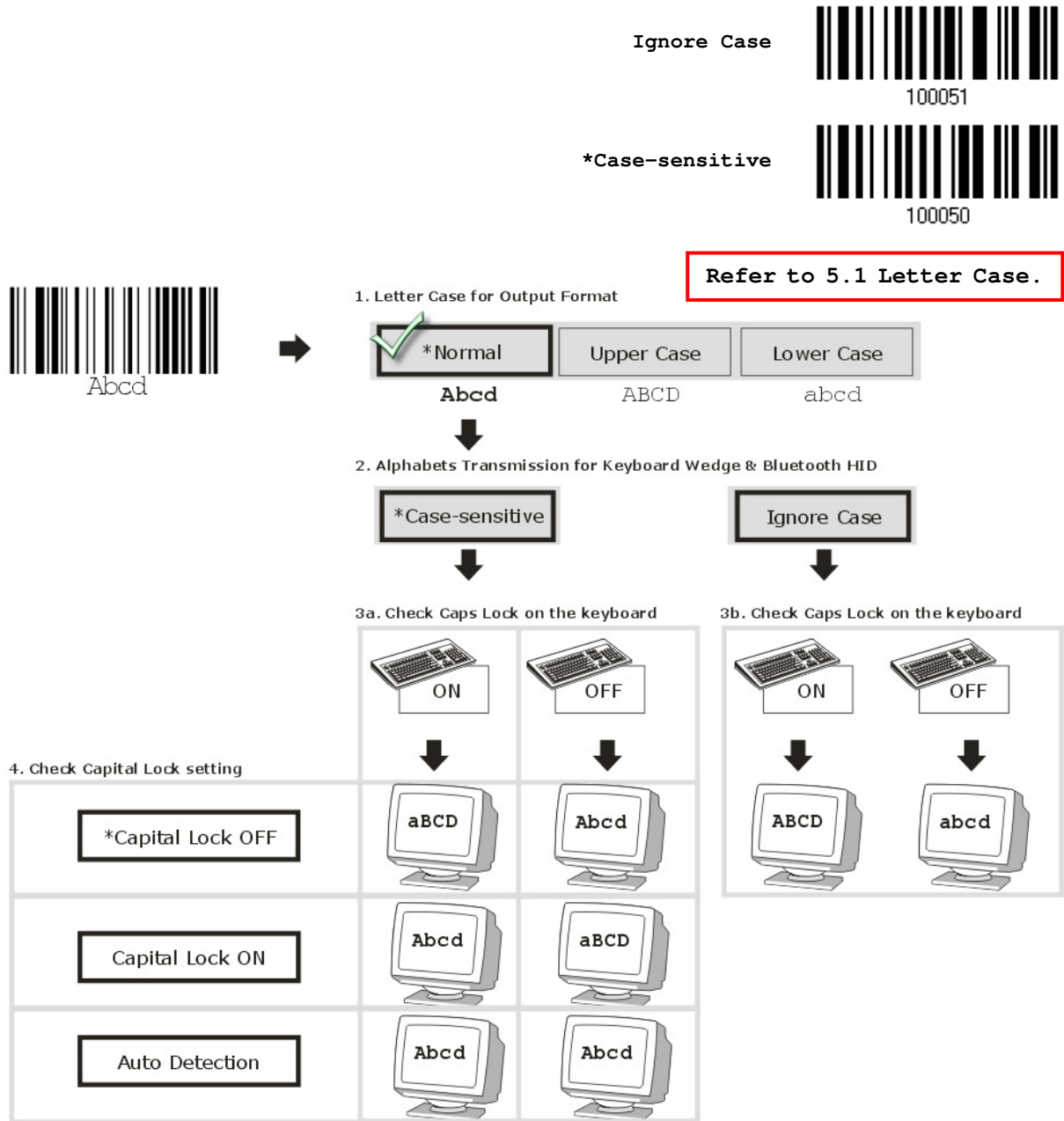


100052



### Alphabets Transmission

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



## Digits Transmission

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

Numeric Key

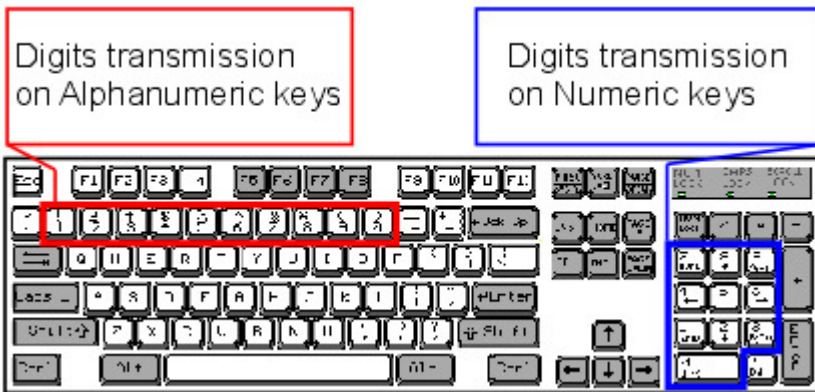


100041

\*Alphanumeric Key



100040



---

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

---



### 2.1.4 INTER-CHARACTER DELAY

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

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



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

### 2.1.5 INTER-FUNCTION DELAY

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

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

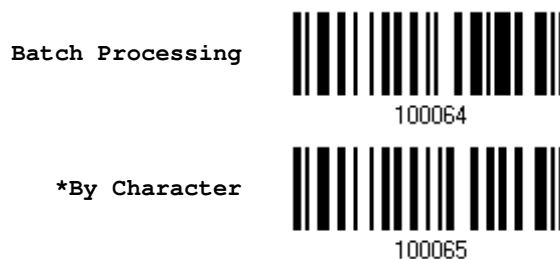


- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 2.1.6 HID CHARACTER TRANSMIT MODE

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



---

Note: "By Character" transmit mode is required when working with iPhone or iPad.

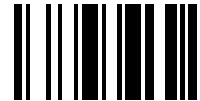
---



### 2.1.7 KEYPAD SUPPORT FOR IPHONE/IPAD

When the scanner has been successfully connected to iPhone or iPad for data collection, the onscreen keypad of iPhone/iPad will disappear by default. Have the scanner read the "Show or Hide Keypad" barcode to show or hide the keypad if necessary.

Show or Hide Keypad



For 1560P Series scanners, read the "Use Trigger Key to Show or Hide Keypad" barcode in advance allowing users to press the trigger key twice within 0.5 seconds to show or hide the onscreen keypad.

Disable



101022

\*Use Trigger Key to Show or Hide Keypad



101023

Note: This function only works for  
(1) iPhone 4 and 3GS version 4.1 or later, and (2) iPad version 4.2 or later.

### 2.1.8 TRANSMIT SPEED

By default, the BT HID transmit speed is set to Fast for working in quicker transmit speed. Users can have the scanner work in normal speed by reading the Normal barcode.

Normal



100162

\*Fast



100163

### 2.1.9 BT HID SLAVE/MASTER SWITCHING

By default, the BT HID role is set to slave. Users can have the scanner switch between slave and master by reading the barcodes below.

\*Slave



100164



Master



100165

### 2.1.10 BT HID AUTO-RECONNECTION (1560P ONLY)

Users can decide whether to have the scanner automatically reconnect to a paired device after disconnection, and the occasion for reconnecting.

\*Auto reconnect  
immediately



100168

Auto reconnect on  
data being scanned



100169

Auto reconnect off



100170



Update

## 2.2 BT SPP SLAVE

For BT SPP Slave, refer to [Chapter 3 – Setting up a WPAN Connection](#) for related connection settings.

### 2.2.1 ACTIVATE BT SPP SLAVE MODE

This is SPP Slave Mode.

Activate BT SPP,  
Slave Mode



100003

### 2.2.2 INTER-FUNCTION DELAY

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

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



100012

- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.





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

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



100013

- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for the scanner to automatically shut down after idleness of 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

#### ACK/NAK Error Beep

Enable Error Beep



100015

\*Disable Error Beep



100014

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

### 2.2.4 BT SPP SLAVE HARDWARE FLOW CONTROL

By default, the data sending via Bluetooth SPP doesn't employ hardware flow control. In some cases users may want to enable hardware flow control to prevent data loss during transmission. Please scan the barcode below to enable/disable it.

\*Disable



100173

Enable



100174



## 2.3 BT SPP MASTER

As a SPP master device, the scanner will be able to resume connection with the host upon powering on again, as long as the host application is running. If the scanner fails to resume connection, it will try every 5 seconds to re-connect to the host unless you have the scanner read the "Reset Connection" or "Restore System Defaults" barcode.

For BT SPP Master, refer [3.2.2 Configure Related Settings](#) for related connection settings.

Note: In SPP Master Mode, if the scanner fails to re-connect within the specified period of time (2 minutes by default), the scanner will become inactive to save power. Once the re-connection is established successfully, the scanner will not go through transition from full CPU speed to low CPU speed even though it is idle during the specified time interval for Auto Power Off. It will automatically turn off when the time is up. Refer to [1.1.3 Power Economy vs. WPAN Connection](#).

### 2.3.1 ACTIVATE BT SPP MASTER MODE

This is SPP Master Mode.

Activate BT SPP,  
Master Mode



#### How to connect with the target device?

Produce two setup barcodes for the target SPP slave device, just like what we do for 3656 CRADLE.

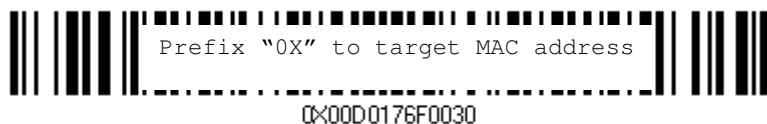
- ▶ "Set Connection"
- ▶ "MAC ID"

Note: The "MAC ID" barcode must have a prefix of two characters, either "0x" or "0X", followed by the real MAC address of the target device.

Usage:

1. Read the "Activate BT SPP, Master Mode" barcode above and barcodes for connection settings, such as authentication and preset PIN. Skip this step if no connection settings are desired.
2. Read the "Set Connection" and "MAC ID" barcodes. The scanner will respond with one beep upon reading each of the barcodes.

Set Connection



Note: Read the "Set Connection" barcode first, and then the "MAC ID" barcode within 10 seconds.

---

Instead of producing the "MAC ID" barcode, you may have the scanner read the setup barcodes for entering the MAC address.

- ▶ Have the scanner read the "Abort" barcode to cancel the operation at any time while reading setup barcodes for the MAC address. If the MAC address has not been completed yet, having the scanner read the "Validate" barcode can cancel the operation as well.

Enter MAC ID in  
Hexadecimal...



Usage:

- 1) Read the barcode above.
- 2) Read the "[Hexadecimal System](#)" barcode on page 242 for the desired MAC address.
- 3) Read the "Validate" barcode on the same page to complete this setting.

### Connect with the target device by scanning a single 1D setting barcode

---

Users can produce a single 1D setup barcode that combines the "Set Connection" and "MAC ID" setup commands to connect with the target device. While producing the barcode, be aware the letter upper/lower case "SeTcOn" and the barcode must be the Code 128 symbology.

Usage:

- 1) Read the "Activate *Bluetooth*<sup>®</sup> SPP, Master Mode" barcode above and barcodes for connection settings, such as authentication and preset PIN. Skip this step if no connection settings are desired.
- 2) Read the "SeTcOnxxxxxxxxxxxx" 1D single barcode below. The scanner will respond with one beep upon reading the barcode.



### Exit SPP Master Mode

---

To stop such re-connection, read "Reset Connection" or "Restore System Defaults" barcode so that the current connection record (= MAC ID) will be cleared. Then, the scanner will restart itself automatically. Go through the process in [3.2.3 Connect to Dongle](#) to establish a new WPAN connection.

Reset Connection



### 2.3.2 INTER-FUNCTION DELAY

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

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



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

### 2.3.3 ACK/NAK TIMEOUT

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

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



- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for the scanner to automatically shut down after idleness of 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.



### ACK/NAK Error Beep

---

Enable Error Beep



100015

\*Disable Error Beep



100014

---

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

---



### 2.3.4 SWITCH BETWEEN MASTER/SLAVE MODE

After the scanner has established a connection as a SPP slave device, you may have it read the "Activate BT SPP, Master Mode" setup barcode to switch to SPP Master Mode. This will result in easy and reliable re-connection, just like connecting with 3656 CRADLE.

### 2.3.5 BT SPP MASTER HARDWARE FLOW CONTROL

By default, the data sending via Bluetooth SPP doesn't employ hardware flow control. In some cases users may want to enable hardware flow control to prevent data loss during transmission. Please scan the barcode below to enable/disable it.

**\*Disable**



100173

**Enable**



100174

### 2.3.6 BT SPP MASTER AUTO-RECONNECTION (1560P ONLY)

Users can decide whether to have the scanner automatically reconnect to a paired device after disconnection, and the occasion for reconnecting.

**\*Auto reconnect  
immediately**



100168

**Auto reconnect on  
data being scanned**



100169

**Auto reconnect off**



100170



## 2.4 KEYBOARD WEDGE VIA 3656 CRADLE

The Y cable allows you to connect the scanner via 3656 CRADLE to the keyboard input port of PC and you may join the keyboard as well. The scanned data will be transmitted to the host keyboard port as if it is manually entered via the keyboard. For example, run a text editor on your computer to receive the data.

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



### 2.4.1 ACTIVATE KEYBOARD WEDGE & SELECT KEYBOARD TYPE

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

Activate 3656  
CRADLE Keyboard  
Wedge & Select  
Keyboard Type...



- 1) Read this barcode above to activate Keyboard Wedge and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 241. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

#### Keyboard Wedge via 3656 CRADLE

By default, the keyboard type is set to PCAT (US). The following keyboard types are supported when using 3656 CRADLE with the keyboard wedge cable provided —

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





## 2.4.2 KEYBOARD SETTINGS

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

### Alphabets Layout

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

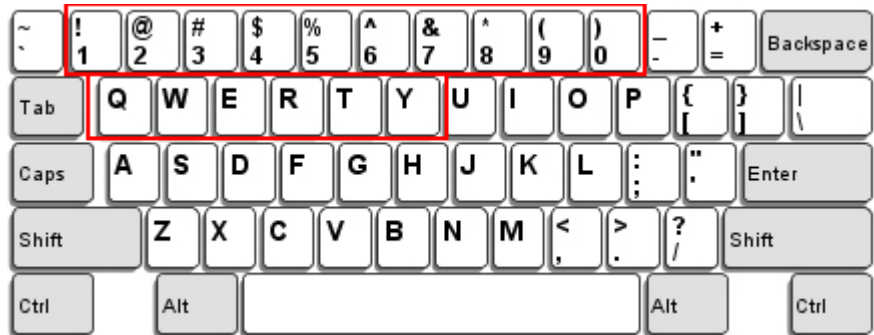


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match your keyboard.



**US Keyboard Style – Normal**

QWERTY layout, which is normally used in western countries.



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

**French Keyboard Style – AZERTY**

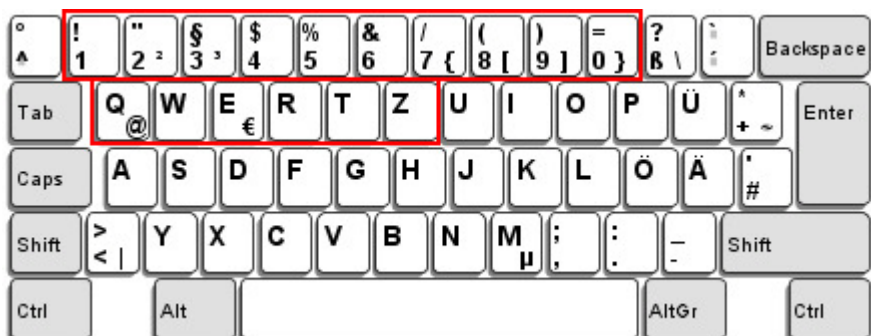
French layout; see below for French Keyboard Style.



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

**German Keyboard Layout – QWERTZ**

German layout; see below for German Keyboard Style.



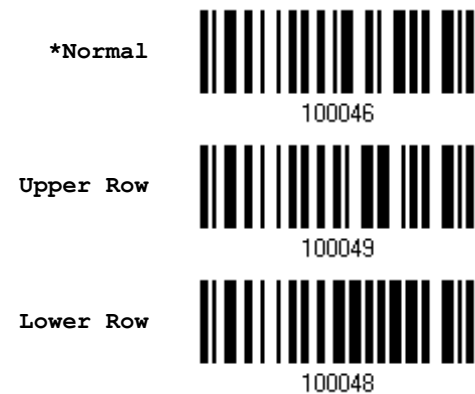
- ▶ Select "Lower Row" for the "Digits Layout" setting for the upper row is for special characters.



### Digits Layout

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

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



---

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

---



**Capital Lock Type & Setting**

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

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



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).



\*Capital Lock OFF



100052



**Alphabets Transmission**

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

Ignore Case



100051

\*Case-sensitive



100050

Refer to 5.1 Letter Case.



