

CipherLab **User Guide**

2564 Barcode Scanner

Setup barcodes included.

Version 1.00



Copyright © 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 finding 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 the local sales representative. Alternatively, 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.

FOR CANADA

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

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

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

FOR PRODUCT WITH LASER



CAUTION

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

SAFETY PRECAUTIONS

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

CARE & MAINTENANCE

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

RELEASE NOTES

Version	Date	Notes
1.00	Sep. 27, 2017	▶ Initial Release

CONTENTS

IMPORTANT NOTICES	- 3 -
For USA.....	- 3 -
For Canada.....	- 3 -
For Product with Laser.....	- 4 -
Safety Precautions	- 4 -
Care & Maintenance.....	- 4 -
RELEASE NOTES	- 5 -
INTRODUCTION.....	1
Getting Familiarized with the Scanner and the Cradle	2
Installing the Battery to the Scanner.....	2
Setting up the Cradle.....	3
Charging the Battery via Cradle	4
Charging the Battery via Charger.....	5
Inside the Package.....	6
Product Highlights	6
Symbolologies Supported	7
QUICK START.....	9
Enter Configuration Mode.....	11
Exit Configuration Mode.....	11
Default Settings	12
Save User Settings as Defaults.....	12
Restore User Defaults.....	12
Restore System Defaults	12
Read a Setup Barcode	13
Configure Parameters.....	13
List the Current Settings	17
Create One-Scan Setup Barcodes.....	19
1D One-Scan Barcode	19
2D One-Scan Barcode	20
UNDERSTANDING THE BARCODE SCANNER	21
1.1 Battery	21
1.1.1 Turn On-Off the Scanner	21
1.1.2 Power Economy	22
1.1.3 Power Economy vs. WPAN Connection	24
1.2 Memory.....	26
1.2.1 Transmit Buffer	26
1.2.2 Memory Mode.....	27

1.2.3 Free Memory	28
1.3 LED Indicator.....	29
1.3.1 Good Read LED.....	30
1.3.2 Good Read LED Duration	30
1.4 Beeper.....	31
1.4.1 Beeper Volume	32
1.4.2 Good Read Beep	33
1.4.3 Low Battery Alarm	34
1.5 Send "NR" to Host.....	35
1.6 Scan Modes.....	36
1.6.1 Laser Mode.....	37
1.6.2 Auto Off Mode.....	37
1.6.3 Auto Power Off Mode	37
1.6.4 Aiming Mode.....	38
1.6.5 Multi-Barcode Mode.....	38
1.6.6 Presentation Mode.....	39
1.7 Scanning Timeout.....	40
1.8 Delay between Re-read.....	41
1.9 Read Redundancy (1D)	42
1.10 Addon Security for UPC/EAN Barcodes.....	43
1.11 Auto-Sense Mode.....	43
1.12 Cable Auto-Detection via BT Cradle.....	44
1.13 Picklist Mode	44
1.14 Mobile Phone/Display Mode	45
1.15 Serial Number Stamp	45
1.15.1 Separator between Serial Number Stamp and Data.....	45
1.16 2D Decode Settings.....	46
1.16.1 Aiming Pattern	46
1.16.2 Decoding Illumination	46
SELECTING OUTPUT INTERFACE	47
2.1 BT HID	48
2.1.1 Activate BT HID & Select Keyboard Type	49
2.1.2 Reset Connection.....	50
2.1.3 Keyboard Settings.....	51
2.1.4 Inter-Character Delay.....	56
2.1.5 Inter-Function Delay	57
2.1.6 HID Character Transmit Mode.....	57
2.1.7 Special Keyboard Feature	58
2.1.8 Keyboard Support for iPhone/iPad.....	58
2.1.9 Transmit Speed	58
2.1.10 Simple Pairing for iPhone/iPad.....	59
2.1.11 BT HID Slave/Master Switching	59
2.1.12 BT HID Auto-Reconnection.....	59
2.1.13 UTF8 Conversion	60

2.2 BT SPP Slave	61
2.2.1 Activate BT SPP Slave Mode.....	61
2.2.2 Inter-Function Delay	61
2.2.3 ACK/NAK Timeout	61
2.2.4 BT SPP Slave Hardware Flow Control	62
2.3 BT SPP Master.....	63
2.3.1 Activate BT SPP Master Mode.....	63
2.3.2 Inter-Function Delay	65
2.3.3 ACK/NAK Timeout	66
2.3.4 Switch between Master/Slave Modes	67
2.3.5 BT SPP Master Hardware Flow Control.....	67
2.3.6 BT SPP Master Auto-Reconnection	67
2.4 Keyboard Wedge via BT Cradle.....	68
2.4.1 Activate Keyboard Wedge & Select Keyboard Type.....	69
2.4.2 Keyboard Settings.....	70
2.4.3 Inter-Character Delay.....	76
2.4.4 Inter-Function Delay	77
2.4.5 Special Keyboard Feature	77
2.4.6 UTF8 Conversion.....	77
2.5 RS-232 via BT Cradle.....	78
2.5.1 Activate RS-232 Interface.....	78
2.5.2 Baud Rate	78
2.5.3 Data Bits	79
2.5.4 Parity	79
2.5.5 Stop Bit.....	79
2.5.6 Flow Control.....	80
2.5.7 Inter-Character Delay.....	81
2.5.8 Inter-Function Delay	81
2.5.9 ACK/NAK Timeout	82
2.6 USB HID via BT Cradle	83
2.6.1 Activate USB HID & Select Keyboard Type	84
2.6.2 Keyboard Settings.....	85
2.6.3 Inter-Character Delay.....	91
2.6.4 Inter-Function Delay	91
2.6.5 HID Character Transmit Mode.....	92
2.6.6 Special Keyboard Feature	92
2.6.7 USB HID via Cradle Auto-Reconnection	92
2.6.8 UTF8 Conversion.....	93
2.6.9 USB Polling Interval.....	93
2.7 USB Virtual COM via BT Cradle	94
2.7.1 Activate USB Virtual COM.....	94
2.7.2 Activate USB Virtual COM_CDC	94
2.7.3 Inter-Function Delay	94
2.7.4 ACK/NAK Timeout	95
2.7.5 USB VCOM via Cradle Auto-Reconnection	96
SETTING UP A WPAN CONNECTION.....	97
3.1 Connecting via Cradle.....	98

3.1.1 Connect to Cradle.....	98
3.1.2 Change Interface.....	99
3.1.3 Configure Related Settings.....	100
3.2 Connecting via <i>Bluetooth</i> ® Dongle.....	100
3.2.1 Change Interface.....	100
3.2.2 Configure Related Settings.....	101
3.2.3 Connect to Dongle.....	105
CHANGING SYMBOLOGY SETTINGS.....	113
4.1 Codabar.....	114
4.1.1 Security Level.....	114
4.1.2 Start/Stop Transmission.....	114
4.1.3 Start/Stop Character Selection.....	115
4.1.4 CLSI Conversion.....	115
4.1.5 Code Length Qualification.....	116
4.2 Code 25 – Industrial 25.....	117
4.2.1 Select Start/Stop Pattern.....	117
4.2.2 Verify Check Digit.....	117
4.2.3 Transmit Check Digit.....	118
4.2.4 Code Length Qualification.....	118
4.3 Code 25 – Interleaved 25.....	120
4.3.1 Select Start/Stop Pattern.....	120
4.3.2 Verify Check Digit.....	120
4.3.3 Transmit Check Digit.....	121
4.3.4 Code Length Qualification.....	121
4.4 Code 25 – Matrix 25.....	123
4.4.1 Select Start/Stop Pattern.....	123
4.4.2 Verify Check Digit.....	123
4.4.3 Transmit Check Digit.....	124
4.4.4 Code Length Qualification.....	125
4.5 Code 39.....	126
4.5.1 Transmit Start/Stop Characters.....	126
4.5.2 Verify Check Digit.....	126
4.5.3 Transmit Check Digit.....	127
4.5.4 Standard/Full ASCII Code 39.....	127
4.5.5 Security Level.....	127
4.5.6 Asterisks (*) as data Characters.....	128
4.5.7 Code Length Qualification.....	128
4.6 Code 93.....	129
4.6.1 Code Length Qualification.....	129
4.7 Code 128.....	131
4.7.1 Security Level.....	131
4.8 EAN-8.....	132
4.8.1 Convert to EAN-13.....	132
4.8.2 Transmit Check Digit.....	133
4.8.3 Conversion Format.....	133
4.9 EAN-13.....	134