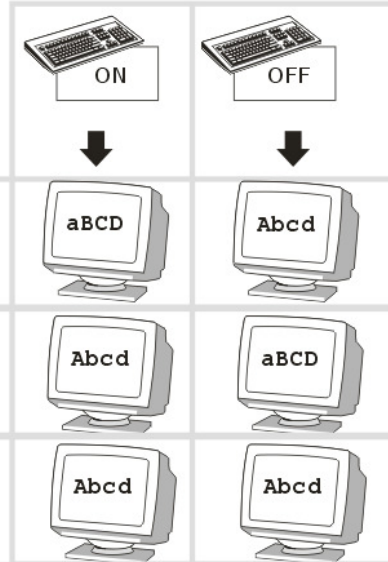
1. Letter Case for Output Format



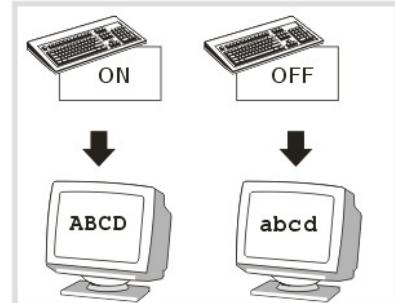
2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID



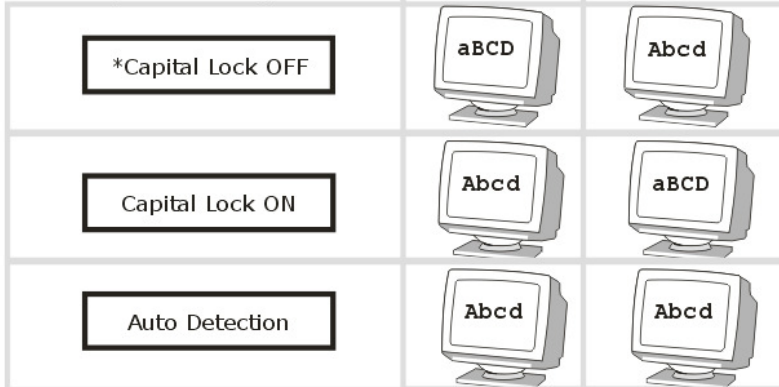
3a. Check Caps Lock on the keyboard



3b. Check Caps Lock on the keyboard



4. Check Capital Lock setting



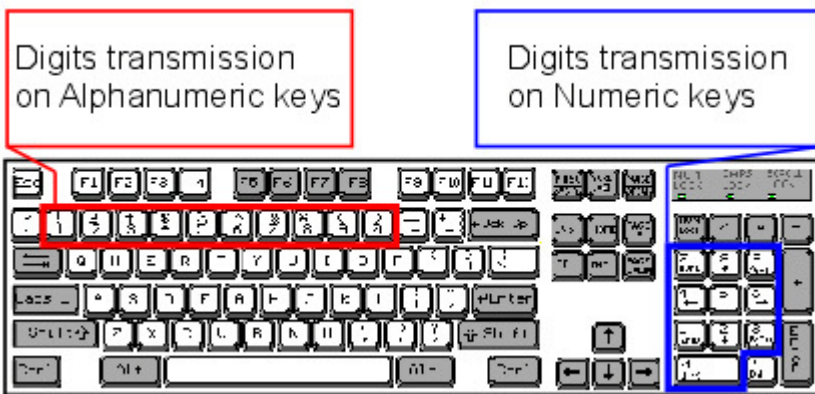
## Digits Transmission

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

Numeric Key



\*Alphanumeric Key



---

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

---



### ALT Composing

---

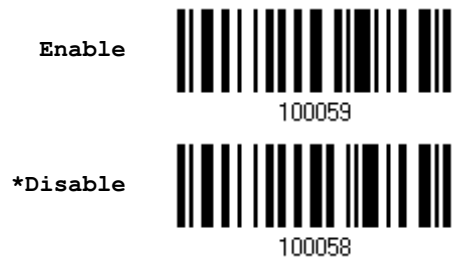
By default, Alternate key composing is disabled. Select [Yes] to allow emulating Alternate key code of a specific keyboard character. For example, [Alt] + [065] will be sent to host for the character "A" regardless the keyboard type you are using.



### Laptop Support

---

By default, laptop support is disabled. It is suggested to enable this feature if you connect the wedge cable to a laptop without an external keyboard being inter-connected.





### 2.4.3 INTER-CHARACTER DELAY

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

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



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

### 2.4.4 INTER-FUNCTION DELAY

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

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



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 2.5 RS-232 VIA 3656 CRADLE

Use the RS-232 cable to connect the scanner via 3656 CRADLE to the serial port of PC, and connect the power supply cord. The associated RS-232 parameters must match those configured on the computer. You may run HyperTerminal.exe on your computer, and the scanned data will be transmitted to the computer.

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

### 2.5.1 ACTIVATE RS-232 INTERFACE

Activate 3656 CRADLE  
RS-232 Interface



100001

### 2.5.2 BAUD RATE

\*115200 bps



100080

57600 bps



100081

38400 bps



100082

19200 bps



100083

9600 bps



100084



4800 bps



100100

2400 bps



100085

1200 bps



100086

600 bps



100087

### 2.5.3 DATA BITS

\*8 bits



100093

7 bits



100092

### 2.5.4 PARITY

\*No parity



100088

Even



100090

Odd



100091



## 2.5.5 STOP BIT

2 stop bits



\*1 stop bit



## 2.5.6 FLOW CONTROL

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

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

\*None



Scanner Ready



Data Ready



Invert Data Ready



## 2.5.7 INTER-CHARACTER DELAY

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

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



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

## 2.5.8 INTER-FUNCTION DELAY

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

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



- 1) Read this barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 2.5.9 ACK/NAK TIMEOUT

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

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



- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for the scanner to automatically shut down after idleness off 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

### ACK/NAK Error Beep

Enable Error Beep



\*Disable Error  
Beep



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



## 2.6 USB HID VIA 3656 CRADLE

For USB HID, use the USB cable to connect the scanner via 3656 CRADLE to the USB port of PC and connect the power supply cord. Run any text editor on your computer, and the scanned data will be transmitted to the computer.

**Warning:** When the 3656 CRADLE stand is solely on USB power, the current may be insufficient for it to function normally. You must connect the power supply cord.

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-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)



## 2.6.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

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

Activate  
3656 CRADLE USB HID &  
Select Keyboard  
Type...



- 1) Read the barcode above to activate USB HID and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 241. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

### USB HID

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	72	PCAT (Spanish)
65	PCAT (French)	73	PCAT (Portuguese)
66	PCAT (German)	74	PS55 A01-2 (Japanese)
67	PCAT (Italy)	75	User-defined table
68	PCAT (Swedish)	76	PCAT (Turkish)
69	PCAT (Norwegian)	77	PCAT (Hungarian)
70	PCAT (UK)	78	PCAT (Swiss German)
71	PCAT (Belgium)	79	PCAT (Danish)





## 2.6.2 KEYBOARD SETTINGS

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

### Alphabets Layout

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



---

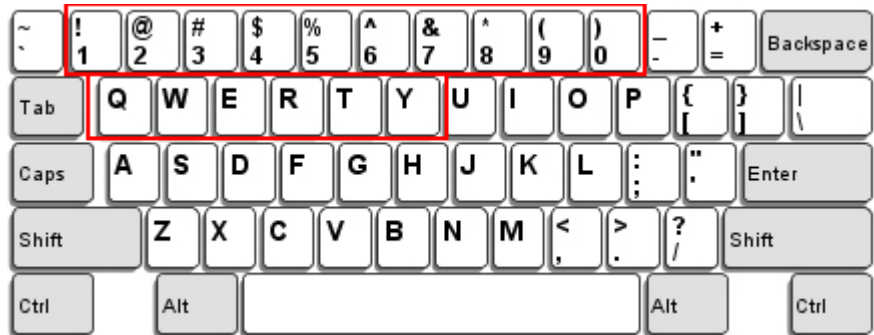
Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match your keyboard.

---



**US Keyboard Style – Normal**

QWERTY layout, which is normally used in western countries.



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

**French Keyboard Style – AZERTY**

French layout; see below for French Keyboard Style.



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

**German Keyboard Layout – QWERTZ**

German layout; see below for German Keyboard Style.



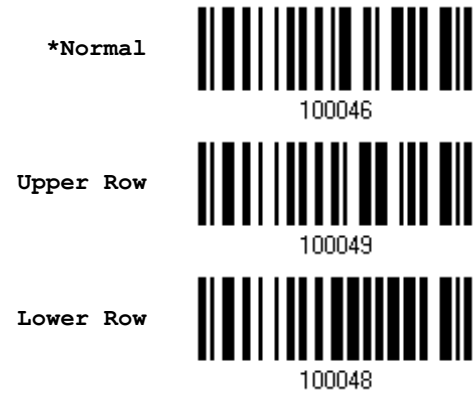
- ▶ Select "Lower Row" for the "Digits Layout" setting for the upper row is for special characters.



### Digits Layout

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

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



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



**Capital Lock Type & Setting**

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

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



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).



\*Capital Lock OFF



100052



**Alphabets Transmission**

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

Ignore Case



100051

\*Case-sensitive



100050

Refer to 5.1 Letter Case.



Abcd

1. Letter Case for Output Format

<input checked="" type="checkbox"/> *Normal	<input type="checkbox"/> Upper Case	<input type="checkbox"/> Lower Case
Abcd	ABCD	abcd

2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID

<input checked="" type="checkbox"/> *Case-sensitive	<input type="checkbox"/> Ignore Case
---	--------------------------------------

3a. Check Caps Lock on the keyboard

ON	OFF
↓	↓
aBCD	Abcd

3b. Check Caps Lock on the keyboard

ON	OFF
↓	↓
ABCD	abcd

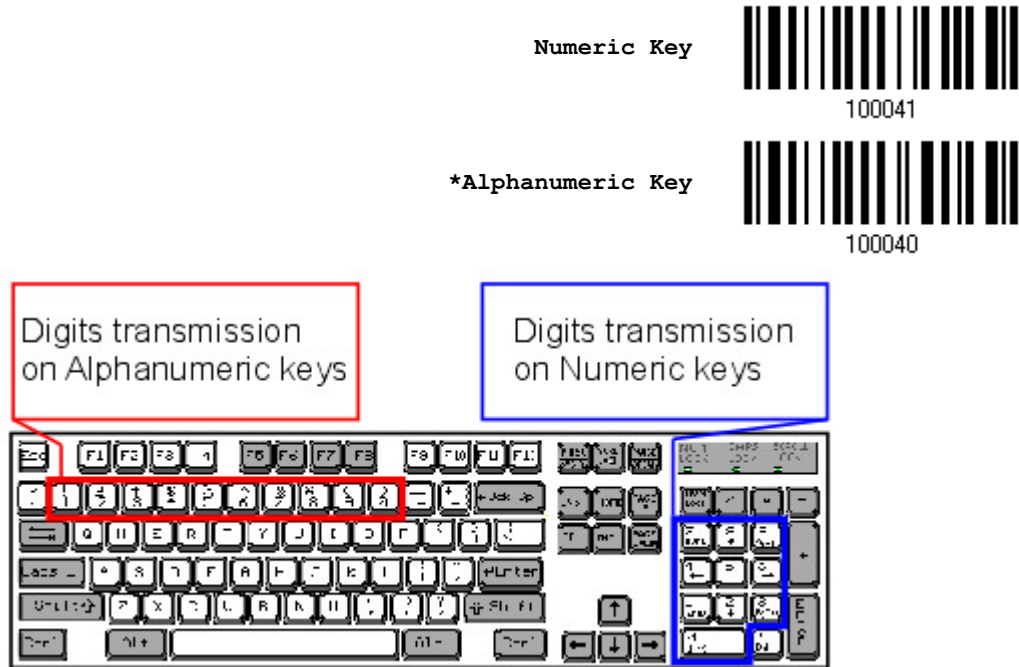
4. Check Capital Lock setting

<input checked="" type="checkbox"/> *Capital Lock OFF		
Capital Lock ON		
Auto Detection		



## 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.



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

## 2.6.3 INTER-CHARACTER DELAY

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



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



## 2.6.4 INTER-FUNCTION DELAY

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

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



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

## 2.6.5 HID CHARACTER TRANSMIT MODE

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

Batch Processing



\*By Character





## 2.7 USB VIRTUAL COM VIA 3656 CRADLE

Use the USB cable to connect the scanner via 3656 CRADLE to the USB port of PC and connect the power supply cord. You may run HyperTerminal.exe on your computer, and the scanned data will be transmitted to the computer.

**Warning:** When the 3656 CRADLE stand is solely on USB power, the current may be insufficient for it to function normally. You must connect the power supply cord.

**Note:** If using USB Virtual COM for the first time, you must install its driver beforehand. Driver version 5.4 or later is required. Please remove older versions!

### 2.7.1 ACTIVATE USB VIRTUAL COM

Activate 3656 CRADLE  
USB Virtual COM



### 2.7.2 INTER-FUNCTION DELAY

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

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



- 1) Read the barcode above to specify the inter-function delay.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



### 2.7.3 ACK/NAK TIMEOUT

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

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



100013

- 1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the "Validate" barcode on the same page to complete this setting.

#### ACK/NAK Error Beep

Enable Error Beep



100015

\*Disable Error Beep



100014

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



## SETTING UP A WPAN CONNECTION

The 1560/1562 scanner can be configured to send data to a host computer wirelessly via the 3656 CRADLE stand, or to a notebook computer or PDA with *Bluetooth*® wireless technology. Upon powering up, the scanner will be ready for establishing a WPAN connection.

To establish a connection via 3656 CRADLE after reading “Set Connection” and “Serial No.” labels ...



Interface Option	Reference
Keyboard Wedge	<a href="#">2.4 Keyboard Wedge via</a>
RS-232	<a href="#">2.5 RS-232 via</a>
USB HID	<a href="#">2.6 USB HID via</a>
USB Virtual COM	<a href="#">2.7 USB Virtual COM via</a>

To establish a connection via *Bluetooth*® dongle after pairing...



Interface Option	Reference
BT HID	<a href="#">2.1 BT HID</a>
BT SPP	<a href="#">2.2 BT SPP Slave</a> , <a href="#">2.3 BT SPP Master</a>



**IN THIS CHAPTER**

---

3.1 Connecting via ..... 107  
3.2 Connecting via *Bluetooth*<sup>®</sup> Dongle..... 111



## 3.1 CONNECTING VIA 3656 CRADLE

By default, the interface of 3656 CRADLE is set to "USB HID". Use the interface cable to connect the scanner via 3656 CRADLE to PC. You can have up to seven scanners connected to one computer at the same time.

Note: If using USB Virtual COM for the first time, you must install its driver beforehand. Driver version 5.4 or later is required. Please remove older versions!

### 3.1.1 CONNECT TO 3656 CRADLE

#### By scanning two setting barcodes in sequence

Connect any scanner to 3656 CRADLE by reading the two labels at the back of 3656 CRADLE. The scanner will respond with one beep upon reading each of the labels.

- ▶ "Set Connection" label
- ▶ "Serial Number" label

After reading these labels, the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to the 3656 CRADLE while its LED is flashing blue (On/Off ratio 0.5 s: 0.5 s). Once connected, the scanner will respond with three beeps (tone ascending from low to high), and the LED flashes blue (On/Off ratio 0.02 s: 3 s). When out of range, the scanner will respond with three short beeps (tone descending from high to low).

Usage:

Read the "Set Connection" barcode first, and then the "Serial Number" barcode. If the "Set Connection" barcode on 3656 CRADLE is illegible, try this one —

Set Connection



88686471166254

Note: The 3656 CRADLE settings will overwrite the interface-related settings on the scanners that are currently connected to 3656 CRADLE.

#### By scanning a single 1D setting barcode

Users can produce a single 1D setup barcode that combines the "Set Connection" and "3656 CRADLE Serial Number" setup commands to connect with the target device. While producing the barcode, be aware the letter upper/lower case "SeTcOn" and the barcode must be the Code 128 symbology.

Usage:

Read the "SeTcOnxxxxxxxx" single 1D barcode. The scanner will respond with one beep upon reading the barcode.

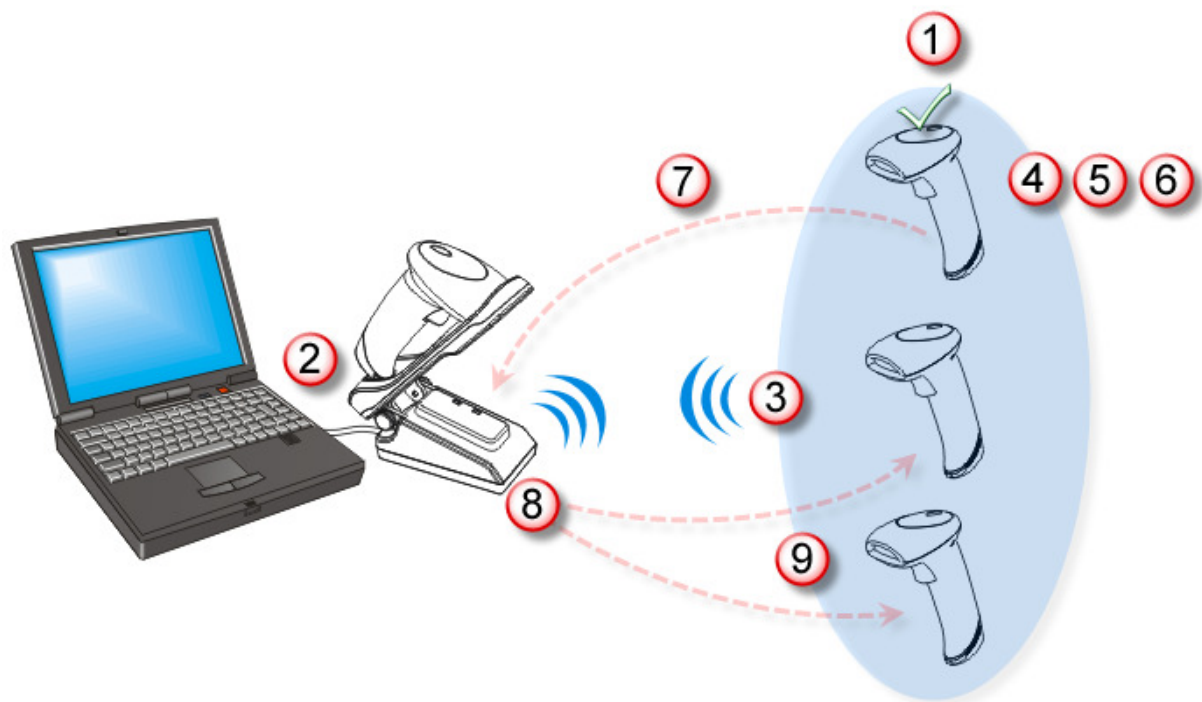


### 3.1.2 CHANGE INTERFACE

If you want to change the interface cable of 3656 CRADLE, use one of the scanners to configure the interface-related settings and it will pass the new settings to 3656 CRADLE, which will then initialize and pass the settings to any other connected scanners.

- 1) Have the scanner read the "Set Connection" and "Serial Number" labels at the back of 3656 CRADLE.
- 2) Within two minutes, connect the interface cable between 3656 CRADLE and your computer. For USB Virtual COM, you may need to install its driver first!
- 3) The scanners will connect to your computer via 3656 CRADLE.
- 4) Have one scanner read the "Enter Setup" barcode to enter the configuration mode.
- 5) Have the scanner read the desired interface barcode and configure its related settings –
  - ▶ "Activate Keyboard Wedge & Select Keyboard Type"
  - ▶ "Activate RS-232"
  - ▶ "Activate USB HID & Select Keyboard Type"
  - ▶ "Activate USB Virtual COM"
- 6) Have the scanner read the "Update" barcode to exit the configuration mode.
- 7) After the scanner resumes connection with 3656 CRADLE, it will pass the interface-related settings to 3656 CRADLE.
- 8) Upon receipt of the new settings, 3656 CRADLE will initialize itself.
- 9) Updated with new settings, 3656 CRADLE will pass the settings to other connected scanners.





### 3.1.3 CONFIGURE RELATED SETTINGS

#### Sniff Mode (Power-saving)

By default, this feature is enabled, meaning the scanner will listen to the wireless network at a reduced rate.

**\*Enable**



100153

**Disable**



100152





## 3.2 CONNECTING VIA *BLUETOOTH*<sup>®</sup> DONGLE

### 3.2.1 CHANGE INTERFACE

Below is the procedure to configure the scanner before establishing a WPAN connection via *Bluetooth*<sup>®</sup> dongle.

- 1) Have the scanner read the "Enter Setup" barcode to enter the configuration mode.
- 2) Have the scanner read the desired interface barcode –
  - ▶ "Activate BT HID & Select Keyboard Type"
  - ▶ "Activate BT SPP Slave Mode"
  - ▶ "Activate BT SPP Master Mode"
- 3) Have the scanner read the barcodes related to WPAN settings, such as Device Name Broadcasting, Authentication & PIN Code, etc.
- 4) Have the scanner read the "Update" barcode to exit the configuration mode.
- 5) The scanner will stay active for a specified period of time (2 minutes by default) waiting for a connection request from the host (SPP Slave Mode) or trying to connect to the host (HID or SPP Master Mode). Its CPU is running at full speed, and the LED is flashing blue (On/Off ratio 0.5 s: 0.5 s).

Once connected, when getting out of range, the scanner will respond with three short beeps (tone descending from high to low).



### 3.2.2 CONFIGURE RELATED SETTINGS

#### Sniff Mode (Power-saving)

By default, this feature is enabled, meaning the scanner will listen to the wireless network at a reduced rate.

**\*Enable**



100153

**Disable**



100152

Note: When connecting more than two scanners to a notebook computer or PDA with *Bluetooth*<sup>®</sup> wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

#### Device Name Broadcasting

The scanner can be configured to hide itself from other devices equipped with *Bluetooth*<sup>®</sup> wireless technology. 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.

**\*Enable**



100157

**Disable**



100156

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



## Authentication

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.

The scanner allows up to 16 characters for a PIN code and provides two options for authentication:

### Enable Authentication with Preset PIN

Have the scanner read the "Use preset PIN" barcode, and change the preset PIN if necessary. This means you will have to enter exactly the same string for your computer or PDA to connect to the scanner. If the PIN or passkey is incorrect, any connection attempt will be turned down by the scanner. See step 8 in [3.2.3 Connect to Dongle](#).

1. Read the "Use preset PIN" barcode to enable authentication with a preset PIN.



2. Read one of the barcodes to specify the PIN code, in decimal or hexadecimal.

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



3. Read the "[Decimal Value](#)" barcode on page 241 or the "[Hexadecimal Value](#)" barcode on page 242 for the desired digits or character string.

Read the "Clear PIN Code" barcode first if you need to re-input the PIN code.

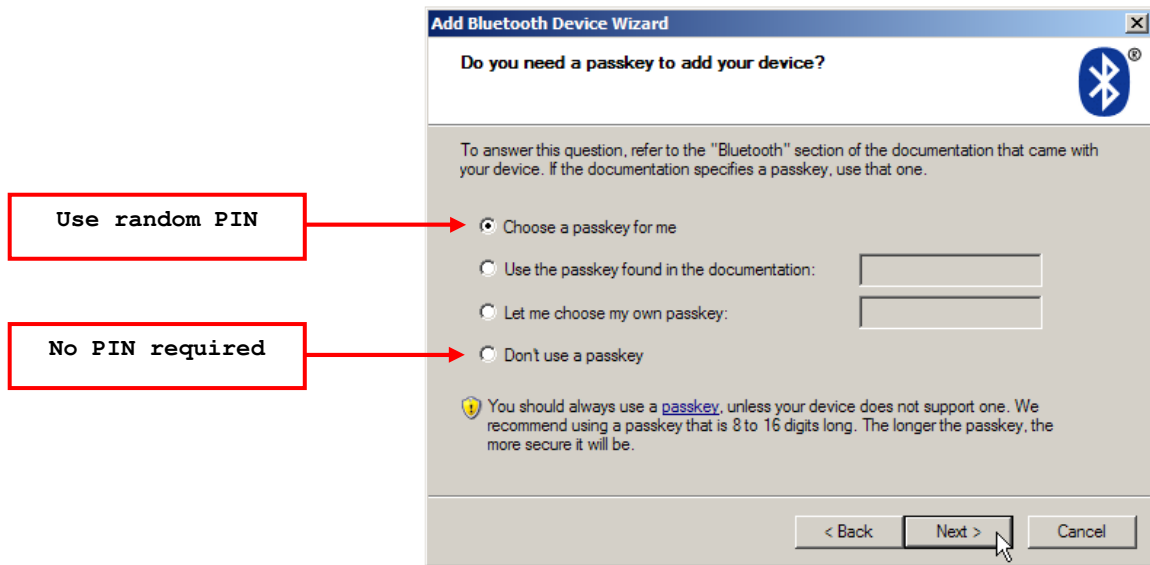


4. Read the "Validate" barcode to complete this setting.

### Enable Authentication with Random PIN or No Authentication

By default, it is set to "No PIN or use random PIN", which depends on the setting of the target device. (No PIN = No authentication.)





---

**Note:** When using BT HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you have the scanner set to "No PIN or use random PIN" before pairing. While pairing, the host PIN code will be displayed on the computer screen. Have the scanner read the setup barcode "Enter PIN Code in Decimal" or "Enter PIN Code in Hexadecimal" to input the matching PIN code. Refer to [Disable Authentication or Use Random PIN](#).

---



### 3.2.3 CONNECT TO DONGLE


The procedure goes through associating devices for establishing a WPAN connection, which is pretty much the same except for the software you are using. If your computer is running Microsoft® Windows® XP Service Pack 3 (SP3) or Windows Vista® Service Pack 1 (SP1), you can use the software support that Windows® includes, or you can use the driver that the device manufacturer provides. Now, let's try using the software support that Windows® XP Service Pack 2 includes.

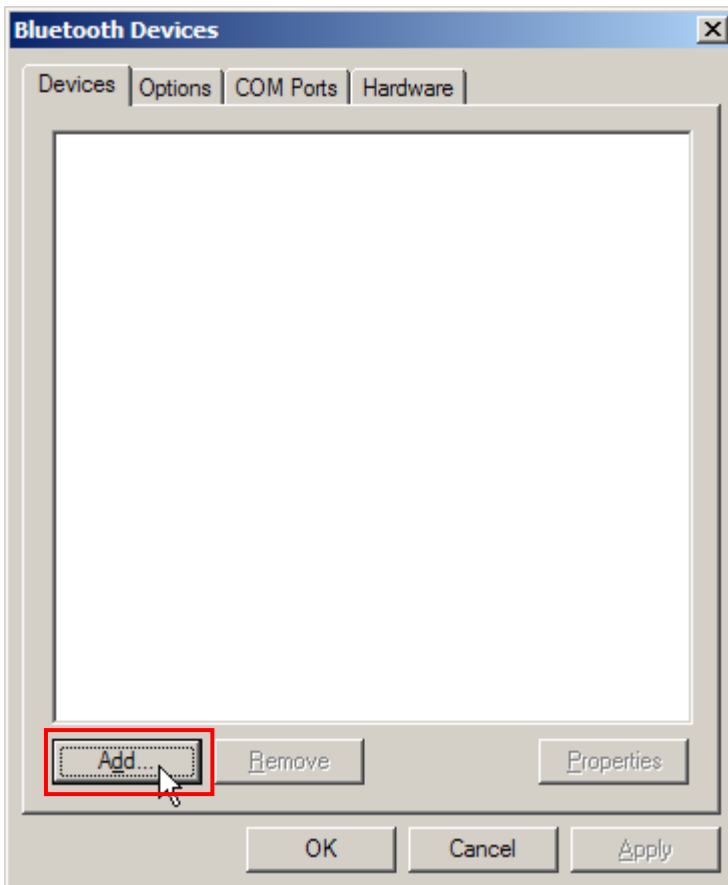
#### BT HID Procedure

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

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

#### BT SPP Procedure

1. Turn on the *Bluetooth*® function on your computer, running Windows XP SP2.
2. Double-click the *Bluetooth*® icon from the lower right of the taskbar.  Alternatively, you may go to **Control Panel > Bluetooth Devices**.
3. Click [Add] to search devices nearby.



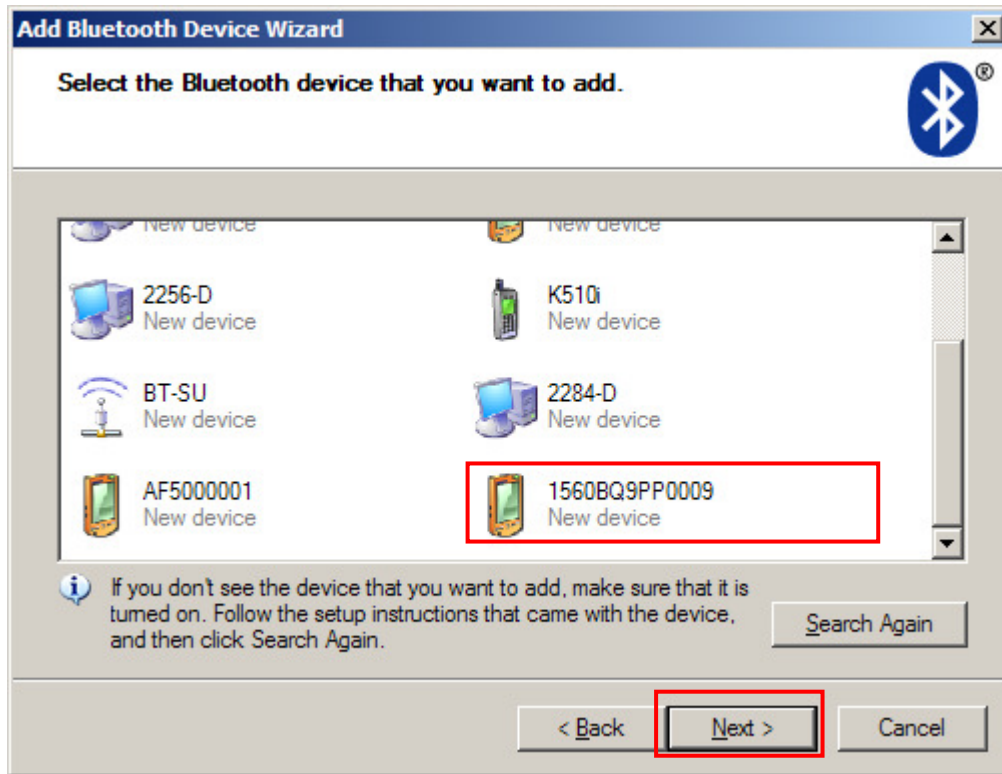
4. Turn on the scanner with correct WPAN settings, such as select BT SPP or BT HID, broadcasting enabled, authentication enabled, and PIN code specified, etc. Select the check box of [My device is set up and ready to be found] on your computer.
5. Click [Next].



6. Wait for a few seconds for the Wizard to search available 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 a specified period of time (2 minutes by default) and wait for PC to establish a connection.



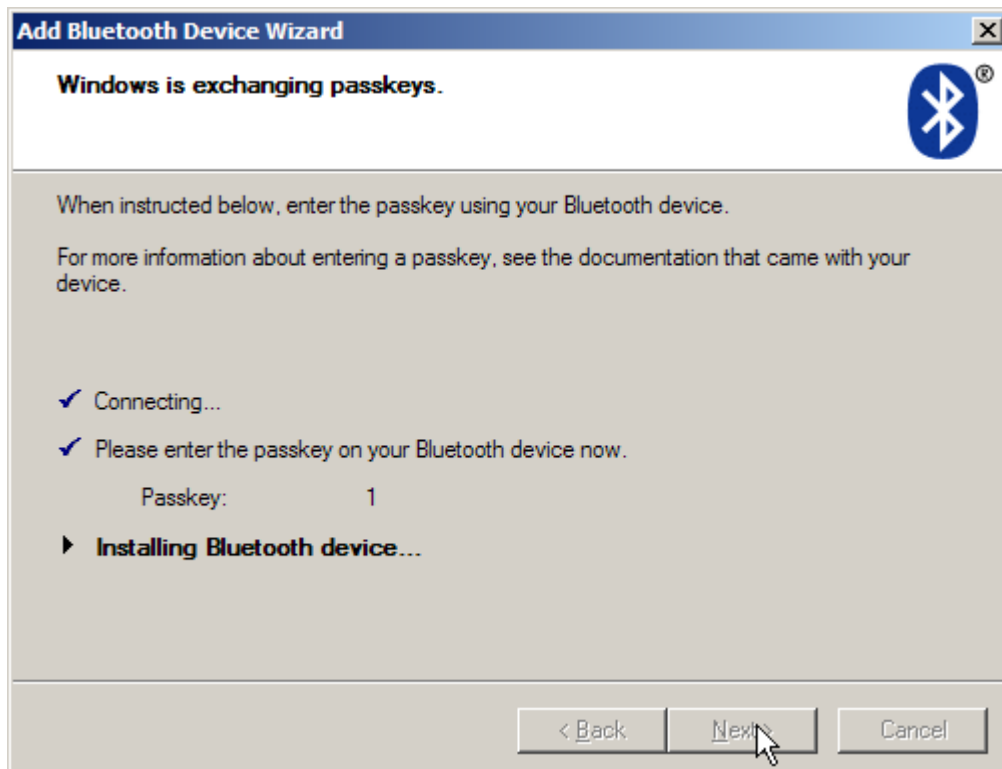
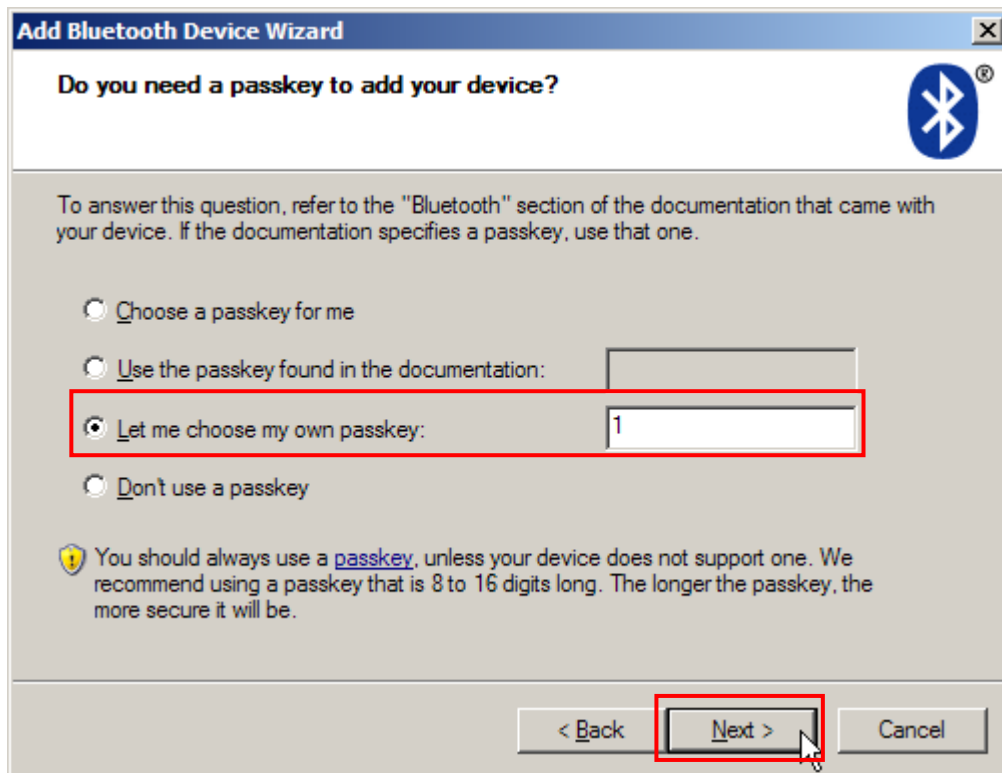
7. Click [Next].