4.9.1 EAN-13 Addon Modes	135
4.9.2 Convert to ISBN	137
4.9.3 Convert to ISSN	137
4.9.4 Transmit Check Digit	138
4.9.5 Security Level	138
4.10 GS1-128 (EAN-128)	139
4.10.1 Transmit Code ID	139
4.10.2 Field Separator (GS Character)	139
4.10.3 GS1 Formatting	140
4.10.4 Application ID Mark	140
4.11 ISBT 128	141
4.11.1 ISBT Concatenation	141
4.12 MSI	142
4.12.1 Verify Check Digit	142
4.12.2 Transmit Check Digit	142
4.12.3 Code Length Qualification	143
4.13 French Pharmacode	144
4.13.1 Transmit Check Digit	144
4.14 Italian Pharmacode	144
4.14.1 Transmit Check Digit	144
4.15 Plessey	145
4.15.1 Convert to UK Plessey	145
4.15.2 Transmit Check Digit	145
4.16 GS1 DataBar (RSS Family)	146
4.16.1 Select Code ID	146
4.16.2 GS1 DataBar Omnidirectional (RSS-14)	147
4.16.3 GS1 DataBar Expanded (RSS Expanded)	148
4.16.4 GS1 DataBar Limited (RSS Limited)	149
4.16.5 Field Separator (GS Character)	150
4.16.6 GS1 Formatting	150
4.16.7 Application ID Mark	150
4.16.8 GS1 DataBar Security Level	151
4.17 Telepen	151
4.17.1 Telepen Output ASCII/Numeric	152
4.18 UPC-A	153
4.18.1 Convert to EAN-13	154
4.18.2 Transmit System Number	154
4.18.3 Transmit Check Digit	154
4.19 UPC-E	155
4.19.1 Select System Number	156
4.19.2 Convert to UPC-A	156
4.19.3 Transmit System Number	157
4.19.4 Transmit Check Digit	157
4.20 Code 11	158
4.20.1 Verify Check Digit	158
4.20.2 Transmit Check Digit	158

4.20.3 Security Level.....	159
4.20.4 Code Length Qualification.....	159
4.21 Composite Code.....	161
4.21.1 Composite CC-A/B.....	161
4.21.2 Composite CC-C	161
4.21.3 UPC Composite Mode	162
4.22 2D Symbolologies.....	163
4.22.1 PDF417.....	163
4.22.2 MicroPDF417	163
4.22.3 Data Matrix.....	163
4.22.4 QR Code.....	166
4.22.5 MicroQR.....	167
4.22.6 Maxicode.....	167
4.22.7 Aztec	167
4.22.8 Han Xin	168
DEFINING OUTPUT FORMAT	169
5.1 Letter Case.....	169
5.2 Character Substitution.....	170
5.2.1 Select a Set for Character Substituion.....	171
5.2.2 Symbolologies for Character Substitution (All 3 Sets).....	172
5.3 Prefix/Suffix Code.....	180
5.4 Code ID.....	181
5.4.1 Select Pre-defined Code ID	182
5.4.2 Change Code ID	186
5.4.3 Clear Code ID Settings.....	188
5.5 Length Code.....	189
5.6 Multi-Barcode Editor	195
5.6.1 Edit a Concatenation of Barcodes	196
5.6.2 Activate the Concatenation of Barcodes.....	198
5.7 Removal of Special Character.....	200
APPLYING FORMATS FOR DATA EDITING	201
6.1 Activating Editing Formats.....	202
6.1.1 Activate Editing Formats.....	202
6.1.2 Exclusive Data Editing	203
6.2 How to Configure Editing Formats	204
6.2.1 Select Format to Configure.....	205
6.2.2 Restore Default Format.....	206
6.3 Configuring Format — Define Data Criteria	207
6.3.1 Applicable Code Type.....	207
6.3.2 Data Length	216
6.3.3 Matching String & Location.....	216
6.4 Configuring Format — Define Data Field.....	218
6.4.1 Start Position.....	218
6.4.2 Field Adjustment.....	218

6.4.3 Total Number of Fields	219
6.4.4 Field Settings.....	220
6.4.5 Pause Field Setting	226
6.5 Configuring Format — Define Transmission Sequence.....	227
6.6 Programming Examples	229
6.6.1 Example I	229
6.6.2 Example II.....	230
SPECIFICATIONS.....	231
FIRMWARE UPGRADE.....	233
How to Upgrade Scanner Firmware.....	233
Using the Cradle	233
Using <i>Bluetooth</i> ® Dongle.....	235
How to Upgrade BT Cradle Firmware	237
HOST SERIAL COMMANDS	239
Serial Commands	239
Example	241
BT Cradle Setup Barcodes & Serial Commands.....	243
BT Cradle Serial Command and Equivalent Setup Barcodes.....	244
Example	246
KEYBOARD WEDGE TABLE	247
Key Type & Status.....	249
Key Type.....	249
Key Status.....	249
Example.....	250
NUMERAL SYSTEMS.....	251
Decimal System	251
Hexadecimal System.....	252
ASCII Table.....	254
Entering PIN Code for Authentication.....	255
Use Preset PIN.....	255
Disable Authentication or Use Random PIN.....	256
READING DRIVER LICENSES	257
License Parsing Setup.....	257
File Type.....	257
Output Sequence Setup.....	258
Separators and Fields	264
Edit Separators.....	265
Edit Fields	266
KEYBOARD TYPE ONE-SCAN BARCODE	267
Bluetooth HID	267

Keyboard Wedge (Cradle).....	270
Remote USB HID (Cradle).....	275

INTRODUCTION

The small-form-factor Barcode Scanners are capable of reading 2D barcodes. The tethered handheld scanners are designed to help accelerate productivity while lowering the total cost of ownership. Intensive data collection jobs are made easier with fast, accurate barcode scanning in various working environments, especially in small businesses.

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

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

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

Thank you for choosing CipherLab products!



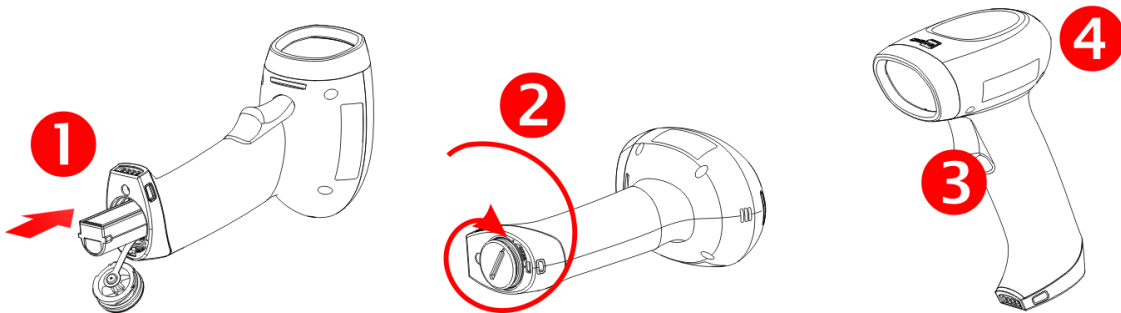
GETTING FAMILIARIZED WITH THE SCANNER AND THE CRADLE

INSTALLING THE BATTERY TO THE SCANNER

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 cradle.

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.

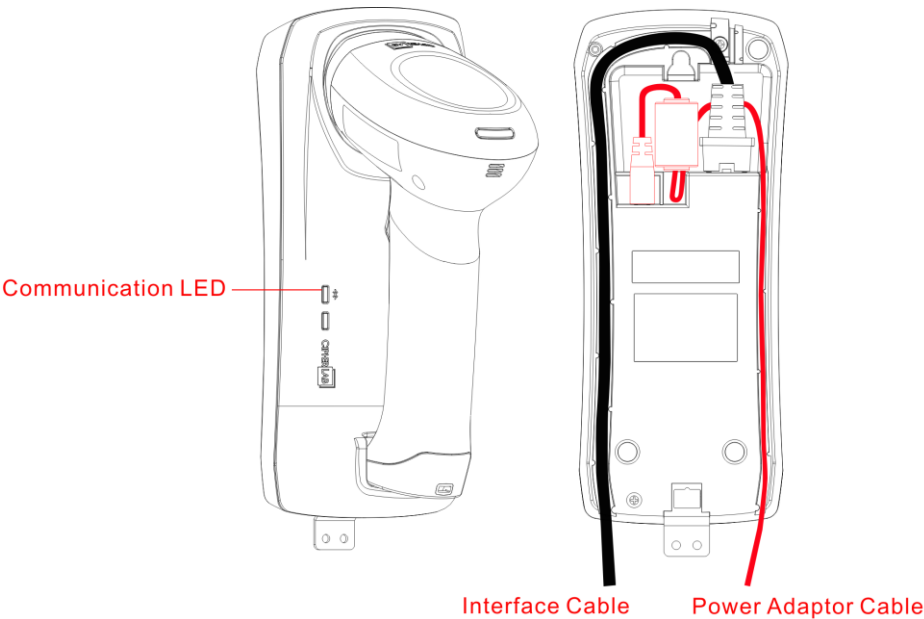


Note: (1) To turn off the scanner, remove the battery.
(2) For shipping and storage purposes, save the scanner and the battery separately. This will keep the battery in good condition for future use.
(3) When the battery charge becomes low, you will find the scanner cannot emit scan beam and its power-on beep sounds differently.



SETTING UP THE CRADLE

Capable of charging the scanner, the cradle is specifically designed for the scanner to communicate with a host computer wirelessly. Refer to [3.1.1 Connect to Cradle](#).



Two LED indicators are provided for power and communications status.