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



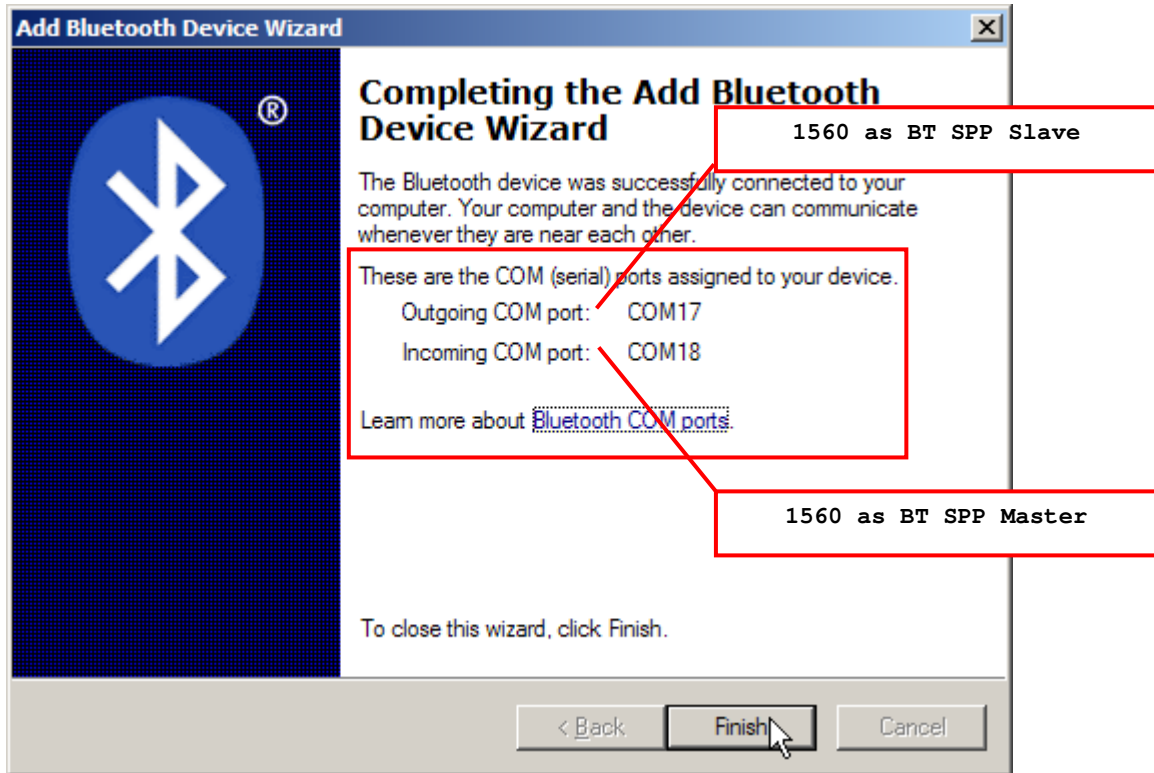
9. Click [Next]. Wait for a few seconds for Windows to exchange passkeys.





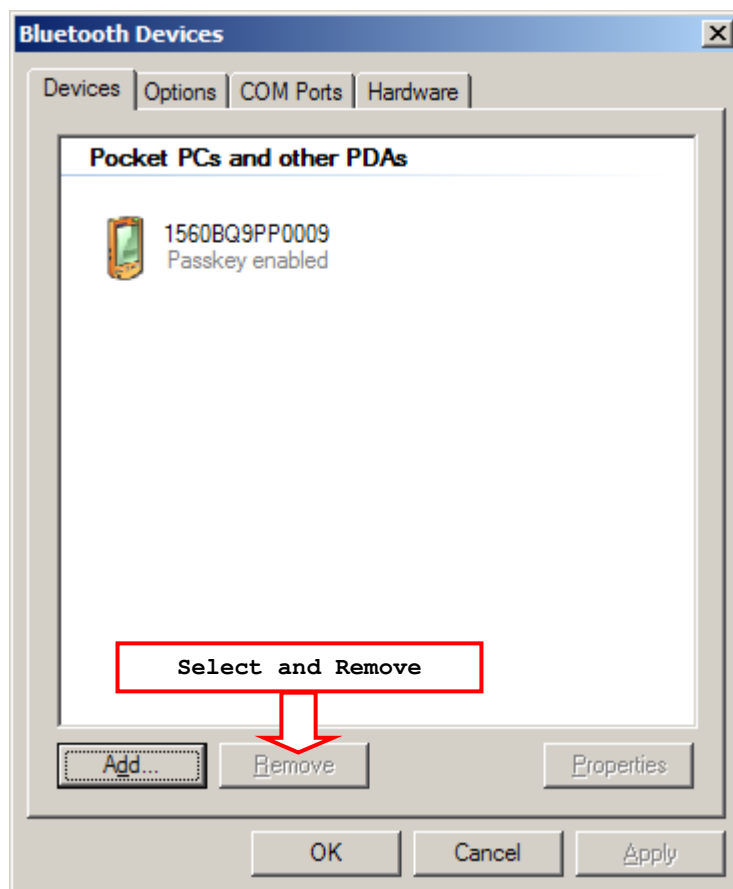
Note: When Bluetooth security is enabled without providing a pre-set PIN code, dynamic input of PIN code is supported.

10. Click [Finish].



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

You can have up to seven scanners connected to one computer at the same time.



---

**Note:** When any changes are made to authentication and PIN code on the scanner side, or you want to change to use BT 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 on your computer, such as HyperTerminal.exe if using BT SPP or Notepad.exe if using BT HID.

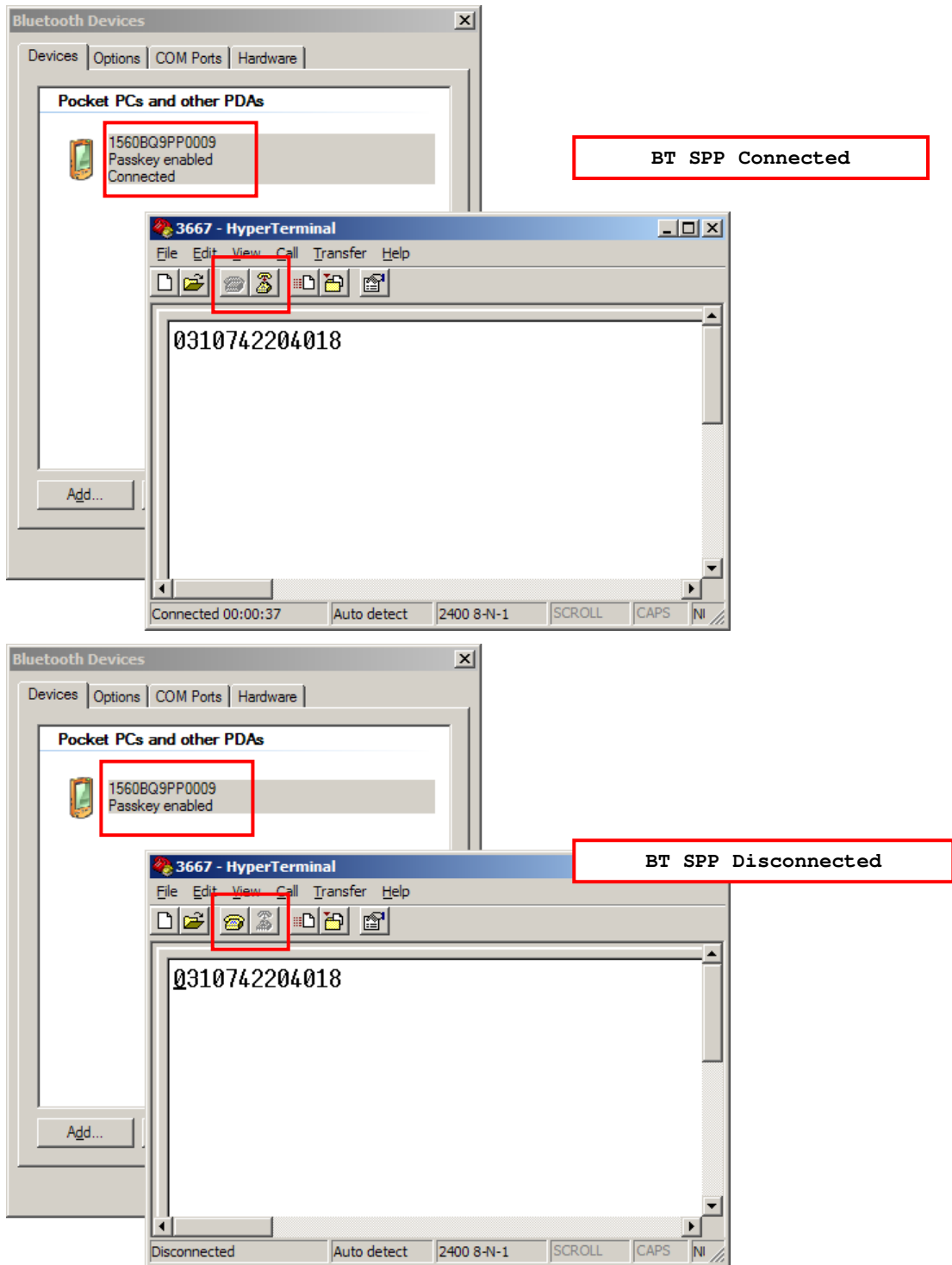
The status of the scanner listed on the device list will be updated to "Connected", indicating the WPAN connection is established successfully via the outgoing COM port if using BT SPP.

---

**Note:** Even though the scanner is connected to the host with authentication disabled (= no PIN code required), the host may still request a PIN code while the application is opening COM port. Dynamic input of PIN code is supported so that you may input a matching PIN code on the scanner. Refer to [Disable Authentication or Use Random PIN](#).

---





### 3.2.4 SECURE SIMPLE PAIRING (SSP)

Secure Simple Pairing (SSP), introduced in *Bluetooth*<sup>®</sup> Core Specification 2.1 + EDR, is a new feature designed to ease the pairing process while keeping up the communication security level. When connecting to a *Bluetooth*<sup>®</sup> host that supports *Bluetooth*<sup>®</sup> HID or *Bluetooth*<sup>®</sup> SPP profile, you can implement the secure simple pairing process. This function is enabled by default; the password dialog box won't show up during the pairing process.



---

Note: Secure Simple Pairing only supports to devices with *Bluetooth*<sup>®</sup> v2.1 or later.

---



## CHANGING SYMBOLOGY SETTINGS

---

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

### IN THIS CHAPTER

---

4.1 Codabar.....	124
4.2 Code 25 – Industrial 25 .....	126
4.3 Code 25 – Interleaved 25.....	129
4.4 Code 25 – Matrix 25.....	132
4.5 Code 39.....	135
4.6 Trioptic Code 39 .....	137
4.7 Code 93.....	137
4.8 Code 128 .....	137
4.9 EAN-8.....	138
4.10 EAN-13 .....	141
4.11 GS1-128 (EAN-128) .....	144
4.12 ISBT 128.....	145
4.13 MSI .....	147
4.14 French Pharmacode .....	149
4.15 Italian Pharmacode .....	150
4.16 Plessey .....	151
4.17 GS1 DataBar (RSS Family) .....	152
4.18 Telepen.....	157
4.19 UPC-A.....	160
4.20 UPC-E.....	162
4.21 Code 11 .....	165



## 4.1 CODABAR

**\*Enable**



100313

**Disable**



100312

### 4.1.1 START/STOP CHARACTERS SELECTION

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

**\* abcd/abcd**



100436

**abcd/tn\*e**



100437

**ABCD/ABCD**



100438

**ABCD/TN\*E**



100439



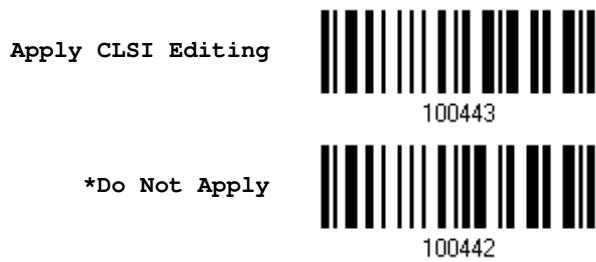
### 4.1.2 START/STOP TRANSMISSION

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



### 4.1.3 CLSI CONVERSION

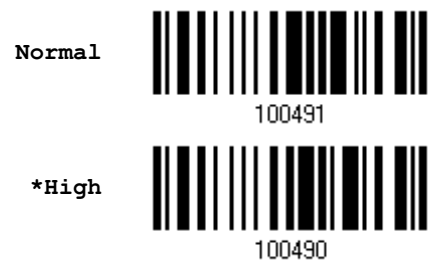
When enabled, the CLSI editing strips the start/stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar barcode.



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

### 4.1.4 SECURITY LEVEL

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



## 4.2 CODE 25 – INDUSTRIAL 25

**\*Enable**



100307

**Disable**



100306

### 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**



100412

**Interleaved 25  
Start/Stop Pattern**



100413

**Matrix 25  
Start/Stop Pattern**



100414

### 4.2.2 VERIFY CHECK DIGIT

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

**Verify Industrial 25  
Check Digit**



100425

**\*Do Not Verify**



100424





### 4.2.3 TRANSMIT CHECK DIGIT

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

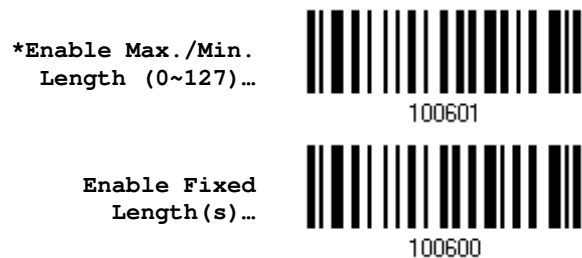


### 4.2.4 CODE LENGTH QUALIFICATION

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

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

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



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



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



100602

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



100603

- 3) Read the "[Decimal Value](#)" barcode on page 241 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.

#### 4.2.5 SECURITY LEVEL (1560P ONLY)

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

Normal



100544

\*High



100543



## 4.3 CODE 25 – INTERLEAVED 25

\*Enable



100309

Disable



100308

### 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



100416

\*Interleaved 25  
Start/Stop Pattern



100417

Matrix 25  
Start/Stop Pattern



100418



### 4.3.2 VERIFY CHECK DIGIT

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

Verify  
Interleaved 25  
Check Digit



\*Do Not Verify



### 4.3.3 TRANSMIT CHECK DIGIT

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

\*Transmit  
Interleaved 25  
Check Digit



Do Not Transmit



#### 4.3.4 CODE LENGTH QUALIFICATION

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

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

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

\*Enable Max./Min.  
Length (0~127)...



Enable Fixed  
Length(s)...



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

Max. Length (\*126) or  
Fixed Length 1



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



- 3) Read the "[Decimal Value](#)" barcode on page 241 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.

#### 4.3.5 SECURITY LEVEL (1560P ONLY)

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes. Please refer to [4.2.5 Security Level](#).



## 4.4 CODE 25 – MATRIX 25

Enable



100311

\*Disable



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 VERIFY CHECK DIGIT

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

Verify Matrix 25  
Check Digit



100433

\*Do Not Verify



100432

#### 4.4.3 TRANSMIT CHECK DIGIT

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

\*Transmit Matrix 25  
Check Digit



100435

Do Not Transmit



100434



#### 4.4.4 CODE LENGTH QUALIFICATION

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

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

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

\*Enable Max. /Min.  
Length (0~127)...



Enable Fixed  
Length(s)...



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

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



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



- 3) Read the "[Decimal Value](#)" barcode on page 241 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.

#### 4.4.5 SECURITY LEVEL (1560P ONLY)

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes. Please refer to [4.2.5 Security Level](#).