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, flashing	Wait for connection request from the scanner (Slow flash at 0.5 Hz)
---	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



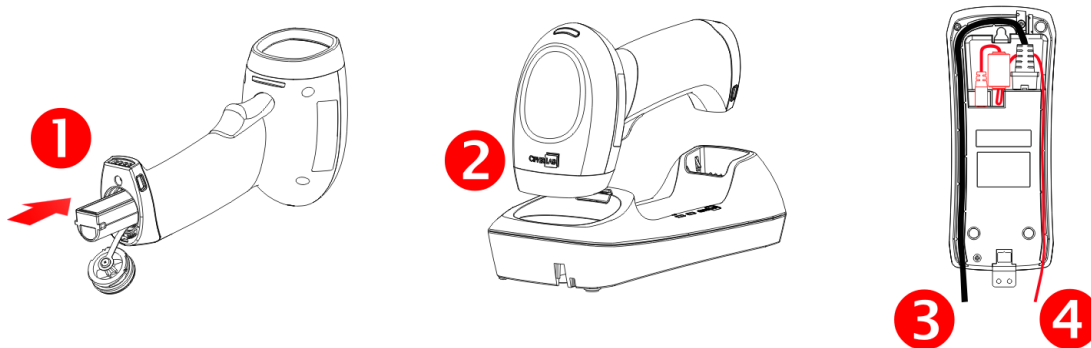
CHARGING THE BATTERY VIA CRADLE

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).

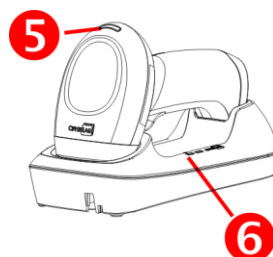
Note: Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.

- 1) Install the battery to the scanner.
- 2) Seat the scanner in the cradle.
- 3) Connect the cradle to your computer or notebook via the USB or RS-232 cable.
- 4) Connect the power supply cord from the 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 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.
- 6) The LED for communications on the cradle will first become solid blue while initializing. Refer to the table above for details on different stage of communications.

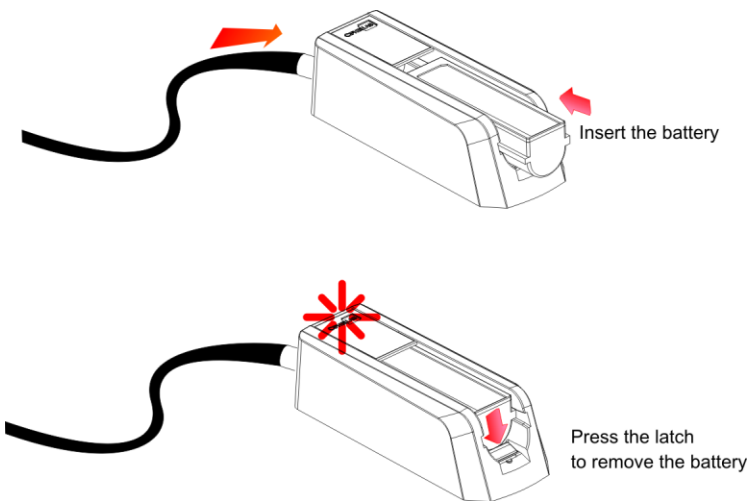


CHARGING THE BATTERY VIA CHARGER

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) Slide the battery smoothly until the latch rises to secure it.
- 2) Connect the power supply cord to the charger.
- 3) Connect the other end of the power cord to a suitable power outlet.



Status LED		Meaning
Red, solid	---	Charger power ON without battery inserted (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. Rich choices of output interfaces are available to enhance the total performance of the scanner. Please refer to product specifications.

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

PRODUCT HIGHLIGHTS

- ▶ Small-form-factor and built tough to survive drop test
- ▶ Extremely low power consumption
- ▶ Firmware upgradeable
- ▶ Supports most popular barcode symbologies, including GS1-128 (EAN-128), GS1 DataBar (RSS), etc.
- ▶ Supports negative barcodes
- ▶ Supports a variety of 2D symbologies
- ▶ Supports different scan modes, including Aiming Mode and Multi-Barcode Mode
- ▶ Programmable feedback via LED indicator and beeper
- ▶ Beeping tone and duration programmable for Good Read
- ▶ 4 MB flash memory for Memory Mode operation, storing up to 246,723 scans based on EAN-13 barcodes
- ▶ Provides up to 10 KB SRAM for reserve buffer while getting out of range over a wireless personal area network (WPAN), storing up to 640 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.



SYMBOLOLOGIES SUPPORTED

Most of the popular barcode symbologies are supported, as listed below. Each can be individually enabled or disabled. The scanner will automatically discriminate and recognize all the symbologies that are enabled. Refer to [Chapter 4 Changing Symbology Settings](#) for details of each symbology.

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



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



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.

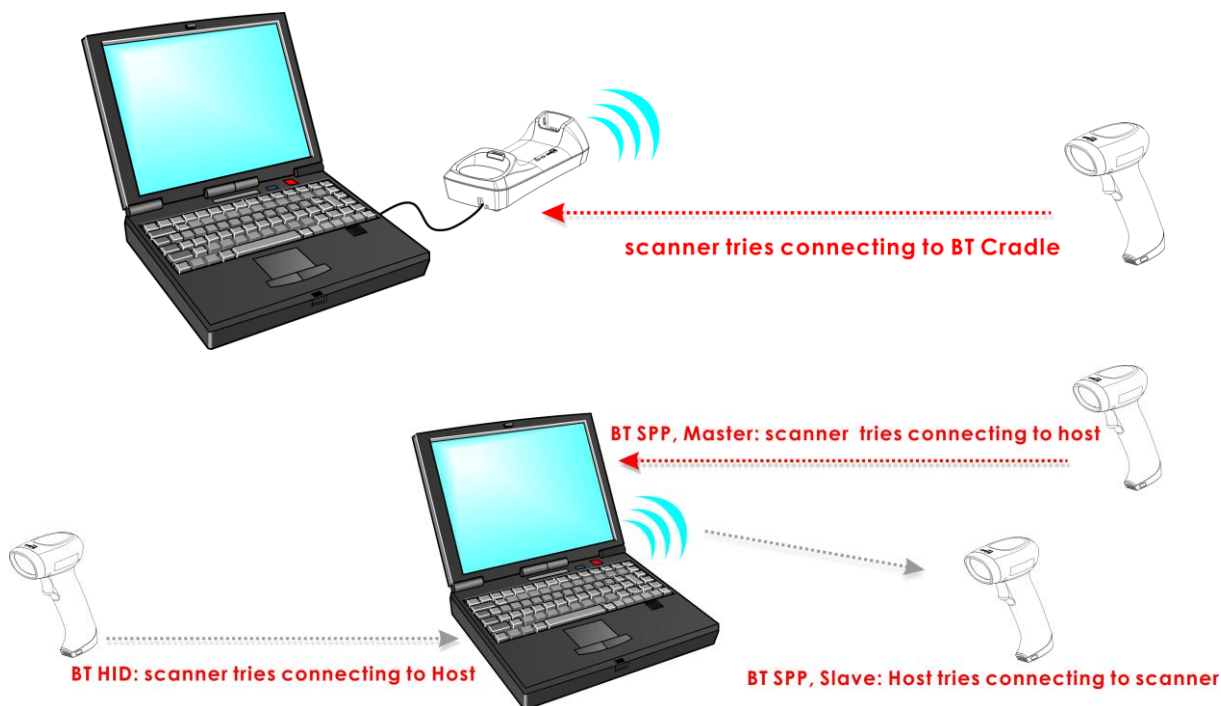


Note: Refer to [Appendix II Host Serial Commands](#) on how to configure the cradle by having the scanner read cradle-related setup barcodes or using serial commands.



Working Mode

Upon powering up, the scanner will try to establish a connection with the BT cradle or a computer with *Bluetooth*® wireless technology. Refer to [Chapter 3 Setting up a WPAN Connection](#) for details. The connection between the scanners and the 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, have it read the "Enter Setup" barcode located at the bottom of almost every even page of this manual.

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

Enter Setup



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

EXIT CONFIGURATION MODE

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

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

Update



109999

Abort



109998



DEFAULT SETTINGS

SAVE USER SETTINGS AS DEFAULTS

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

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

Save as User
Defaults



109986

RESTORE USER DEFAULTS

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

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

Restore User
Defaults



109987

RESTORE SYSTEM DEFAULTS

For the scanner to restore the factory defaults, 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 the cradle to restore factory defaults, refer to

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

Restore System
Defaults



109993

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



READ A SETUP BARCODE

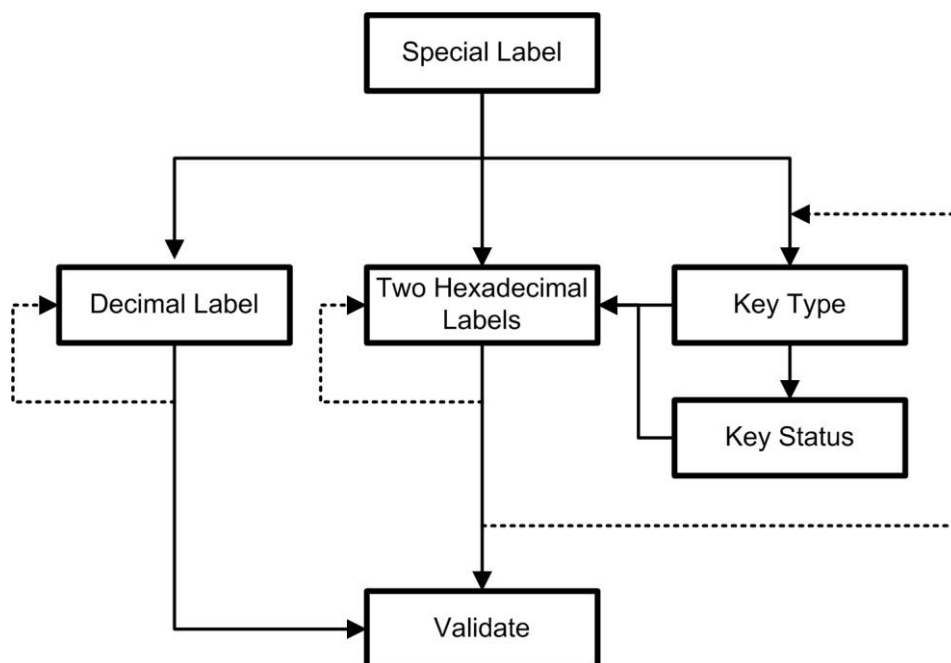
CONFIGURE PARAMETERS

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






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

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

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












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

Steps	Action	Scanner Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode...	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will be flashing red.
3	Read a Setup barcode... For example,	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.
	<div><div>Enter Setup</div></div> <div><div>*Enable Industrial 25</div><div>100307</div></div> <div><div>Save as User Default</div><div>109986</div></div>	
4	Exit the Configuration Mode...	Same as for <i>Enter the Configuration Mode</i> .
	<div><div>Update</div><div>109999</div></div> OR <div><div>Abort</div><div>109998</div></div>	
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).

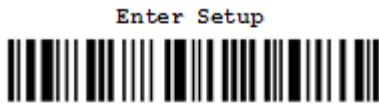










The example below shows how to set numeric parameters:

Steps	Action	Scanner Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... <div>Enter Setup</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>Normal setup barcode</div> <div>*Enable Interleaved 25</div> 	
	<div>Normal setup barcode</div> <div>Enable Fixed Length(s) ...</div> 	
	<div>Special setup barcode</div> <div>Max. Length (*126) Or Fixed Length 1</div> 	The scanner will respond with one short beep if reading a special setup barcode such as "Max. Length", indicating the setup requires reading more barcodes.
	<div>Decimal barcodes</div> <div>1</div>  <div>5</div>  <div>Validate</div> 	Read the "Decimal Value" barcode(s). ▶ Refer to Appendix IV "Decimal System"
4	Exit the Configuration Mode... <div>Update</div>  <div>OR</div> <div>Abort</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	Scanner Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... 	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode... For example,	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>Special setup barcodes</div>   	<p>When "Keyboard Wedge" or "USB HID" is configured for interface, Key Type and Key Status will then become applicable. Decide whether or not to change key status when "Normal Key" is selected for Key Type.</p> <p>▶ Refer to Appendix III</p>
	<div>Hexadecimal barcodes</div>   	<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>
4	Exit the Configuration Mode...  OR 	The scanner will respond with two beeps (low-high tone) when the input values are validated. Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .



LIST THE CURRENT SETTINGS

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

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

List Page 1



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

List Page 2



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

List Page 3



Lists settings regarding Code ID

List Page 4



Lists settings regarding: Readable Symbologies (1/2)

List Page 5



Lists settings regarding: Readable Symbologies (2/2)

List Page 6



Lists settings regarding Symbology Parameters (1/3)

List Page 7



Lists settings regarding Symbology Parameters (2/3)

List Page 8



Lists settings regarding Symbology Parameters (3/3)

List Page 9



Reserved

List Page 10



Lists settings regarding Editing Format 1
(1/2)

List Page 11



Lists settings regarding Editing Format 1
(2/2)

List Page 12



Lists settings regarding Editing Format 2
(1/2)

List Page 13



Lists settings regarding Editing Format 2
(2/2)

List Page 14



Lists settings regarding Editing Format 3
(1/2)

List Page 15



Lists settings regarding Editing Format 3
(2/2)

List Page 16



Lists settings regarding Editing Format 4
(1/2)

List Page 17



Lists settings regarding Editing Format 4
(2/2)

List Page 18



Lists settings regarding Editing Format 5
(1/2)

List Page 19



Lists settings regarding Editing Format 5
(2/2)

List Page 20



Lists settings of Driver License parsing

List Page 22



CREATE ONE-SCAN SETUP BARCODES

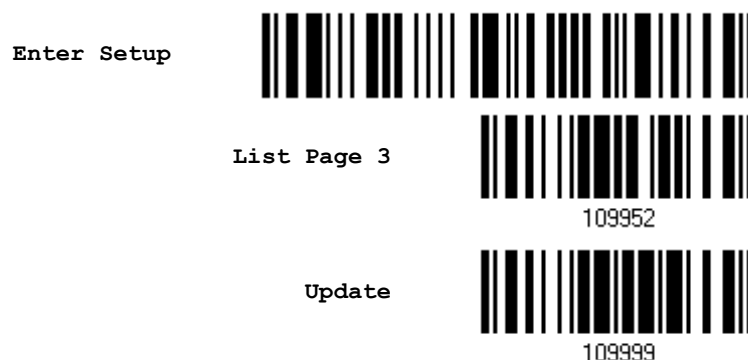
Most of the scanner parameters require only one read for setting new values. To facilitate configuring the scanner, create One-Scan setup barcodes for use.

1D ONE-SCAN BARCODE

The requirements of a One-Scan setup barcode are:

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

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



Now, it requires only one read:



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



2D ONE-SCAN BARCODE

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

#@CipherLab101231109902109903109994

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

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

2D One-Scan Setup Barcode for configuring suffix



UNDERSTANDING THE BARCODE SCANNER

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

IN THIS CHAPTER

1.1 Battery	21
1.2 Memory	26
1.3 LED Indicator	29
1.4 Beeper.....	31
1.5 Send "NR" to Host.....	35
1.6 Scan Modes.....	36
1.7 Scanning Timeout	40
1.8 Delay between Re-read.....	41
1.9 Read Redundancy (1D).....	42
1.10 Addon Security for UPC/EAN Barcodes	43
1.11 Auto-Sense Mode	43
1.13 Picklist Mode.....	44
1.14 Mobile Phone/Display Mode	45
1.15 Serial Number Stamp	45
1.16 2D Decode Settings	46

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 (from the power adaptor). However, the charging time may vary by working condition. For intensive data collection, you may need a spare battery for uninterrupted operation.

Note: The scanner supports power economy. Refer to settings of "[Power Economy](#)", "[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" and "Auto Power Off" 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 251. 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 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.

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



101000

- 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 251. 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 the scanner is in the configuration mode.



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 the 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 the 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 cradle, the scanner tries to re-connect the 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 10 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.



Note: The 10 KB transmit buffer on the scanner can hold as many as 640 scans based on EAN-13 barcodes. Data will be cleared out once the scanner is turned off or running out of battery power!



1.2.2 MEMORY MODE

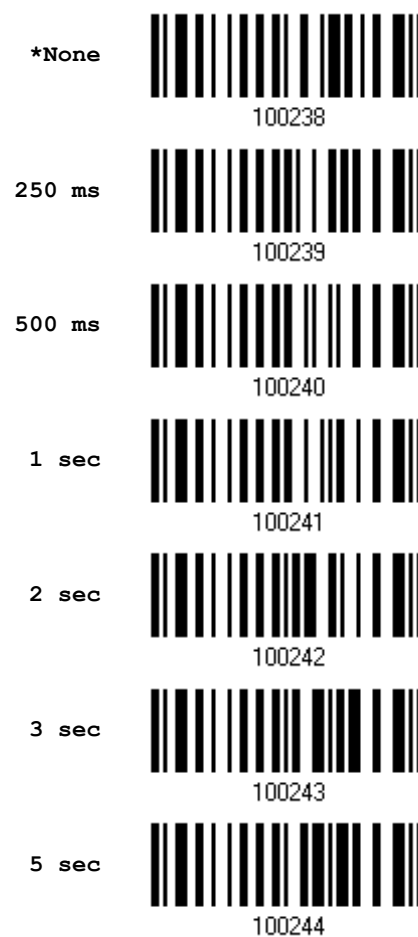
The scanner keeps 4 MB flash memory for memory mode operation. When the scanner is in memory mode, it means any real-time connection established with host is disabled.



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



Send Data

The 4 MB flash memory on the scanner can store up to 246,723 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 host temporarily.

Send Data



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



Confirm



1.2.3 FREE MEMORY

You can scan the barcode below to show the available capacity of the flash memory in percentage terms.

Available Memory



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"> ▶ Charging (On/Off ratio 0.5 s: 0.5 s) ▶ Configuration Mode (On/Off ratio 0.5 s: 0.5 s)
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"> ▶ No WPAN connection is established after waiting for two minutes
Red, on-off	---	---	<ul style="list-style-type: none"> ▶ Power on, with one long beep (high tone, LED on for 1 second) ▶ Data saved to buffer when transmit buffer is enabled and the scanner is out of range, with two short beeps (high-low tone) ▶ Transmit buffer full, with one long beep (low tone) ▶ Transmit buffer disabled, with one long beep (low tone) ▶ Memory full in memory mode, with two short beeps (high-low tone)
---	---	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"> ▶ SPP Slave: waiting host to connect ▶ HID or SPP Master: trying to connect to host ▶ Using Cradle: trying to connect to the cradle
---	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



101014

Disable
Good Read LED



101013

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)



101020

- 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 251. For example, read "1" and "5" for the LED to go off after 150 milliseconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.



1.4 BEEPER

The scanner has a buzzer to give feedback for various operating conditions.