## 4.5 CODE 39

\*Enable



100301

Disable



100300

### 4.5.1 START/STOP TRANSMISSION

Decide whether 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 VERIFY CHECK DIGIT

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

Verify Code 39  
Check Digit



100405

\*Do Not Verify

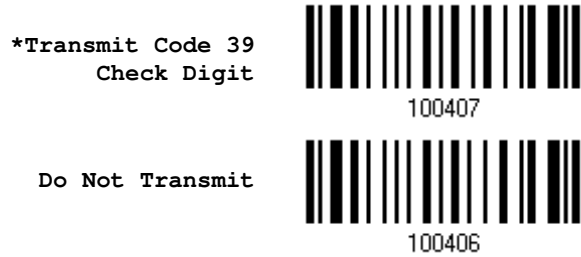


100404



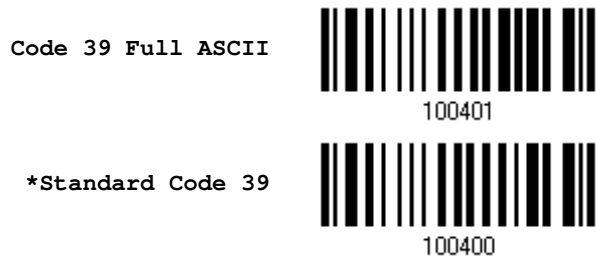
### 4.5.3 TRANSMIT CHECK DIGIT

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



### 4.5.4 STANDARD/FULL ASCII CODE 39

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



### 4.5.5 SECURITY LEVEL

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



#### 4.5.6 ASTERISKS (\*) AS DATA CHARACTERS

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

Enable



100513

\*Disable



100512

#### 4.6 TRIOPTIC CODE 39

Enable



100361

\*Disable



100360

#### 4.7 CODE 93

\*Enable



100315

Disable



100314

#### 4.8 CODE 128

\*Enable



100317

Disable



100316



### 4.8.1 SECURITY LEVEL

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

**\*Normal**



**High**



### 4.9 EAN-8

#### EAN-8

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



**Disable**



#### EAN-8 Addon 2

**Enable EAN-8 Addon 2**



**\*Disable**



#### EAN-8 Addon 5

**Enable EAN-8 Addon 5**



**\*Disable**



### 4.9.1 CONVERT TO EAN-13

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

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

Convert EAN-8 to  
EAN-13



100461

\*Do Not Convert



100460

### 4.9.2 TRANSMIT CHECK DIGIT

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

\*Transmit EAN-8  
Check Digit



100471

Do Not Transmit



100470

### 4.9.3 CONVERSION FORMAT

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



\*Default Format



GTIN-13 Format



## 4.10 EAN-13

### EAN-13

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



**Disable**



### EAN-13 Addon 2

**Enable EAN-13 Addon 2**



**\*Disable**



### EAN-13 Addon 5

**Enable EAN-13 Addon 5**



**\*Disable**



### 4.10.1 ISBN CONVERSION

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

Convert EAN-13 to ISBN



100463

\*Do Not Convert



100462

### 4.10.2 ISSN CONVERSION

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

Convert EAN-13 to ISSN



100465

\*Do Not Convert



100464

### 4.10.3 TRANSMIT CHECK DIGIT

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

\*Transmit EAN-13 Check Digit



100473

Do Not Transmit



100472





#### 4.10.4 SECURITY LEVEL

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



## 4.11 GS1-128 (EAN-128)

**\*Enable**



100319

**Disable**



100318

Note: When this setting is disabled, GS1-128 barcodes used to be taken as Code 128. However, starting from firmware version 1.01, GS1-128 barcodes can be decoded only when this setting is enabled.

### 4.11.1 CODE ID TRANSMISSION

Decide whether to include the Code ID (" $\text{]c1}$ ") in the data being transmitted.

**Transmit Code ID**



100519

**\*Do Not Transmit**



100518

### 4.11.2 FIELD SEPARATOR (GS CHARACTER)

Decide whether to apply a field separator (to convert the  $\text{FNC1}$  control character to human readable character).

**Enable Field Separator...**



100616

- 1) Read the barcode above to enable field separator.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

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



### 4.1.1.3 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-128.



### 4.1.1.4 APPLICATION ID MARK

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



- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



## 4.12 ISBT 128

**\*Enable**



100355

**Disable**



100354

### 4.12.1 ISBT CONCATENATION

Decide whether to decode and concatenate pairs of ISBT barcodes.

▶ **Auto-discriminate ISBT Concatenation**

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

▶ **Enable ISBT Concatenation**

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

▶ **Disable ISBT Concatenation**

It will not concatenate pairs of ISBT barcodes it encounters.

**\*Auto-discriminate**



100532

**Enable**



100533

**Disable**



100534



## 4.13 MSI

Enable



100345

\*Disable



100344

### 4.13.1 VERIFY CHECK DIGIT

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

\*Single Modulo 10



100448

Double Modulo 10



100449

Modulo 10 & 11



100450

### 4.13.2 TRANSMIT CHECK DIGIT

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

\*Last Digit Not Transmitted



100452

Both Digits Transmitted



100453

Both Digits Not Transmitted



100454



### 4.13.3 CODE LENGTH QUALIFICATION

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

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

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

\*Enable Max./Min.  
Length (0~127)...



Enable Fixed  
Length(s)...



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

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



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



- 3) Read the "[Decimal Value](#)" barcode on page 241 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



## 4.14 FRENCH PHARMACODE

Enable



\*Disable



### 4.14.1 TRANSMIT CHECK DIGIT

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

\*Transmit  
French Pharmacode  
Check Digit



Do Not Transmit



## 4.15 ITALIAN PHARMACODE

Enable



100303

\*Disable



100302

### 4.15.1 TRANSMIT CHECK DIGIT

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

\*Transmit  
Italian Pharmacode  
Check Digit



100409

Do Not Transmit



100408





## 4.16 PLESSEY

Enable



100347

\*Disable



100346

### 4.16.1 CONVERT TO UK PLESSEY

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

Convert to UK Plessey



100447

\*Do Not Convert



100446

### 4.16.2 TRANSMIT CHECK DIGIT

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

\*Transmit Plessey  
Check Digits



100445

Do Not Transmit



100444



## 4.17 GS1 DATABAR (RSS FAMILY)

It is categorized into three groups:

### Group I – GS1 DataBar Omnidirectional (RSS-14)

This group consists of the following:

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

### Group II – GS1 DataBar Expanded (RSS Expanded)

This group consists of the following:

- ▶ GS1 DataBar Expanded
- ▶ GS1 DataBar Expanded Stacked

### Group III – GS1 DataBar Limited (RSS Limited)

This group consists of the following:

- ▶ GS1 DataBar Limited

### 4.17.1 CODE ID SELECTION

Select a desired Code ID to use:

- ▶ “]e0” (GS1 DataBar Code ID)
- ▶ “]c1” (GS1-128 Code ID)

Use “]c1”



100517

\*Use “]e0”



100516



### 4.17.2 GS1 DATABAR OMNIDIRECTIONAL (RSS-14)

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



\*Disable



The settings below apply to Group I symbologies only:

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

#### Transmit Code ID

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

\*Transmit RSS-14  
Code ID



Do Not Transmit



#### Transmit Application ID

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

\*Transmit RSS-14  
Application ID



Do Not Transmit



### Transmit Check Digit

---

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

\*Transmit RSS-14  
Check Digit



Do Not Transmit



### 4.17.3 GS1 DATABAR EXPANDED (RSS EXPANDED)

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



\*Disable



The settings below apply to Group II symbologies only:

- ▶ GS1 DataBar Expanded
- ▶ GS1 DataBar Expanded Stacked

#### Transmit Code ID

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

\*Transmit  
RSS Expanded Code ID



Do Not Transmit



### 4.17.4 GS1 DATABAR LIMITED (RSS LIMITED)

Enable RSS Limited  
(Group III)



\*Disable



#### Transmit Code ID

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

\*Transmit  
RSS Limited Code ID



Do Not Transmit



#### Transmit Application ID

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

\*Transmit  
RSS Limited  
Application ID



Do Not Transmit



#### Transmit Check Digit

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

\*Transmit  
RSS Limited  
Check Digit



Do Not Transmit



#### 4.17.5 FIELD SEPARATOR (GS CHARACTER)

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

Enable Field  
Separator...



- 1) Read the barcode above to enable field separator.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

#### 4.17.6 GS1 FORMATTING

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

Enable



\*Disable



#### 4.17.7 APPLICATION ID MARK

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

AIMark1



AIMark2



- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



#### 4.17.8 SECURITY LEVEL

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

**\*Normal**



100511

**High**



100510





## 4.18 TELEPEN

Enable Telepen



100353

\*Disable



100352

### 4.18.1 TELEPEN OUTPUT - FULL ASCII/NUMERIC

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

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

Original Telepen  
(Numeric)



100485

\*AIM Telepen



100484



## 4.19 UPC-A

### UPC-A

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



100339

**Disable**



100338

### UPC-A Addon 2

**Enable UPC-A Addon 2**



100341

**\*Disable**



100340

### UPC-A Addon 5

**Enable UPC-A Addon 5**



100343

**\*Disable**



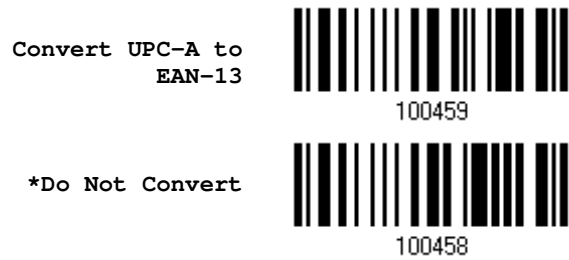
100342



### 4.19.1 CONVERT TO EAN-13

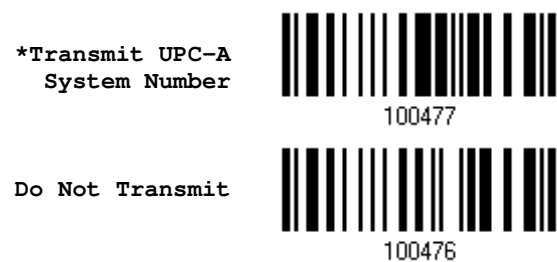
Decide whether to expand the read UPC-A barcode, as well as its addons, into EAN-13.

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



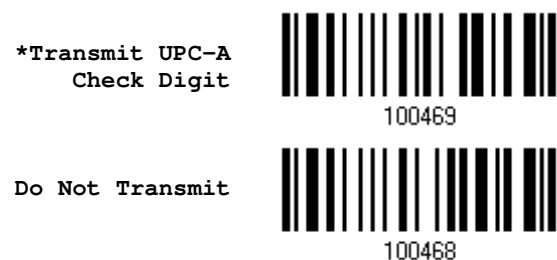
### 4.19.2 SYSTEM NUMBER TRANSMISSION

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



### 4.19.3 TRANSMIT CHECK DIGIT

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



## 4.20 UPC-E

### UPC-E

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



100321

**Disable**



100320

### UPC-E Addon 2

**Enable UPC-E Addon 2**



100323

**\*Disable**



100322

### UPC-E Addon 5

**Enable UPC-E Addon 5**



100325

**\*Disable**



100324



### 4.20.1 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

\*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.

### 4.20.2 CONVERT TO UPC-A

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

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

Convert UPC-E to  
UPC-A



100457

\*Do Not Convert



100456



### 4.20.3 SYSTEM NUMBER TRANSMISSION

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

Transmit UPC-E  
System Number



\*Do Not Transmit



### 4.20.4 TRANSMIT CHECK DIGIT

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

\*Transmit UPC-E  
Check Digit



Do Not Transmit



## 4.21 CODE 11

Enable



100359

\*Disable



100358

### 4.21.1 VERIFY CHECK DIGIT

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

None



100538

Double



100537

Single



100536

\*Auto

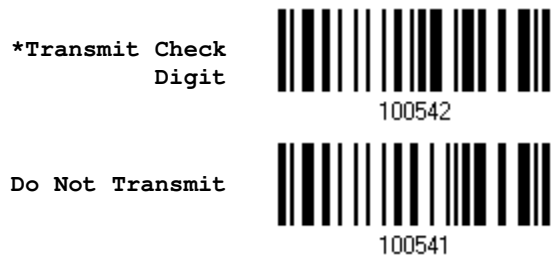


100535



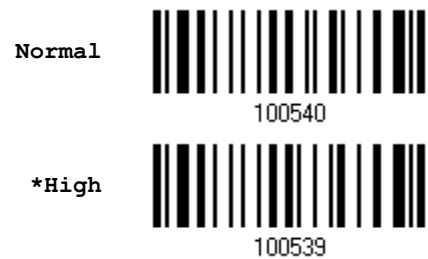
### 4.21.2 TRANSMIT CHECK DIGIT

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



### 4.21.3 SECURITY LEVEL

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





## DEFINING OUTPUT FORMAT

You may configure in which format the collected data will be output to the host computer. Barcode read by the scanner will be processed in the following sequence –

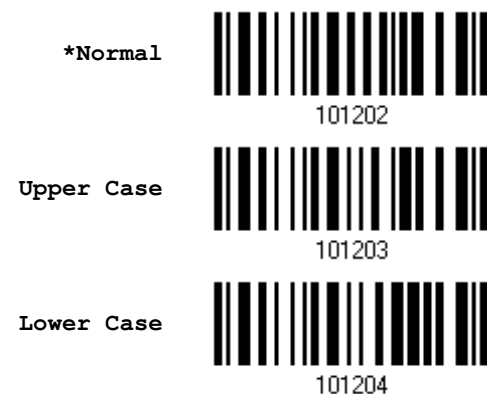
- 1) Perform character substitution on the data scanned.
- 2) Add [Code ID](#) and [Length Code](#) to the front of the data: [Code ID] [Length Code] [Data]
- 3) Process the whole data in step 2 with user formats. Data is now divided into fields by user specified rules. Refer to [Chapter 6 Applying Formats for Data Editing](#).
- 4) Add [Prefix Code](#) and [Suffix Code](#) before transmission: [Prefix Code] [Processed Data] [Suffix Code]

### IN THIS CHAPTER

5.1 Letter Case .....	167
5.2 Character Substitution .....	168
5.3 Prefix/Suffix Code .....	176
5.4 Code ID .....	177
5.5 Length Code.....	182
5.6 Multi-Barcode Editor.....	186
5.7 Removal of Special Character .....	190

### 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.



## 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.

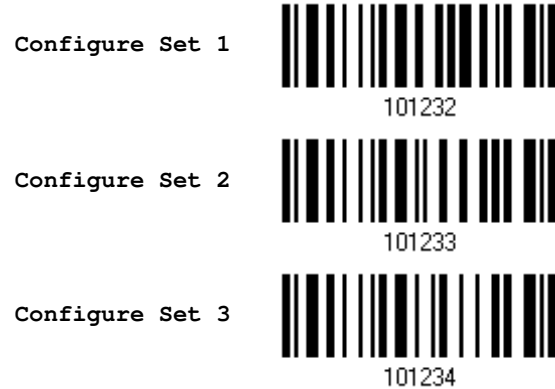
- ▶ The first character will be replaced by the second character(s).
- ▶ Up to three sets of character substitution can be configured.
- ▶ If "BT HID", "USB HID" or "Keyboard Wedge" is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. You may decide whether or not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

Key Type		Key Status
Scan Code	Only 1 scan code value is allowed. Refer to <a href="#">5.2.1 Select a Set for Character Substitution</a> .	N/A
Normal Key	Up to 3 character strings are allowed.	<ul style="list-style-type: none"> <li>▶ Add Shift</li> <li>▶ Add Left Ctrl</li> <li>▶ Add Left Alt</li> <li>▶ Add Right Ctrl</li> <li>▶ Add Right Alt</li> </ul> Refer to <a href="#">Keyboard Wedge Table</a> .

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 SUBSTITUTION



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

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

- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character substitution. For example,

### KEY TYPE = NORMAL

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

### KEY TYPE = SCAN CODE

If you want to replace the character "0" with "a" (= "1C" on the scan code table):

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

### KEY TYPE = NORMAL + KEY STATUS = SHIFT

If you want to replace the character "0" with "!" (= "Shift" + "1" on keyboard):

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

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



**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 "Do Not Apply" barcode for each undesired symbologies and all the three sets will be ignored for them.

**Character Substitution for Codabar**

\*Apply



101253

Do Not Apply



101252

**Character Substitution for Code 39**

\*Apply



101241

Do Not Apply



101240

**Character Substitution for Trioptic Code 39**

\*Apply



101299

Do Not Apply



101298

**Character Substitution for Code 93**

\*Apply



101255

Do Not Apply



101254

**Character Substitution for Code 128**



**\*Apply**



101257

**Do Not Apply**



101256

---

#### Character Substitution for GS1-128

**\*Apply**



101259

**Do Not Apply**



101258

---

#### Character Substitution for ISBT 128

**\*Apply**



101293

**Do Not Apply**



101292

---

#### Character Substitution for EAN-8 (No Addon)

**\*Apply**



101267

**Do Not Apply**



101266

---

#### Character Substitution for EAN-8 Addon 2

**\*Apply**



101269

**Do Not Apply**



101268

---

#### Character Substitution for EAN-8 Addon 5



**\*Apply**



101271

**Do Not Apply**



101270

---

**Character Substitution for EAN-13 (No Addon)**

---

**\*Apply**



101273

**Do Not Apply**



101272

---

**Character Substitution for EAN-13 Addon 2**

---

**\*Apply**



101275

**Do Not Apply**



101274

---

**Character Substitution for EAN-13 Addon 5**

---

**\*Apply**



101277

**Do Not Apply**



101276

---

**Character Substitution for French Pharmacode**

---

**\*Apply**



101245

**Do Not Apply**



101244

---

**Character Substitution for Italian Pharmacode**

---



**\*Apply**



101243

**Do Not Apply**



101242

---

#### Character Substitution for Industrial 25

**\*Apply**



101247

**Do Not Apply**



101246

---

#### Character Substitution for Interleaved 25

**\*Apply**



101249

**Do Not Apply**



101248

---

#### Character Substitution for Matrix 25

**\*Apply**



101251

**Do Not Apply**



101250

---

#### Character Substitution for MSI

**\*Apply**



101285

**Do Not Apply**



101284

---

#### Character Substitution for Plessey

---



**\*Apply**



101287

**Do Not Apply**



101286

---

**Character Substitution for GS1 DataBar**

---

**\*Apply**



101291

**Do Not Apply**



101290

---

**Character Substitution for Telepen**

---

**\*Apply**



101289

**Do Not Apply**



101288

---

**Character Substitution for UPC-A (No Addon)**

---

**\*Apply**



101279

**Do Not Apply**



101278

---

**Character Substitution for UPC-A Addon 2**

---

**\*Apply**



101281

**Do Not Apply**



101280

---

**Character Substitution for UPC-A Addon 5**

---





**\*Apply**



101283

**Do Not Apply**



101282

---

#### Character Substitution for UPC-E (No Addon)

**\*Apply**



101261

**Do Not Apply**



101260

---

#### Character Substitution for UPC-E Addon 2

**\*Apply**



101263

**Do Not Apply**



101262

---

#### Character Substitution for UPC-E Addon 5

**\*Apply**



101265

**Do Not Apply**



101264

---

#### Character Substitution for Code 11

**\*Apply**



101297

**Do Not Apply**



101296



### 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 "BT HID", "USB HID" or "Keyboard Wedge" is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. You may decide whether or not to apply Key Status when "Normal Key" is selected for Key Type.

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

Configure Prefix



101230

Configure Suffix



101231

- 1) Read the barcode above to apply prefix code or suffix code separately, and follow steps 2~3. (Max. 8 characters each)
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string. For example, read "2" and "B" for the scanner to prefix or suffix the character [+].
- 3) Read the "Validate" barcode to complete this setting.



## 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 "BT HID", "USB HID" or "Keyboard Wedge" is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. You may decide whether or not to apply Key Status when "Normal Key" is selected for Key Type.

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

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

### 5.4.1 SELECT PRE-DEFINED CODE ID

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



Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Italian Pharmacode	A	C	Y	M	A
French Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
UPC-E	S	E	C	E	E
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
MSI	V	V	D	P	M
Plessey	W	W	E	Q	P
Telepen	Z	---	---	---	---
Code 11	K	J	J	D	H

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

Apply AIM Code ID



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

Symbology	Character	Modifier Character
Codabar	F	0: Standard Codabar symbol. No special processing.
Code 11	H	0: Single modulo 11 check character validated and transmitted 1: Two modulo 11 check characters validated and transmitted 3: Check characters validated but not transmitted







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



## 5.4.2 CHANGE CODE ID

- 1) Read the barcode below to change code ID of a specific symbology.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string. For example, read "4" and "4" for applying the character [D] for Code ID.
- 3) Read the "Validate" barcode to complete this setting.

Configure Code ID for Codabar	 101456
Configure Code ID for Code 39	 101450
Configure Code ID for Trioptic Code 39	 101484
Configure Code ID for Code 93	 101457
Configure Code ID for Code 128	 101458
Configure Code ID for ISBT 128	 101466
Configure Code ID for EAN-8	 101460
Configure Code ID for EAN-13	 101461
Configure Code ID for French Pharmacode	 101452
Configure Code ID for Italian Pharmacode	 101451



Configure Code ID for  
Industrial 25



101453

Configure Code ID for  
Interleaved 25



101454

Configure Code ID for  
Matrix 25



101455

Configure Code ID for  
MSI



101463

Configure Code ID for  
Plessey



101464

Configure Code ID for  
Telepen



101465

Configure Code ID for  
UPC-A



101462

Configure Code ID for  
UPC-E



101459

Configure Code ID for  
Code 11



101499

### 5.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID  
Settings



109960



## 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.

### Length Code for Codabar

Apply



101413

\*Do Not Apply



101412

### Length Code for Code 39

Apply



101401

\*Do Not Apply



101400

### Length Code for Trioptic Code 39

Apply



101441

\*Do Not Apply



101440

### Length Code for Code 93

Apply



101415

\*Do Not Apply



101414

### Length Code for Code 128





Apply



101417

\*Do Not Apply



101416

---

Length Code for GS1-128 & GS1 DataBar

Apply



101419

\*Do Not Apply



101418

---

Length Code for ISBT 128

Apply



101435

\*Do Not Apply



101434

---

Length Code for EAN-8

Apply



101423

\*Do Not Apply



101422

---

Length Code for EAN-13

Apply



101425

\*Do Not Apply



101424



**Length Code for French Pharmacode**

---

Apply



101405

\*Do Not Apply



101404

**Length Code for Italian Pharmacode**

---

Apply



101403

\*Do Not Apply



101402

**Length Code for Industrial 25**

---

Apply



101407

\*Do Not Apply



101406

**Length Code for Interleaved 25**

---

Apply



101409

\*Do Not Apply



101408

**Length Code for Matrix 25**

---

Apply



101411

\*Do Not Apply



101410



#### Length Code for MSI

---

Apply



101429

\*Do Not Apply



101428

#### Length Code for Plessey

---

Apply



101431

\*Do Not Apply



101430

#### Length Code for Telepen

---

Apply



101433

\*Do Not Apply



101432

#### Length Code for UPC-A

---

Apply



101427

\*Do Not Apply



101426

#### Length Code for UPC-E

---

Apply



101421

\*Do Not Apply



101420



### Length Code for Code 11

---

Apply



101439

\*Do Not Apply



101438

## 5.6 MULTI-BARCODE EDITOR

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

---

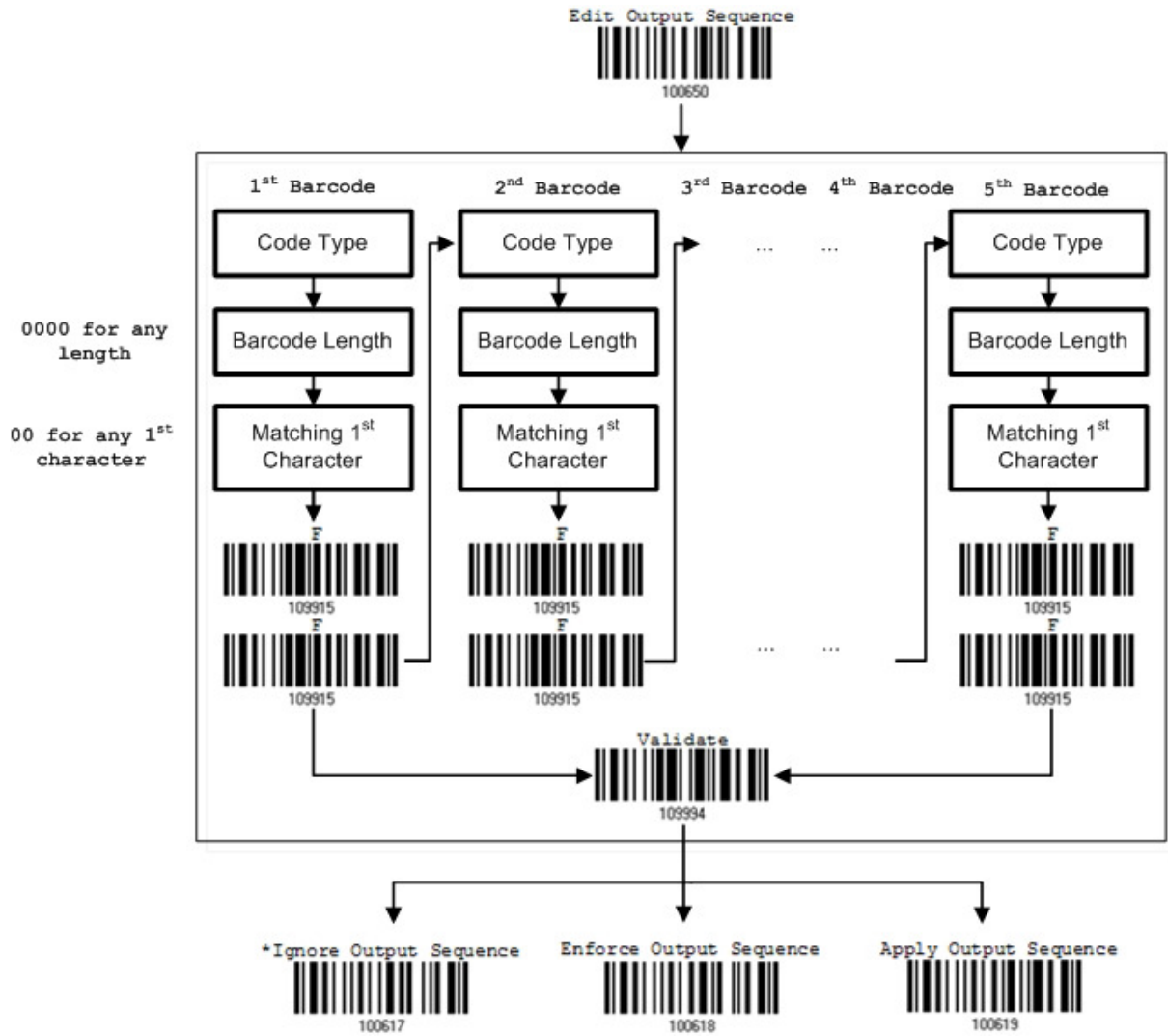
Note: The Multi-Barcode Editor has nothing to do with [Multi-Barcode Mode](#).

---

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

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





### 5.6.1 EDIT A CONCATENATION OF BARCODES



- 1) Read the barcode above to start editing a concatenation of barcodes.
- 2) Code Type setting – read the "[Hexadecimal Value](#)" barcode on page 242 for Code Type of the (first) barcode. For example, read "4" and "1" for Code 39.



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

- Barcode Length setting – read the [“Decimal Value”](#) barcode on page 241 for the 4-digit length of the (first) barcode. For example, read “0065” for barcode length of 65 characters or read “0000” for any length.

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

- Matching Character setting – read the [“Hexadecimal Value”](#) barcode on page 242 for the 1<sup>st</sup> 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.
- Read twice the “F” barcode on page 242 (“FF”) to complete the setting of each barcode.
- Read the “Validate” barcode to end the editing of the barcode set.



## 5.6.2 ACTIVATE THE CONCATENATION OF BARCODES

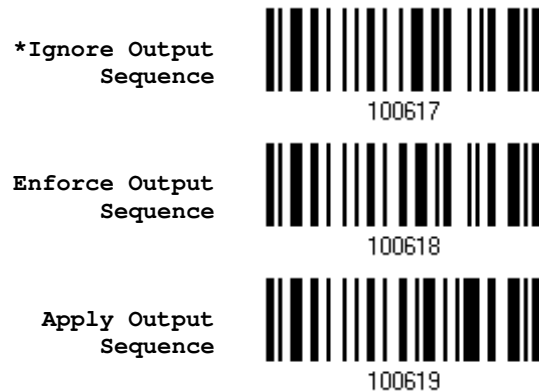
By default, the output sequence editing of the concatenation of barcodes is not applied.

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.

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

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



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



## 5.7 REMOVAL OF SPECIAL CHARACTER

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

Remove Special  
Character



101470

- 1) Read the barcode above to remove the specified character.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character.  
For example, read "3" and "0" for the scanner to remove the character "0".
- 3) Read the "Validate" barcode to complete this setting.





## APPLYING FORMATS FOR DATA EDITING

---

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

[PrefixCode]	[Code ID]	[LengthCode]	[Data]	[SuffixCode]	Additional Field(s)
None by default	None by default	None by default	Barcode itself	0x0d by default	

### IN THIS CHAPTER

---

6.1 Activating Editing Formats .....	192
6.2 How to Configure Editing Formats .....	194
6.3 Configuring Format — Define Data Criteria .....	197
6.4 Configuring Format — Define Data Field.....	205
6.5 Configuring Format — Define Transmission Sequence....	214
6.6 Programming Examples .....	216



## 6.1 ACTIVATING EDITING FORMATS

### 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



\*Disable



#### Editing Format 2

Enable



\*Disable



#### Editing Format 3

Enable



\*Disable



#### Editing Format 4

Enable



\*Disable



### Editing Format 5

---

Enable



101309

\*Disable



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

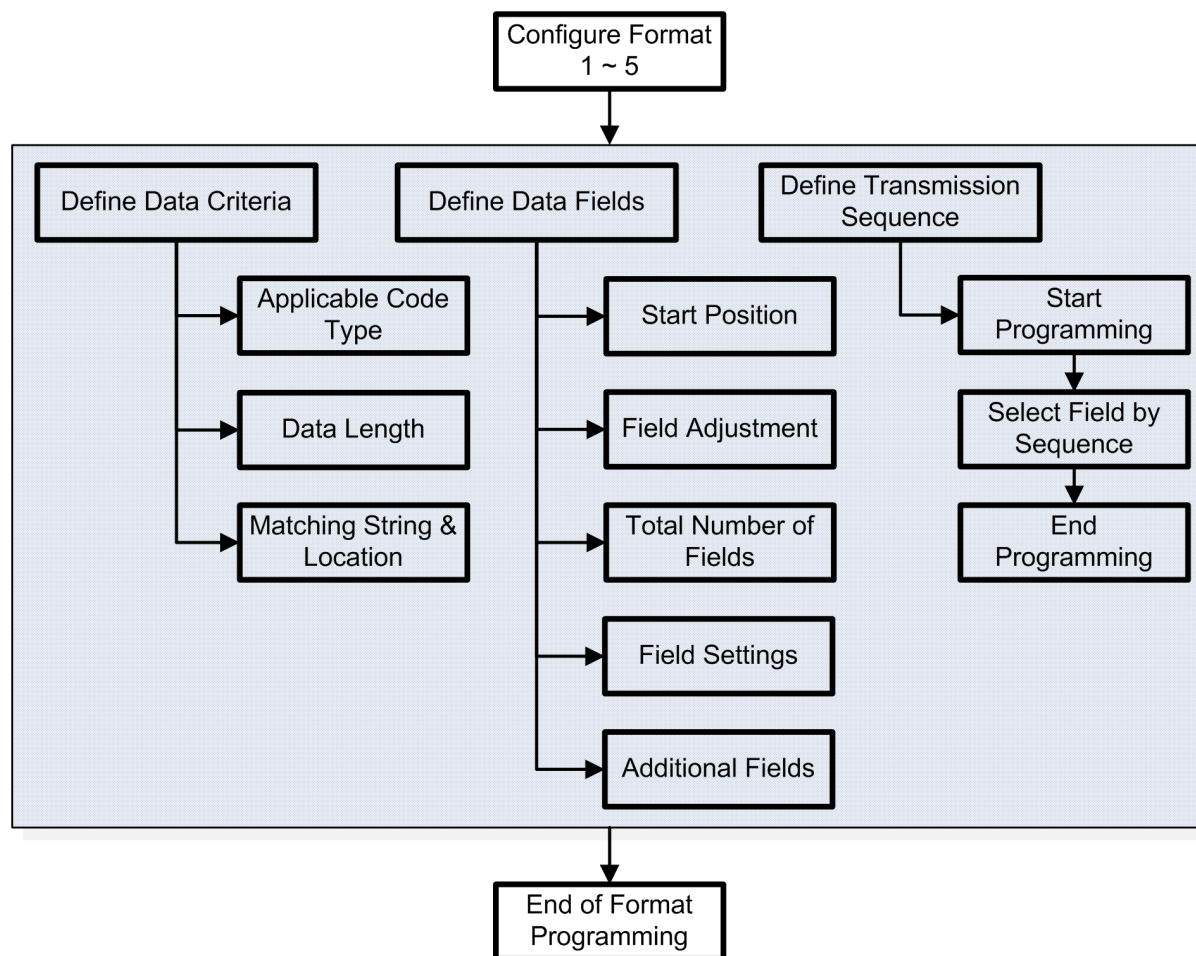
\*No



101200



## 6.2 HOW TO CONFIGURE EDITING FORMATS

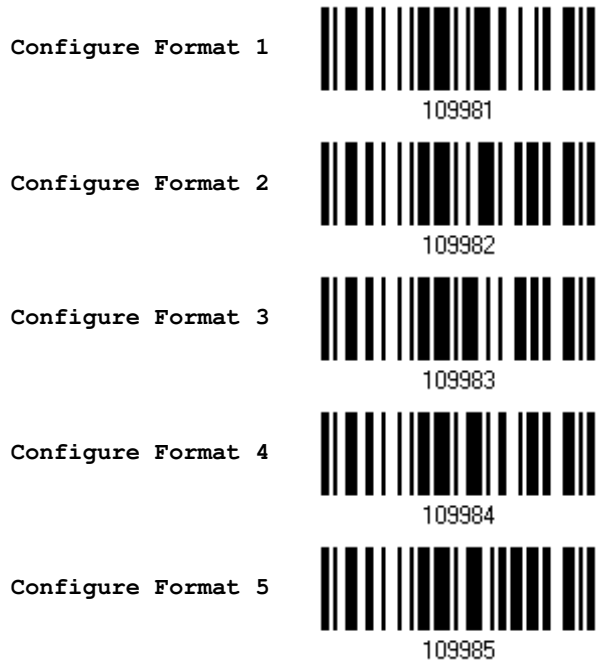


## 6.2.1 SELECT FORMAT TO CONFIGURE

### 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, start position, field adjustment, total number of fields, field settings (field-dividing rule), additional fields, and field transmission sequence.

- ▶ Up to five different formats can be specified.