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone ▶ Programmable, default to 4 KHz	Good Read, with green LED on-off quickly
Six short beeps ▶ High-low tone repeats three times	▶ Enter Configuration Mode, with red LED flashing ▶ Exit Configuration Mode
Two short beeps, low-high tone	Setup barcode read successfully
One short beep, high tone	▶ More setup barcode required ▶ Input PIN code ▶ Clear PIN code
One short beep, low tone	More barcodes required to complete the "output sequence" requirements of Multi-Barcode Editor, with green LED on-off quickly (Upon completion, same as Good Read.)
One long beep, low tone	▶ Transmit buffer full, with red LED on-off quickly ▶ Transmit buffer disabled, with red LED on-off quickly ▶ Configuration error (Wrong barcode...) ▶ PIN code input error ▶ Reject random PIN request ▶ Fail to send data in memory mode
Two short beeps, high-low tone	▶ Data saved to buffer when transmit buffer is enabled and the scanner is out of range, with red LED on-off quickly ▶ Memory Mode – Memory full, with red LED on-off quickly
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	▶ WPAN connection established, with blue LED flashing ▶ WPAN connection resumed, with blue LED flashing
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

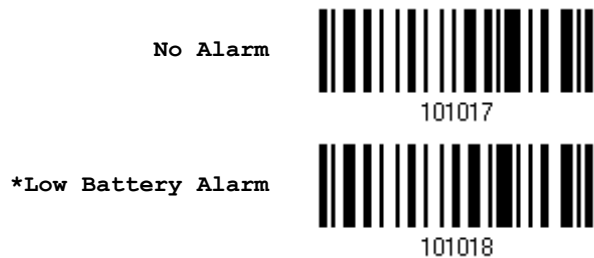


Duration



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).



1.5 SEND "NR" TO HOST

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

Enable



100267

*Disable



100266



Update

1.6 SCAN MODES

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

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

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



1.6.1 LASER MODE

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

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

Note: Refer to "Scanning Timeout".

*Laser Mode



1.6.2 AUTO OFF MODE

The scanner will start scanning once the trigger is pressed.

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

Note: Refer to "Scanning Timeout".

Auto Off Mode



1.6.3 AUTO POWER OFF MODE

The scanner will start scanning once the trigger is pressed.

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

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

Auto Power Off Mode



1.6.4 AIMING MODE

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

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

Aiming Mode



Aiming Timeout

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

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



1. Read the barcode above to specify the time interval before aiming ends. (It is set to 1 by default.)
2. Read the ["Decimal Value"](#) barcode on page 251. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.

1.6.5 MULTI-BARCODE MODE

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

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

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

Multi-Barcode Mode



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



1.6.6 PRESENTATION MODE

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

Presentation Mode



Low Light Enhancement

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

Enable



*Disable



1.7 SCANNING TIMEOUT

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

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

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



- 1) Read the barcode above to specify the time interval before the scan engine times out.
- 2) Read the "[Decimal Value](#)" barcode on page 251. For example, read "1" and "5" for the scanner to automatically shut down after being idle for 15 seconds.
- 3) Read the "Validate" barcode on the same page to complete this setting.



1.8 DELAY BETWEEN RE-READ

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

- ▶ Auto Power Off mode
- ▶ Presentation mode

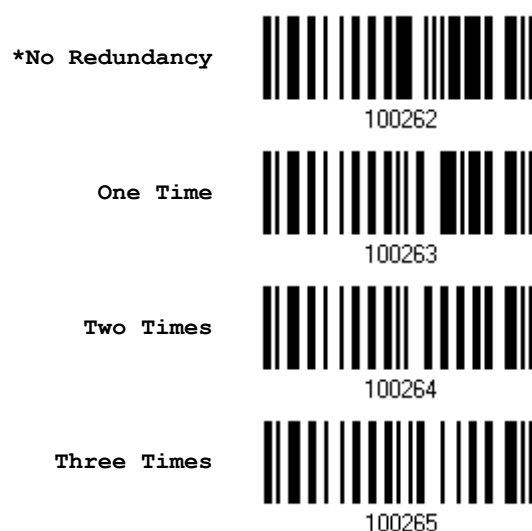


1.9 READ REDUNDANCY (1D)

Select the level of reading redundancy. For example,

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

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



1.10 ADDON SECURITY FOR UPC/EAN BARCODES

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

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

Addon Security Level
(*2~30)



- 1) Read the barcode above to specify the read redundancy for UPC/EAN barcodes. (It is set to 2 by default.)
- 2) Read the "[Decimal Value](#)" barcode on page 251. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.
- 3) Read the "Validate" barcode on the same page to complete this setting.

1.11 AUTO-SENSE MODE

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

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

*Enable Auto-sense



Disable Auto-sense



1.12 CABLE AUTO-DETECTION VIA BT CRADLE

By default, this function is enabled that the cradle will detect the interface automatically.

Connect the BT cradle to a host computer using the provided interface cable. After the BT connection between the scanner and the cradle is established, users can have the scanner read the setting barcodes below to enable/disable cable auto-detection on the cradle.

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

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

***Enable**



Disable



1.13 PICKLIST MODE

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

Enable



***Disable**



1.14 MOBILE PHONE/DISPLAY MODE

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

*Disable



102267

Enable



102268

1.15 SERIAL NUMBER STAMP

Decide whether to add the device serial number in front of the data transmitted.

Add serial number in
front of data



101365

*Disable



101364

1.15.1 SEPARATOR BETWEEN SERIAL NUMBER STAMP AND DATA

Scan the barcode below to specify the separator character between device serial number and the accompanying data. By default, the separator is a comma symbol.

Specify the
separator character



101380

- 1) Read the barcode above to specify a separator character.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character.
- 3) Read the "Validate" barcode to complete this setting.



1.16 2D DECODE SETTINGS

1.16.1 AIMING PATTERN

Enable/Disable the aiming pattern during scanning.

***Enable**



102131

Disable



102130

1.16.2 DECODING ILLUMINATION

Enable/Disable illumination during scanning.

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

***Enable**



102129

Disable



102128



SELECTING OUTPUT INTERFACE

In order to establish a proper WPAN 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	48
2.2 BT SPP Slave	60
2.3 BT SPP Master	63
2.4 Keyboard Wedge via BT Cradle	68
2.5 RS-232 via BT Cradle	77
2.6 USB HID via BT Cradle.....	83
2.7 USB Virtual COM via BT Cradle	94



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
Kanji Transmission	Disable
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 251. 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)	78	PCAT (Swiss German)
65	PCAT (French)	79	PCAT (Danish)
66	PCAT (German)	80	Reserved
67	PCAT (Italy)	81	Reserved
68	PCAT (Swedish)	82	Reserved
69	PCAT (Norwegian)	83	PCAT (Russian)
70	PCAT (UK)	84	Reserved
71	PCAT (Belgium)	85	Reserved
72	PCAT (Spanish)	86	Reserved
73	PCAT (Portuguese)	87	Reserved
74	PS55 A01-2 (Japanese)	88	PCAT (Cyrillic on Russian)
75	User-defined table	89	PCAT (Armenian)
76	PCAT (Turkish)	90	PCAT (Thai)
77	PCAT (Hungarian)		



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
- ▶ Kanji 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.

***Normal**



100060

AZERTY



100061

QWERTZ



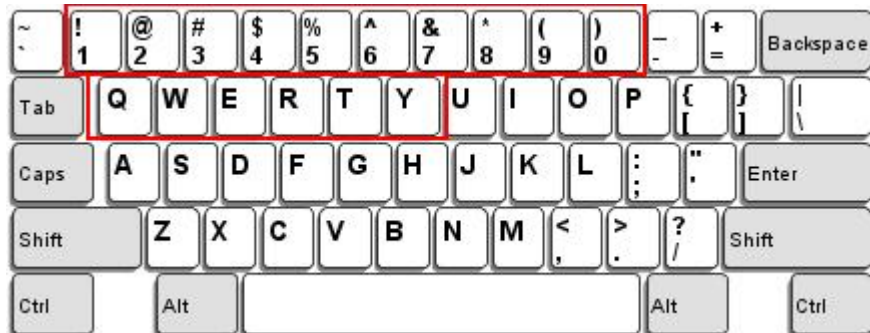
100062

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 because the upper row is for special characters.

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



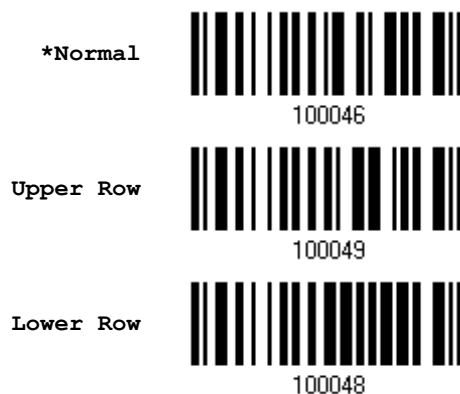
- ▶ Select "Lower Row" for the "Digits Layout" setting because the upper row is for special characters.



Digits Layout

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

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



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



100044

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▶ Refer to the Capital Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▶ This setting is not supported on PDAs.

Auto Detect



100054

Capital Lock ON



100053

*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



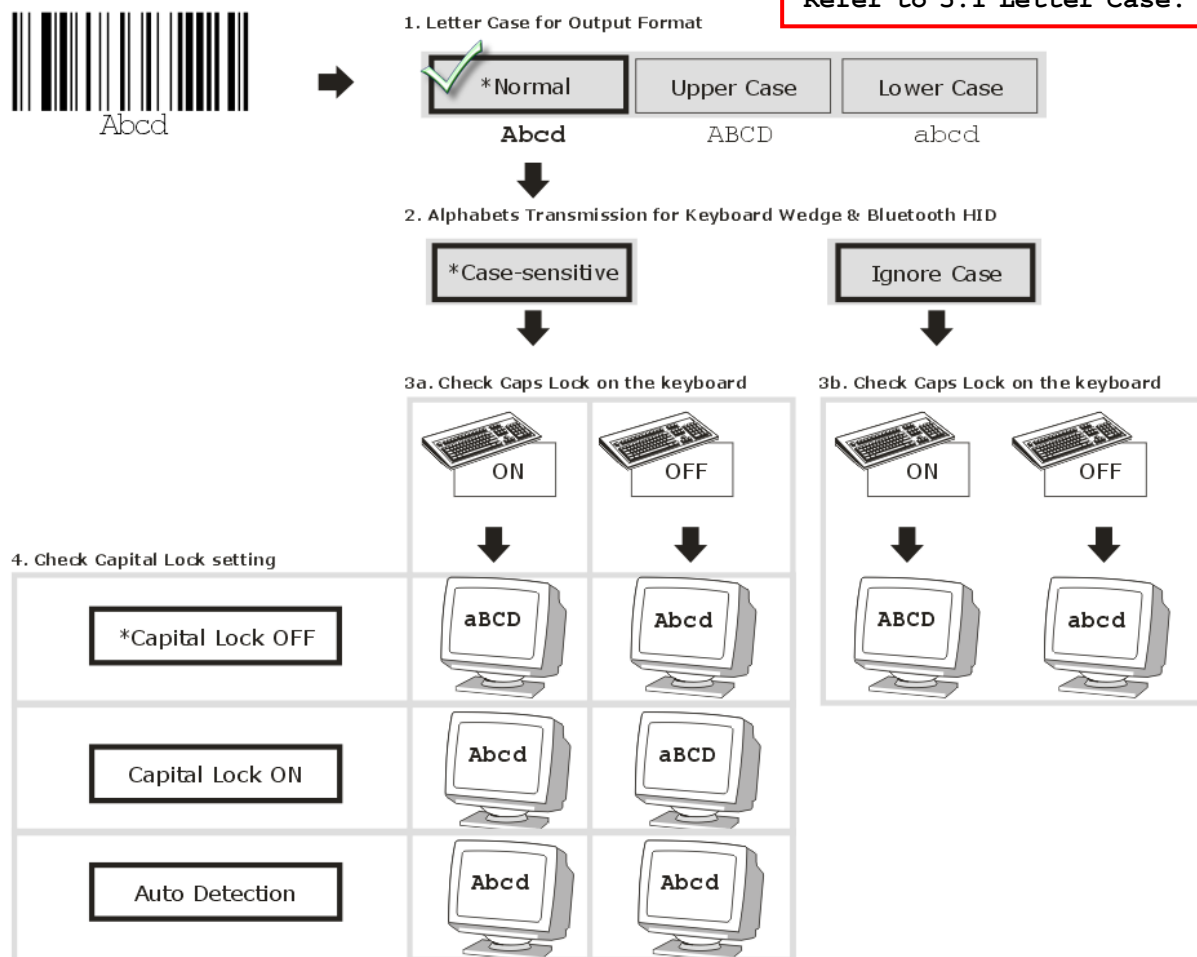
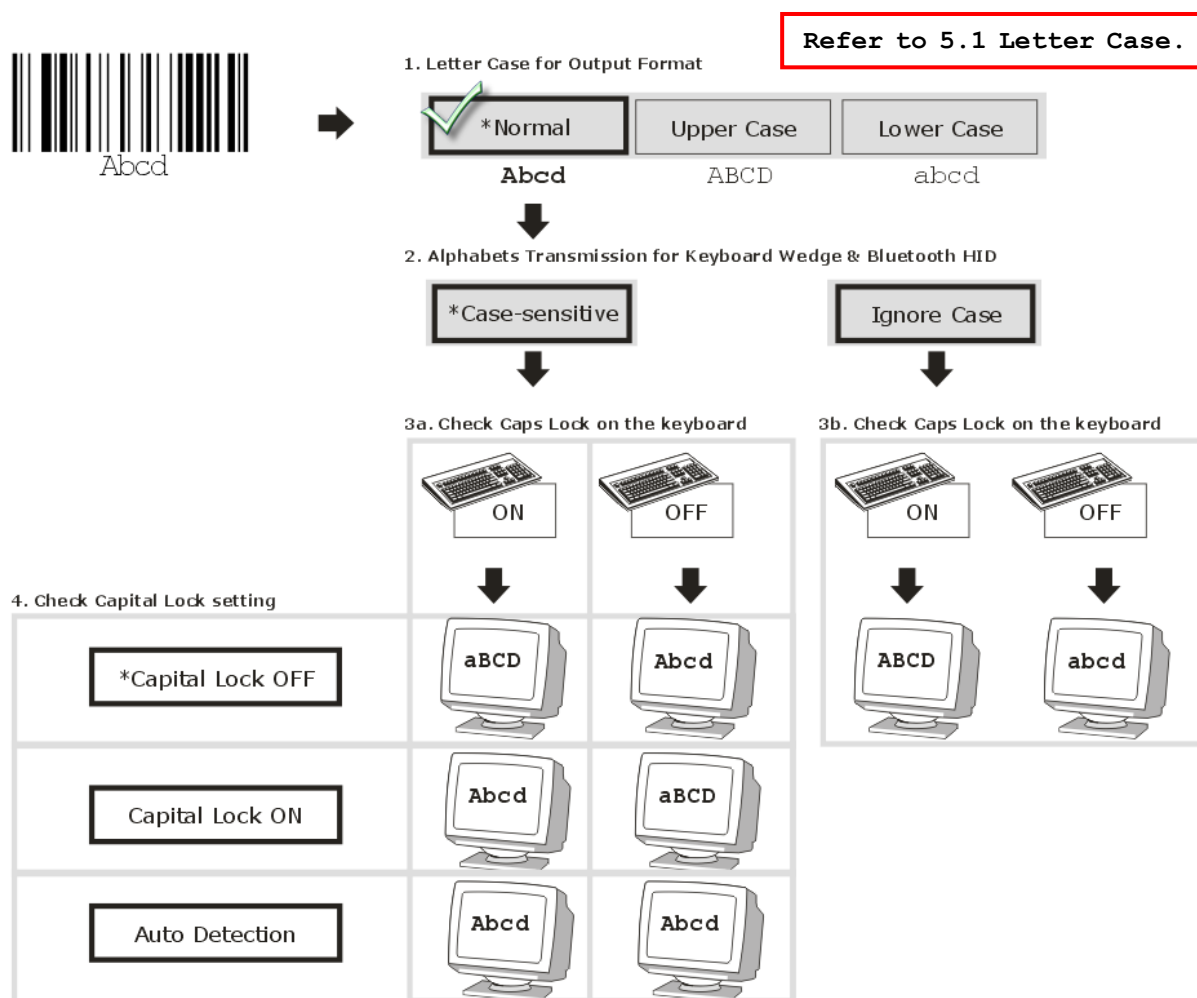
100051

*Case-sensitive



100050





Digits Transmission

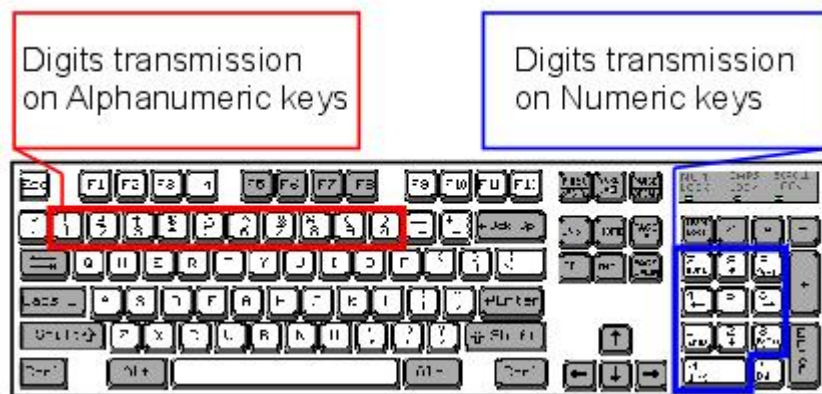
By default, the alphanumeric keypad is used for transmitting digits. Select "Numeric Keypad" if you wish to use the keys on the numeric keypad.

Numeric Key



*Alphanumeric Key





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

Kanji Transmission

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

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

Enable



100067

*Disable



100066

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)



100011

- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 251 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 251 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.

Batch Processing



*By Character



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



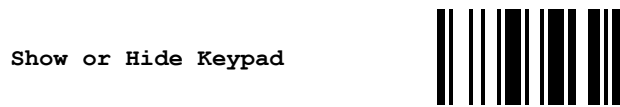
2.1.7 SPECIAL KEYBOARD FEATURE

By default, this interface employs special function codes (0x01 ~ 0x1F) defined in the Keyboard Wedge Table. However, users may want to get rid of these special codes within the barcodes to avoid data error. You can decide whether to apply the special keyboard feature. For further details please refer to [Keyboard Wedge Table](#).