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

### End Programming Format

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



## 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
Start Position	From head
Field Adjustment	No adjustment
Total Number of Fields	1
Field Setting – field-dividing rule	Not configured
Additional Fields	None
Field Transmission Sequence	F1

Restore Default  
Format



109990



## 6.3 CONFIGURING FORMAT — DEFINE DATA CRITERIA

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

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

### 6.3.1 APPLICABLE CODE TYPE

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

Note: You must have at least one symbology selected.

\*Apply to All



Clear All



### Editing Format for Codabar

---

**\*Apply**



101513

**Do Not Apply**



101512

### Editing Format for Code 39

---

**\*Apply**



101501

**Do Not Apply**



101500

### Editing Format for Trioptic Code 39

---

**\*Apply**



101559

**Do Not Apply**



101558

### Editing Format for Code 93

---

**\*Apply**



101515

**Do Not Apply**



101514

### Editing Format for Code 128

---

**\*Apply**



101517

**Do Not Apply**





101516







#### Editing Format for GS1-128 & GS1 DataBar

---

<b>*Apply</b>	 101519
<b>Do Not Apply</b>	 101518


#### Editing Format for ISBT 128

---

<b>*Apply</b>	 101553
<b>Do Not Apply</b>	 101552



#### Editing Format for EAN-8

---

<b>*Apply</b>	 101527
<b>Do Not Apply</b>	 101526



#### Editing Format for EAN-8 Addon 2

---

<b>*Apply</b>	 101529
<b>Do Not Apply</b>	 101528

#### Editing Format for EAN-8 Addon 5

---

<b>*Apply</b>	 101531
<b>Do Not Apply</b>	 101530



### Editing Format for EAN-13

---

<b>*Apply</b>	 101533
<b>Do Not Apply</b>	 101532

### Editing Format for EAN-13 Addon 2

---

<b>*Apply</b>	 101535
<b>Do Not Apply</b>	 101534

### Editing Format for EAN-13 Addon 5

---

<b>*Apply</b>	 101537
<b>Do Not Apply</b>	 101536

### Editing Format for French Pharmacode

---

<b>*Apply</b>	 101505
<b>Do Not Apply</b>	 101504

### Editing Format for Italian Pharmacode



---

<b>*Apply</b>	 101503
<b>Do Not Apply</b>	 101502





### Editing Format for Industrial 25

---

<b>*Apply</b>	 101507
<b>Do Not Apply</b>	 101506



### Editing Format for Interleaved 25

---

<b>*Apply</b>	 101509
<b>Do Not Apply</b>	 101508



### Editing Format for Matrix 25

---

<b>*Apply</b>	 101511
<b>Do Not Apply</b>	 101510



### Editing Format for MSI

---

<b>*Apply</b>	 101545
<b>Do Not Apply</b>	 101544

### Editing Format for Plessey

---

<b>*Apply</b>	 101547
<b>Do Not Apply</b>	 101546



### Editing Format for Telepen

---

**\*Apply**



101549

**Do Not Apply**



101548

### Editing Format for UPC-A

---

**\*Apply**



101539

**Do Not Apply**



101538

### Editing Format for UPC-A Addon 2

---

**\*Apply**



101541

**Do Not Apply**



101540

### Editing Format for UPC-A Addon 5

---

**\*Apply**



101543

**Do Not Apply**



101542

### Editing Format for UPC-E

---

**\*Apply**



101521

**Do Not Apply**



101520



#### Editing Format for UPC-E Addon 2

---

\*Apply



101523

Do Not Apply



101522

#### Editing Format for UPC-E Addon 5

---

\*Apply



101525

Do Not Apply



101524

#### Editing Format for Code 11

---

\*Apply



101557

Do Not Apply



101556



### 6.3.2 DATA LENGTH

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

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

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

Max. Length



101561

Min. Length



101560

- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired length.
- 3) Read the "Validate" barcode on the same page to complete this setting.



### 6.3.3 MATCHING STRING & LOCATION

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

- ▶ When the Matching String Location is zero, the scanner will only check for the existence of the matching string in the barcode data.
- ▶ You may specify a value from 1 to 254 to indicate where the matching string starts in the barcode data.

1) Read the barcode to specify a matching string.

Matching String...



2) Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.

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

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

Location of Matching  
String...



5) Read the "[Decimal Value](#)" barcode on page 241 for the desired location.

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

## 6.4 CONFIGURING FORMAT — DEFINE DATA FIELD

### 6.4.1 START POSITION

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

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

\*From Head



From Tail



## 6.4.2 FIELD ADJUSTMENT

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

\*No adjustment



101602

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



101603

- 1) Read the barcode above to adjust field by length.
- 2) Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
- 3) Read the "Validate" barcode on the same page to complete this setting.

## 6.4.3 TOTAL NUMBER OF FIELDS

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

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

\*One Field



101590

Two Fields



101591

Three Fields



101592

Four Fields



101593







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.

### 6.4.4 FIELD SETTINGS

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

#### By Terminating String

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

- ▶ By default, this string will be included in the field. You may discard it.

#### By Length

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

#### Field 1 Setting

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



2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.



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

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

Divide Field 1  
by Length



2. Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

### Field 2 Setting

---

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

Select  
Field Separator  
to Divide Field 2...



2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

\*Include Separator



Discard Separator



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

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

Divide Field 2  
by Length



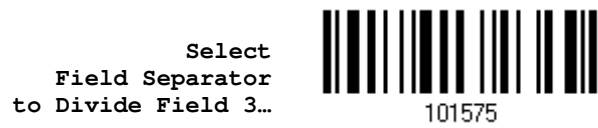
2. Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



### Field 3 Setting

---

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



2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.



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

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



2. Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



### Field 4 Setting

---

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

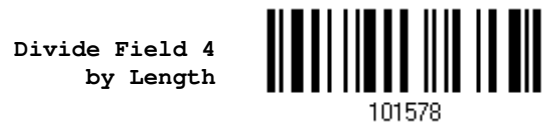


2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.



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

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



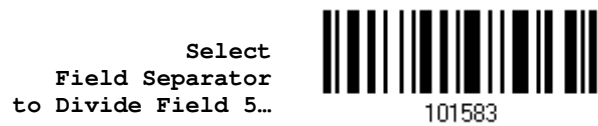
2. Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



### Field 5 Setting

---

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



2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.



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

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



2. Read the "[Decimal Value](#)" barcode on page 241 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



**Additional Fields**

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

- ▶ If "BT HID", "USB HID" or "Keyboard Wedge" is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to apply Key Status when "Normal Key" is selected for Key Type.

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

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

<b>Additional Field 1...</b>	 101584
<b>Additional Field 2...</b>	 101585
<b>Additional Field 3...</b>	 101586
<b>Additional Field 4...</b>	 101587
<b>Additional Field 5...</b>	 101588

2. Read the "[Hexadecimal Value](#)" barcode on page 242 for the desired additional field.
3. Read the "Validate" barcode to complete this setting.



## 6.4.5 PAUSE FIELD SETTING

### Pause Field Time

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

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



1. Read the barcode above to specify the time interval for the Pause Field. (It is set to 1 by default.)
2. Read the "[Decimal Value](#)" barcode on page 241. For example, read "1" and "0" for setting the Pause Field Time to 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.



## 6.5 CONFIGURING FORMAT — DEFINE TRANSMISSION SEQUENCE

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

Note: Up to twelve fields can be assigned.

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

Start Programming...



101589

- 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

Pause Field



109912

Null Character Field



109913

3) Read the "End" barcode to complete this setting.

End Programming...



109994



## 6.6 PROGRAMMING EXAMPLES

### 6.6.1 EXAMPLE I

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

---

The editing format should be configured as follows:

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



## 6.6.2 EXAMPLE II

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

---

Data in a barcode is encoded like this:

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

Data will be transmitted like this:

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

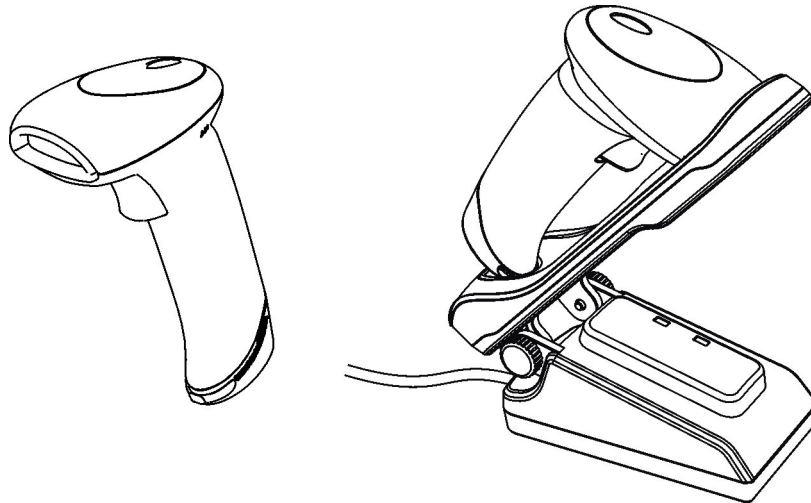
The editing format should be configured as follows:

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





# SPECIFICATIONS



<b>Optical Characteristics</b>	<b>1560</b>	<b>1562</b>
Scan Engine	Non-contact type	Non-contact type
Optical Sensor	CCD, 2500 pixels	Laser
Light Source	Visible red LED	Visible laser diode
<b>RF Characteristics</b>		
WPAN Module	Wireless PAN BT Class 2 compliance	
Coverage (line-of-sight)	90 meters with 3656 CRADLE	
Interface Supported	<ul style="list-style-type: none"> <li>▶ Serial Port Profile (BT SPP)</li> <li>▶ Human Interface Device Profile (BT HID)</li> <li>▶ 3656 CRADLE</li> </ul>	
<b>Physical Characteristics</b>		
Memory	<ul style="list-style-type: none"> <li>▶ 4 KB for transmit buffer</li> <li>▶ 512 KB flash for memory mode</li> </ul>	
Switch	Tactile switch	
Indication	Triple-color LED (Red/Green/Blue) and beeper	
Weight	Approx. 170 g	Approx. 175 g



<b>Electrical Characteristics</b>		
Battery	Rechargeable Li-ion battery – 3.7 V, 800 mAh	
<b>Power Adaptor</b>		
Input	AC 100~240 V, 50/60 Hz	
Output	DC 5V, 2A (3656 CRADLE) DC 5V 0.5A (Battery Charger)	
Operating Temperature	0 °C to 40 °C	
<b>Environmental Characteristics</b>		
Temperature	Operating	0 °C to 50 °C
	Storage	-20 °C to 60 °C
Humidity (Non-condensing)	Operating	10% to 90%
	Storage	5% to 95%
<b>Resistance</b>		
Impact Resistance	1.2 m, 5 drops per 6 sides	
Splash / Dust Resistance	IP 30	
Electrostatic Discharge	± 15 kV air discharge, ± 8 kV contact discharge	
<b>Programming Support</b>		
Configuration via Setup Barcodes	Use setup barcodes or host serial commands.	
Software	Windows®-based ScanMaster	
Firmware upgradeable	Download firmware updates via the download utility.	
<b>Accessories (√ means “supported”)</b>		
Rechargeable Li-ion Battery	√	√
Battery Charger	√	√
3656 CRADLE Stand	√	√
USB Cable	√	√
RS-232 Cable	√	√
Keyboard Wedge Cable	√	√

Note: The 3656 CRADLE stand is not only an Auto-Sense stand (for 1560 only) and capable of charging the 1560/1562 scanner, but specifically designed for the scanner to communicate with a host computer wirelessly.



## FIRMWARE UPGRADE

---

You can only upgrade firmware of one scanner at a time. For example, you must turn off each of the rest 1560/1562 scanners when there is more than one scanner connected to your computer.

---

Note: In case it fails downloading due to low battery, make sure the target scanner is loaded with good battery and the battery charge is enough.

---

### HOW TO UPGRADE 1560/1562 FIRMWARE

#### USING 3656 CRADLE

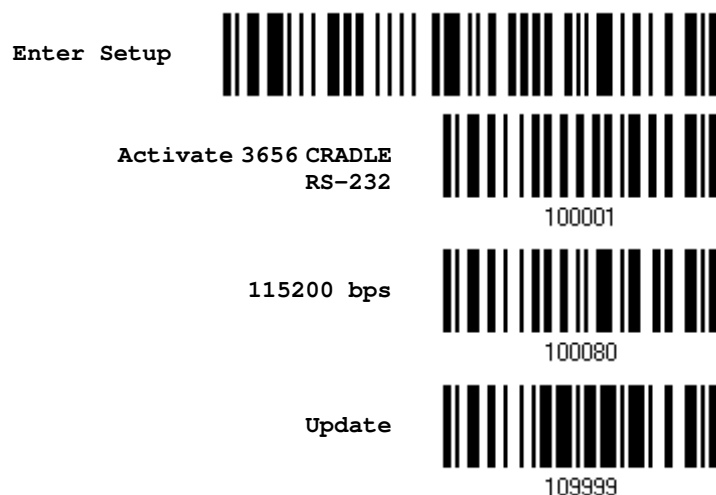
- 1) Connect the interface cable, RS-232 or USB, between 3656 CRADLE and your computer.

For USB Virtual COM, you may need to install its driver first!

- 2) Connect the power supply cord from 3656 CRADLE to a proper power outlet.
- 3) Refer to [3.1.1 Connect to](#) for the target scanner to connect to 3656 CRADLE.

Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of 3656 CRADLE.

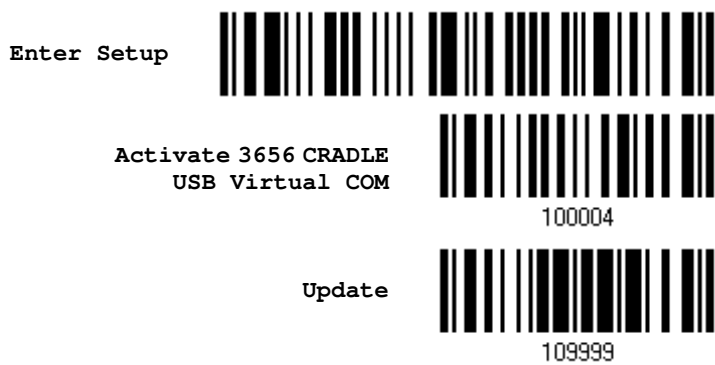
- 4) Read the following barcodes in sequence to configure the scanner to use RS-232 as download interface.



Or, read the following barcodes in sequence to configure the scanner to use USB Virtual COM as download interface.



Update

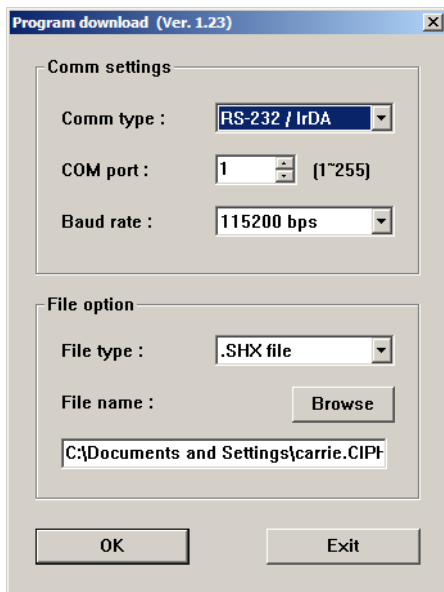


- 5) Read the following barcodes in sequence for the scanner to enter the download mode. The scanner will respond with beeps to indicate it is ready for downloading.



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

Kernel Program	User Program
K1560_V*.shx	STD1560_V*.shx



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

- 7) After upgrading kernel, you will need to manually restart the scanner. After upgrading the user program, the scanner will automatically restart itself once the download is completed successfully.





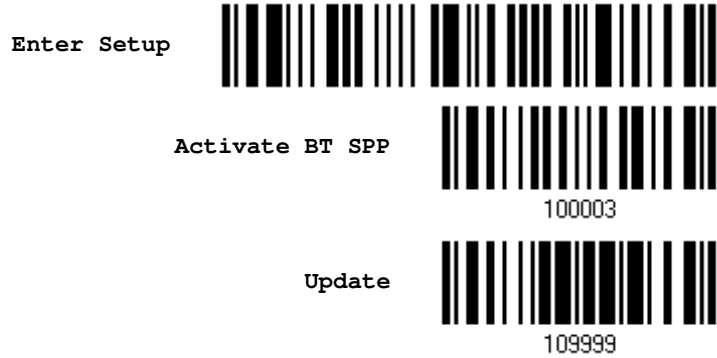
Note: The output interface remains unchanged as specified in step 3 (= RS-232 or USB Virtual COM). For RS-232, the baud rate setting is still 115200 bps!

---



**USING BLUETOOTH® DONGLE**

- 1) Refer to [3.2.3 Connect to Dongle](#) for the target scanner to accept the connection request from your computer.
- 2) Read the following barcodes in sequence to configure the scanner to use BT SPP as download interface.