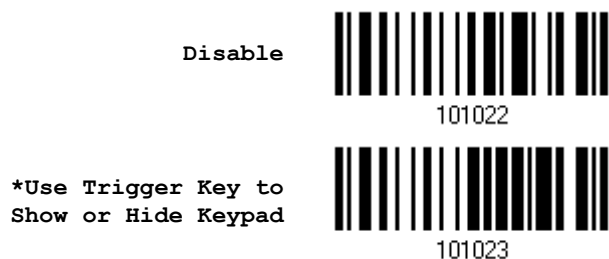


2.1.8 KEYBOARD SUPPORT FOR IPHONE/IPAD

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.



By default, users can show or hide the onscreen keypad by simply pressing the scanner trigger key twice within 0.5 seconds. To disable this function, please read the Disable setting barcode below.



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

2.1.9 TRANSMIT SPEED

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



Normal



*Fast



2.1.10 SIMPLE PAIRING FOR IPHONE/IPAD

The window requiring pairing passcode is always pop-up when you are using a *Bluetooth*® connection to an iPhone or iPad. To connect to iOS-based devices more quickly, scan the barcode below to enable *Bluetooth*® simple pairing so that the passcode-required window will not show up when establishing a connection.

Disable



*Enable



Note: Simple pairing only supports to the device with *Bluetooth*® v2.1 or later.

2.1.11 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



Master



2.1.12 BT HID AUTO-RECONNECTION

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

*Auto reconnect
immediately



Auto reconnect on
data being scanned



100169

Auto reconnect off



100170

2.1.13 UTF8 CONVERSION

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

Enable



100023

*Disable



100022



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

Scan this barcode to have the scanner get into 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 251 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 251. 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.

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 it 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 *Bluetooth*[®]
SPP, Master Mode



Connect with the target device by scanning two setting barcodes in sequence

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

- ▶ "Set Connection"
- ▶ "MAC ID"

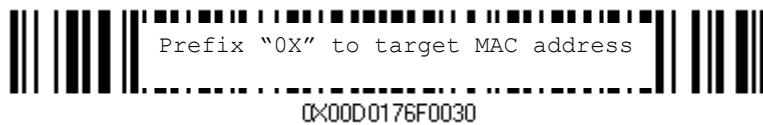
Note: The "MAC ID" barcode must have a prefix of two characters, either "0x" or "0X", followed by the real MAC address of the target device.

Usage:

- 1) Read the "Activate *Bluetooth*[®] 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 read the setup barcodes for entering the MAC address.

- ▶ 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, reading the "Validate" barcode can cancel the operation as well.

Enter MAC ID in
Hexadecimal...



Usage:

- 1) Read the barcode above.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 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*® 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.



Connect with the target device by scanning a single 2D setting barcode

Users can also scan a single 2D barcode that combines the "Set Connection" and "MAC ID" setup barcodes to connect with the target device. The example below is a 2D barcode containing codes '#@CipherLab', '88686471166254' (Set Connection), '0x' (Prefix to the target MAC ID), and '00D0176F0030' (MAC ID of the target device). Underlining the digits is to make them more readable.

#@CipherLab886864711662540X00D0176F0030

Command	Purpose
---------	---------



#@CipherLab	Enter Setup
88686471166254	Set connection
0X	Prefix to the target MAC ID
00d0176f0030	MAC address ID of the target device

The concatenation of setup barcodes can be combined to create a single 2D barcode as below:

2D One-Scan Setup Barcode for connecting with a target device



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 251 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)



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 251. 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.



2.3.4 SWITCH BETWEEN MASTER/SLAVE MODES

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 the 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

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 scanned**



100169

Auto reconnect off



100170



2.4 KEYBOARD WEDGE VIA BT CRADLE

The Y cable allows you to connect the scanner via the 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.

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



2.4.1 ACTIVATE KEYBOARD WEDGE & SELECT KEYBOARD TYPE

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

Activate Keyboard
Wedge & Select
Keyboard Type...



- 1) Read this barcode above to activate Keyboard Wedge and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 251. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

Keyboard Type

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

No.	Keyboard Type	No.	Keyboard Type
1	PCAT (US)	23	PS55 002-82, 003-82
2	PCAT (French)	24	PS55 002-3, 003-3
3	PCAT (German)	25	PS55 002-8A, 003-8A
4	PCAT (Italian)	26	IBM 3477 Type 4 (Japanese)
5	PCAT (Swedish)	27	PS2-30
6	PCAT (Norwegian)	28	IBM 34XX/319X, Memorex Telex 122 Keys
7	PCAT (UK)	29	User-defined table
8	PCAT (Belgium)	30	PCAT (Turkish)
9	PCAT (Spanish)	31	PCAT (Hungarian)
10	PCAT (Portuguese)	32	PCAT (Swiss German)
11	PS55 A01-1	33	PCAT (Danish)
12	PS55 A01-2 (Japanese)	34	Reserved
13	PS55 A01-3	35	Reserved
14	PS55 001-1	36	Reserved
15	PS55 001-81	37	PCAT (Russian)
16	PS55 001-2	38	Reserved
17	PS55 001-82	39	Reserved
18	PS55 001-3	40	Reserved
19	PS55 001-8A	41	Reserved
20	PS55 002-1, 003-1	42	PCAT (Cyrillic on Russian)
21	PS55 002-81, 003-81	43	PCAT (Armenian)



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

2.4.2 KEYBOARD SETTINGS

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

Alphabets Layout

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

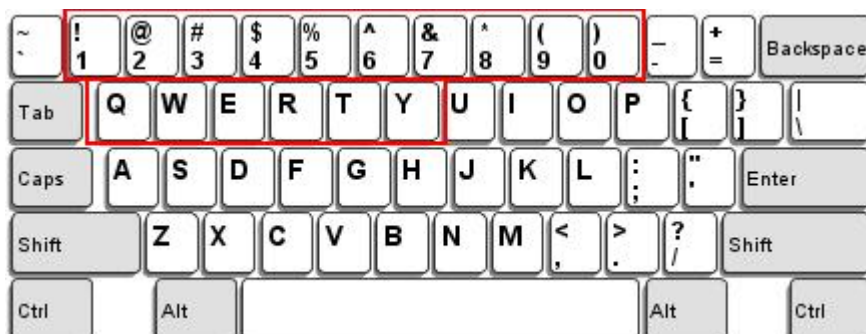


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match the keyboard.



US Keyboard Style – Normal

QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



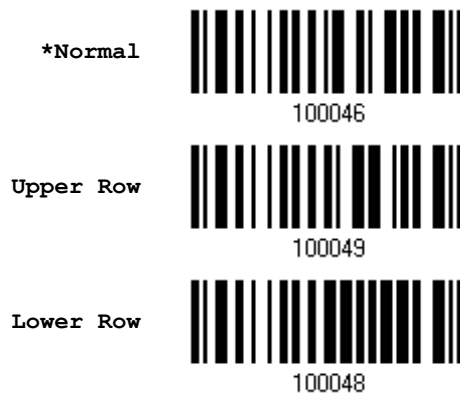
- Select "Lower Row" for the "Digits Layout" setting because the upper row is for special characters.



Digits Layout

Select a proper layout that matches Alphabets Layout settings. The scanner will make adjustments according to this setting.

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



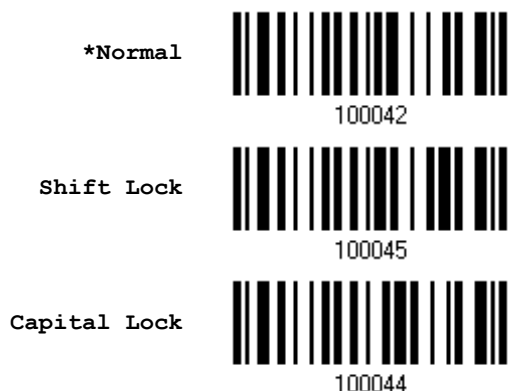
Note: This setting is meant to be used with the Alphabets Layout; and perhaps with the Character Substitution setting when support to certain keyboard types (languages) is unavailable but required.



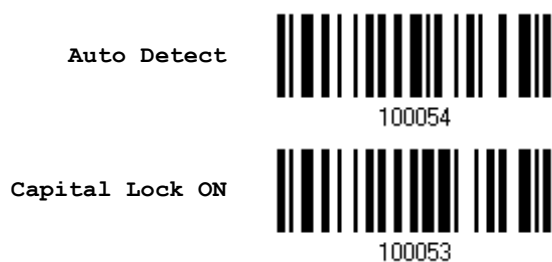
Capital Lock Type & Setting

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



Alphabets Transmission

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

Ignore Case

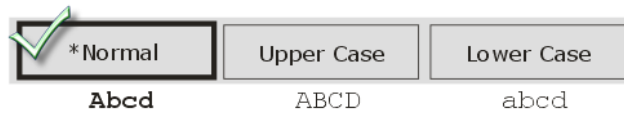


*Case-sensitive

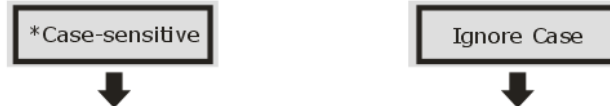


1. Letter Case for Output Format

Refer to 5.1 Letter Case.