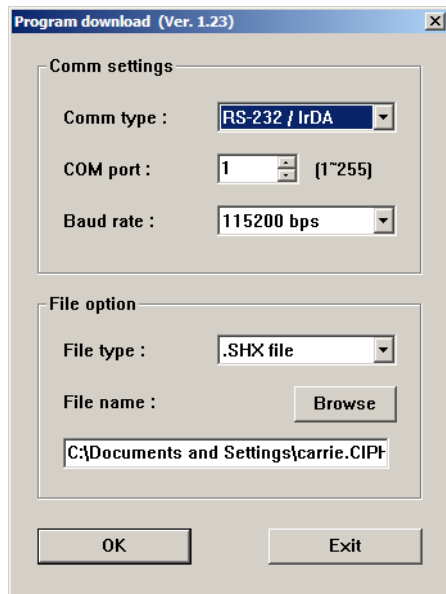
- 3) Read the following barcodes in sequence for the scanner to enter the download mode. The scanner will respond with beeps to indicate it is ready for downloading.



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

Kernel Program	User Program
K1560_V*.shx	STD1560_V*.shx





- ▶ For the communication settings, select "RS-232" and the correct COM port for BT SPP interface.
- ▶ Ignore the baud rate setting.
- ▶ For the file option, click [Browse] to select the target file for firmware update.
- ▶ Click [OK].

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

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

---

Note: The output interface remains unchanged as specified in step 2 (= BT SPP).

---



## HOW TO UPGRADE 3656 CRADLE FIRMWARE

### UPGRADING 3656 CRADLE CPU FIRMWARE

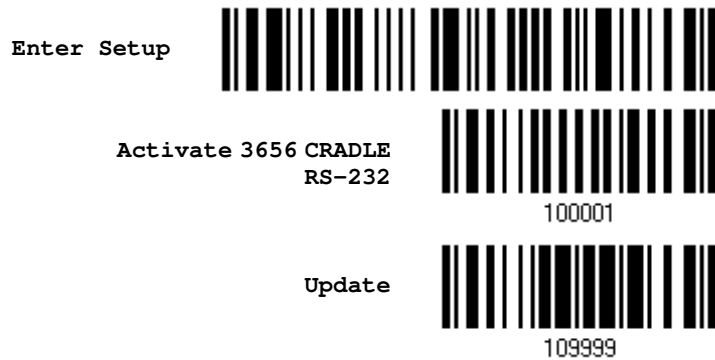
- 1) Connect the interface cable, RS-232 or USB, between 3656 CRADLE and your computer.

For USB Virtual COM, you may need to install its driver first!

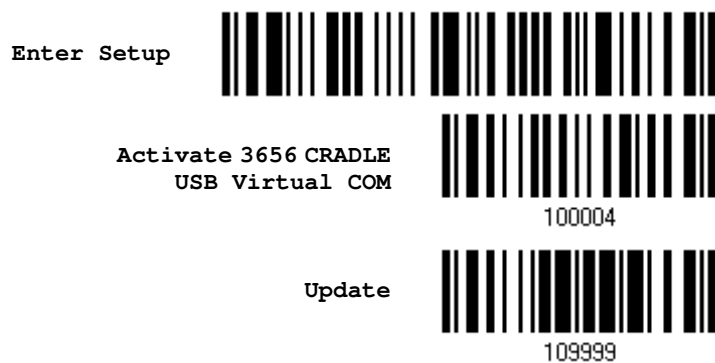
- 2) Connect the power supply cord from 3656 CRADLE to a proper power outlet.
- 3) Refer to [3.1.1 Connect to](#) for the target scanner to connect to 3656 CRADLE.

Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of 3656 CRADLE.

- 4) Read the following barcodes in sequence to configure the scanner to use RS-232 as download interface.



Or, read the following barcodes in sequence to configure the scanner to use USB Virtual COM as download interface.



- 5) Read the following barcodes in sequence for 3656 CRADLE to enter the download mode. The Communication LED on 3656 CRADLE will be flashing red to indicate it is ready for downloading.



Enter Setup



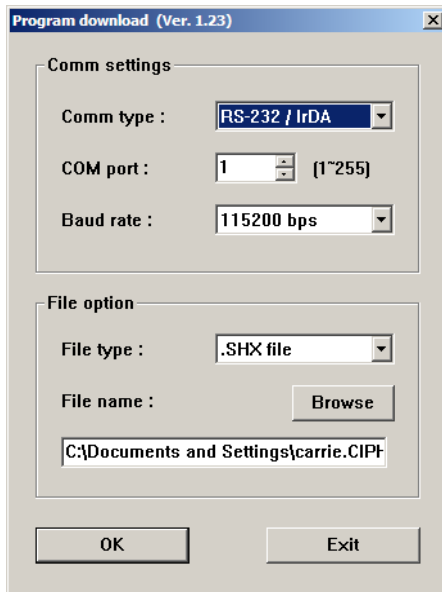
Download 3656 CRADLE  
CPU Firmware



Download

6) Run the download utility "ProgLoad.exe" on your computer.

Kernel Program	User Program
K3656 CRADLE _V*.shx	STD3656 CRADLE _V*.shx



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

7) The 3656 CRADLE will automatically restart itself when upgrading firmware is completed successfully.

8) Read the "Update" barcode for the scanner to resume its operation (exit the configuration mode).

Update

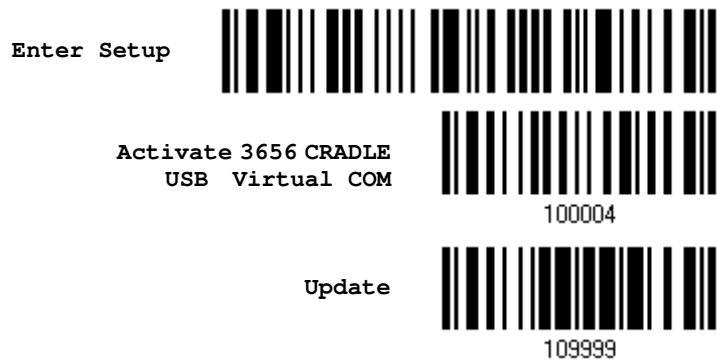


109999



**UPGRADING 3656 CRADLE USB BRIDGE FIRMWARE**

- 1) Connect the USB cable between 3656 CRADLE and your computer.  
For USB Virtual COM, you may need to install its driver first!
- 2) Connect the power supply cord from 3656 CRADLE to a proper power outlet.
- 3) Refer to [3.1.1 Connect to](#) for the target scanner to connect to 3656 CRADLE.  
Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of 3656 CRADLE.
- 4) Read the following barcodes in sequence to configure the scanner to use USB Virtual COM as download interface.



Note: You can download USB Bridge firmware via USB Virtual COM only!

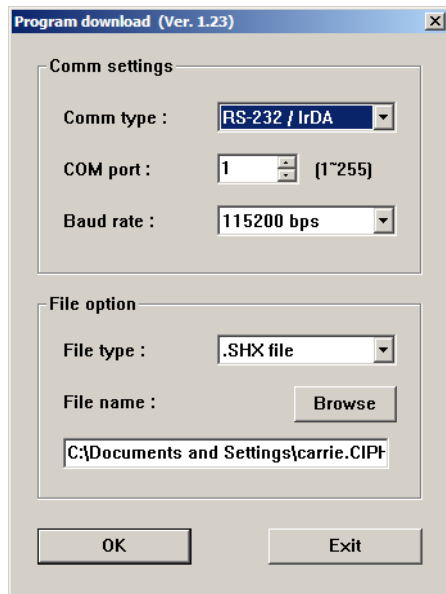
- 5) Read the following barcodes in sequence for 3656 CRADLE to enter the download mode. The Communication LED on 3656 CRADLE will be flashing red to indicate it is ready for downloading.



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

Kernel Program	User Program
K3656 CRADLE Bridge_V*.shx	STD3656 CRADLE Bridge_V*.shx





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

- 7) The 3656 CRADLE will automatically restart itself when upgrading firmware is completed successfully.
- 8) Read the "Update" barcode for the scanner to resume its operation (exit the configuration mode).

Update







## HOST SERIAL COMMANDS

### 1560/1562 SERIAL COMMANDS

#### D

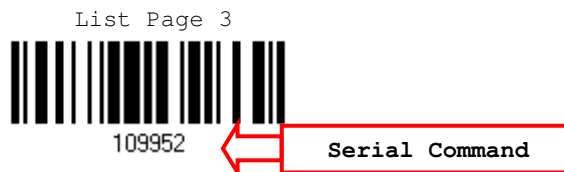
Purpose To disable the scanner.  
Remarks "D"

#### E

Purpose To enable the scanner.  
Remarks "E"

#### #@ nnnnnn <CR>

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



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

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

#### #@ ----<CR>

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

#### #@ ....<CR>

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

#### #@////<CR>

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



**#@TRIGOFF<CR>**

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

**#@TRIGON<CR>**

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

**#@RDSN<CR>**

Purpose	Read serial number
Remarks	"0x23" + "0x40" + "0x52" + "0x44" + "0x53" + "0x4E" + "0x0D"

**EXAMPLE**

You may run HyperTerminal.exe on the host computer to send serial commands to the 1560/1562 scanner via RS-232, USB Virtual COM or BT SPP.

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



- ▶ For the scanner to read the serial number and beep –

#@RDSN<CR>

#@////<CR>

Note: (1) For RS-232 or USB Virtual COM, you can only configure the first scanner that connects to 3656 CRADLE. To identify the scanner, you may send the serial command to have it respond with a beep.

(2) For BT SPP, you can configure up to seven scanners at the same time.

## 3656 CRADLE SETUP BARCODES & SERIAL COMMANDS

Normally, you can configure the 3656 CRADLE stand by having a connected scanner read 3656 CRADLE -related setup barcodes.

- 1) Connect the interface cable, RS-232, Keyboard Wedge or USB, between 3656 CRADLE and your computer.

For USB Virtual COM, you may need to install its driver first!

- 2) Connect the power supply cord from 3656 CRADLE to a proper power outlet.
- 3) Refer to [3.1.1 Connect to](#) for the target scanner to connect to 3656 CRADLE.

Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of 3656 CRADLE.

- 4) Read the following barcodes in sequence to configure 3656 CRADLE.

Enter Setup



Update



For 3656 CRADLE -related setup barcodes, refer to the Serial Command table below. Note that for the "Version" and "GetID" barcodes, you must run HyperTerminal.exe or any text editor to receive the information.

- ▶ If the output interface is RS-232 or USB Virtual COM, run HyperTerminal.exe on your computer to receive the information.
- ▶ If the output interface is Keyboard Wedge or USB HID, run any text editor to receive the information.



## 3656 CRADLE SETUP BARCODES

### Config<CR>

---

**Purpose** To configure 3656 CRADLE.  
Here is the setup barcode for this serial command:



**Remarks** A list of the current settings will be displayed. Run HyperTerminal.exe on your computer and change the settings one by one.

### DefaultSetting<CR>

---

**Purpose** To restore the default settings.  
Here is the setup barcode for this serial command:



### SingleConnection<CR>

---

**Purpose** To allow only one scanner connecting to 3656 CRADLE.  
Here is the setup barcode for this serial command:



### MultiConnection<CR>

---

**Purpose** To allow up to seven scanners connecting to 3656 CRADLE.  
Here is the setup barcode for this serial command:



### UseOnePortforAll<CR>

---

**Purpose** To use one Virtual COM port for all whenever connecting 3656 CRADLE to PC via USB. This setting requires you to connect one 3656 CRADLE at a time, and will facilitate configuring a great amount of 3656 CRADLE via the same Virtual COM port (for administrators' or factory use).

Here is the setup barcode for this serial command:



### UseVariablePort<CR>

---

Purpose To use variable Virtual COM port when connecting more than one 3656 CRADLE to PC via USB.

Here is the setup barcode for this serial command:



### Version<CR>

---

Purpose To get the firmware versions (CPU+USB Bridge).

Here is the setup barcode for this serial command:



### GetID<CR>

---

Purpose To get MAC ID.

Here is the setup barcode for this serial command:



### Download<CR>

---

Purpose To download CPU firmware to 3656 CRADLE via RS-232 or USB.

Here is the setup barcode for this serial command:



### LoadBridge<CR>

---

Purpose To download USB Bridge firmware to 3656 CRADLE via USB only.

Here is the setup barcode for this serial command:



**EXAMPLE**

Without using the scanner to read the above setup barcodes for configuring the 3656 CRADLE stand, you may run HyperTerminal.exe on the host computer to send serial commands to 3656 CRADLE via RS-232 or USB.

- 1) Connect the interface cable, RS-232 or USB, between 3656 CRADLE and your computer.

For USB Virtual COM, you may need to install its driver first!

- 2) Connect the power supply cord from 3656 CRADLE to a proper power outlet.

The Communication LED will indicate when 3656 CRADLE can accept serial commands after initializing. Refer to the table below.

- ▶ If the output interface is USB Virtual COM or RS-232, run HyperTerminal.exe on your computer. While the Communication LED on 3656 CRADLE is purple (red with flashing blue), type the serial command within three seconds.
- ▶ If the output interface is USB HID, press the “Num Lock” or “Caps Lock” key on your keyboard 5 times within 3 seconds while the Communication LED on 3656 CRADLE is flashing red and blue. This will change the interface from USB HID to USB Virtual COM and the Communication LED will become purple (red with flashing blue). Then, run HyperTerminal.exe on your computer. While the Communication LED on 3656 CRADLE is purple (red with flashing blue), type the serial command within three seconds. After configuring via serial commands, the interface will be reset to USB HID after re-connecting the power supply cord.

Communication LED		Meaning
---	Blue, solid	Initialize
Red, solid	Blue, flashing	Serial command mode with USB Virtual COM or RS-232: wait 3 seconds for starting a serial command
Red, flashing	Blue, flashing	Serial command mode with USB HID changed to USB Virtual COM first: wait 3 seconds for pressing [Num Lock] or [Caps Lock] 5 times via keyboard



## KEYBOARD WEDGE TABLE

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

Note: (1) ⓪~⑨: Digits of numeric keypad.  
 (2) CR\*/ENTER\*: ENTER key on the numeric keypad.



## KEY TYPE & STATUS

### KEY TYPE

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

\*Normal



109926

Scan Code



109936

### KEY STATUS

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

Add Shift



109930

Add Left Ctrl



109931

Add Right Ctrl



109933

Add Left Alt



109932

Add Right Alt



109934





## EXAMPLE

### KEY TYPE = NORMAL

---

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

1. Read the “Configure Prefix” barcode.
2. Read the “[Hexadecimal Value](#)” barcode on page 242 for “2” and “1”.
3. Read the “Validate” barcode to complete this setting.

### KEY TYPE = SCAN CODE

---

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

1. Read the “Configure Prefix” barcode.
2. Read the “Scan Code” barcode.
3. Read the “[Hexadecimal Value](#)” barcode on page 242 for “1” and “C”.
4. Read the “Validate” barcode to complete this setting.

### KEY TYPE = NORMAL + KEY STATUS = SHIFT

---

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

1. Read the “Configure Prefix” barcode.
2. Read the “Add Shift” barcode.
3. Read the “[Hexadecimal Value](#)” barcode on page 242 for “3” and “1”.
4. Read the “Validate” barcode to complete this setting.

### KEY TYPE = NORMAL + KEY STATUS = CTRL

---

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

1. Read the “Configure Prefix” barcode.
2. Read the “Add Left Ctrl” barcode.
3. Read the “[Hexadecimal Value](#)” barcode on page 242 for “4”, “1” (= “A”).
4. Read the “Add Left Ctrl” barcode.
5. Read the “[Hexadecimal Value](#)” barcode on page 242 for “2”, “4” (= “\$”).
6. Read the “Validate” barcode to complete this setting.





# NUMERAL SYSTEMS

---

## DECIMAL SYSTEM

### Decimal

---





### Validate the Values

---



## HEXADECIMAL SYSTEM

### Hexadecimal

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



Validate the Values



**ASCII TABLE**

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

Update



Abort



## ENTERING PIN CODE FOR AUTHENTICATION

### USE PRESET PIN

- 1) In the configuration mode, read the barcode below to use a preset PIN for authentication.

Use Preset PIN



100155

- 2) Read one of the barcodes to specify the PIN code, in decimal or hexadecimal.  
By default, the PIN code is set to "0000". Maximum 16 characters are allowed.

Enter PIN in  
Hexadecimal...



100150

Enter PIN in  
Decimal...



100151

- 3) Read the "[Decimal Value](#)" barcode on page 241 or the "[Hexadecimal Value](#)" barcode on page 242 for the desired digits or character string.

Read the "Clear PIN Code" barcode first if you need to re-input the PIN code.

Clear PIN Code



109973

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



## DISABLE AUTHENTICATION OR USE RANDOM PIN

In the configuration mode, read the barcode below to disable authentication (= No PIN) or use a random PIN for authentication.

\*No PIN or  
use random PIN



Note: When using BT HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you have the scanner set to "No PIN or use random PIN" before pairing. While pairing, the host PIN code will be displayed on the computer screen.

### Use Random PIN

When the target device is set to use a random PIN for authentication, wait until the random PIN is displayed on the target device while pairing, and then input the matching PIN code on the scanner.

Note: Follow the steps below to enter the matching PIN on the scanner. There is no need to enter the configuration mode!

1. Read one of the barcodes to specify the PIN code, in decimal or hexadecimal.

Enter PIN in  
Hexadecimal...



Enter PIN in  
Decimal...



2. Read the "[Decimal Value](#)" barcode on page 241 or the "[Hexadecimal Value](#)" barcode on page 242 for the desired digits or character string.

Read the "Clear PIN Code" barcode first if you need to re-input the PIN.

Clear PIN Code



3. Read the "Validate" barcode to complete this setting.

### Reject Random PIN Request

When the random PIN is displayed on the target device while pairing, you can reject the PIN request by having the scanner read the "Validate" barcode.

Update



Abort