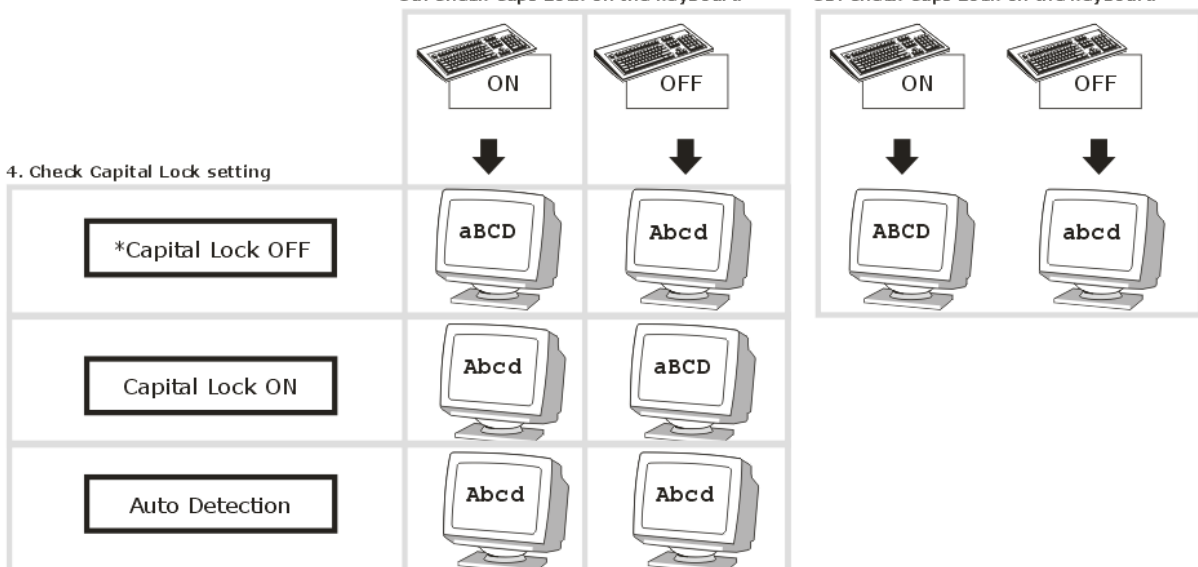
2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID



3a. Check Caps Lock on the keyboard

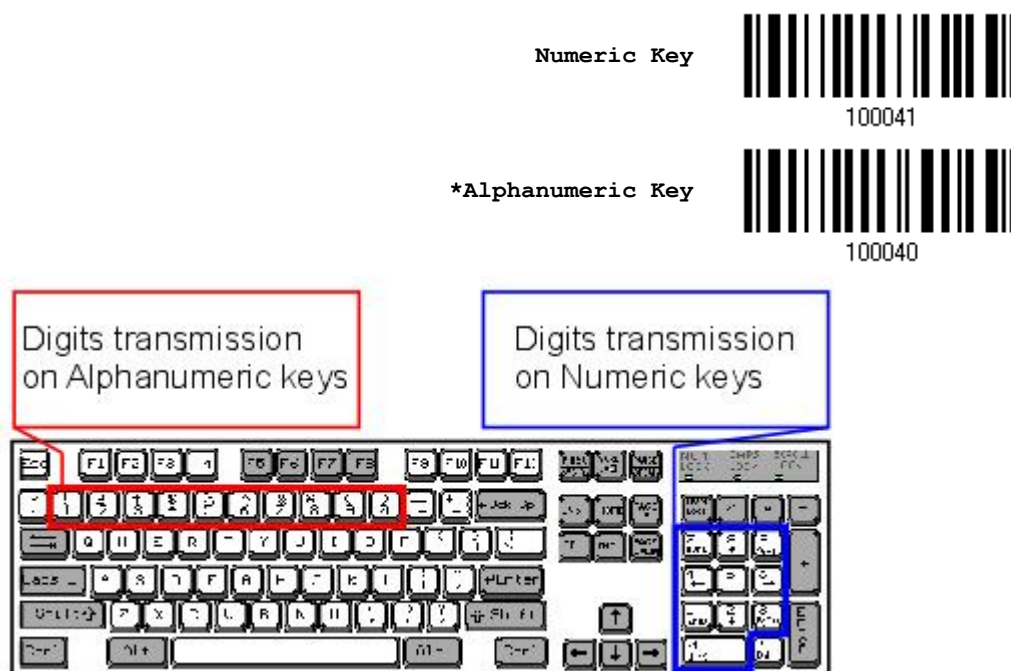
3b. Check Caps Lock on the keyboard

4. Check Capital Lock setting



Digits Transmission

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



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

Kanji Transmission

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

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



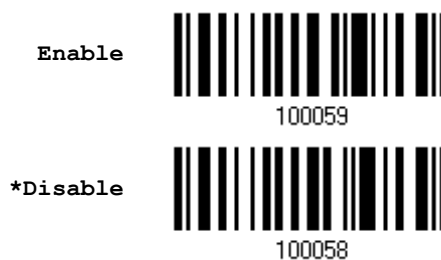
ALT Composing

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



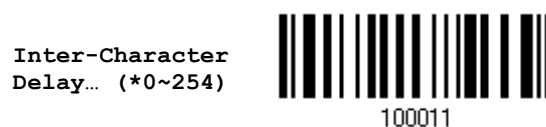
Laptop Support

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



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.



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 251 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 251 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.

2.4.5 SPECIAL KEYBOARD FEATURE

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

*Apply



Bypass



2.4.6 UTF8 CONVERSION

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

Enable



*Disable



2.5 RS-232 VIA BT CRADLE

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

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

2.5.1 ACTIVATE RS-232 INTERFACE

Activate RS-232
Interface



2.5.2 BAUD RATE

*115200 bps



57600 bps



38400 bps



19200 bps



9600 bps



4800 bps



2400 bps



100085

1200 bps



100086

600 bps



100087

2.5.3 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



100099

*1 stop bit



100098



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**



100094

Scanner Ready



100095

Data Ready



100096

Invert Data Ready



100097



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 251 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 251 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)



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

ACK/NAK Error Beep

Enable Error Beep



100015

*Disable Error Beep



100014

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



2.6 USB HID VIA BT CRADLE

For USB HID, use the USB cable to connect the scanner via 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 cradle is solely on USB power, the provided 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
Kanji Transmission	Disable
Inter-Character Delay	0 (ms)
Inter-Function Delay	0 (ms)



2.6.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

With the USB HID interface activated, you have to select a keyboard type to complete this setting.

Activate
Direct USB HID &
Select Keyboard
Type...



- 1) Read the barcode above to activate USB HID and select a keyboard type.
- 2) Read the "[Decimal Value](#)" barcode on page 251. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on the same page to complete this setting.

USB HID

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	78	PCAT (Swiss German)
65	PCAT (French)	79	PCAT (Danish)
66	PCAT (German)	80	Reserved
67	PCAT (Italy)	81	Reserved
68	PCAT (Swedish)	82	Reserved
69	PCAT (Norwegian)	83	PCAT (Russian)
70	PCAT (UK)	84	Reserved
71	PCAT (Belgium)	85	Reserved
72	PCAT (Spanish)	86	Reserved
73	PCAT (Portuguese)	87	Reserved
74	PS55 A01-2 (Japanese)	88	PCAT (Cyrillic on Russian)
75	User-defined table	89	PCAT (Armenian)
76	PCAT (Turkish)	90	PCAT (Thai)
77	PCAT (Hungarian)		



2.6.2 KEYBOARD SETTINGS

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

Alphabets Layout

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

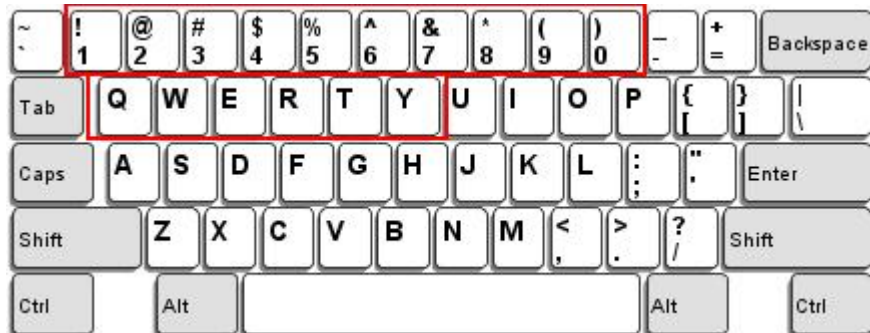


Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US). The Alphabets Layout and Digits Layout setting must match the keyboard.



US Keyboard Style – Normal

QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



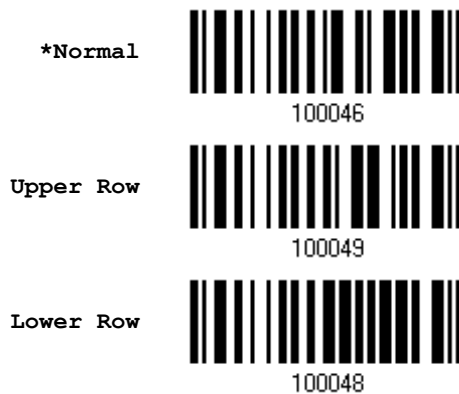
- ▶ Select "Lower Row" for the "Digits Layout" setting because the upper row is for special characters.



Digits Layout

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

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



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



Alphabets Transmission

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

Ignore Case



*Case-sensitive



1. Letter Case for Output Format

Refer to 5.1 Letter Case.



2. Alphabets Transmission for Keyboard Wedge & Bluetooth HID



3a. Check Caps Lock on the keyboard



3b. Check Caps Lock on the keyboard



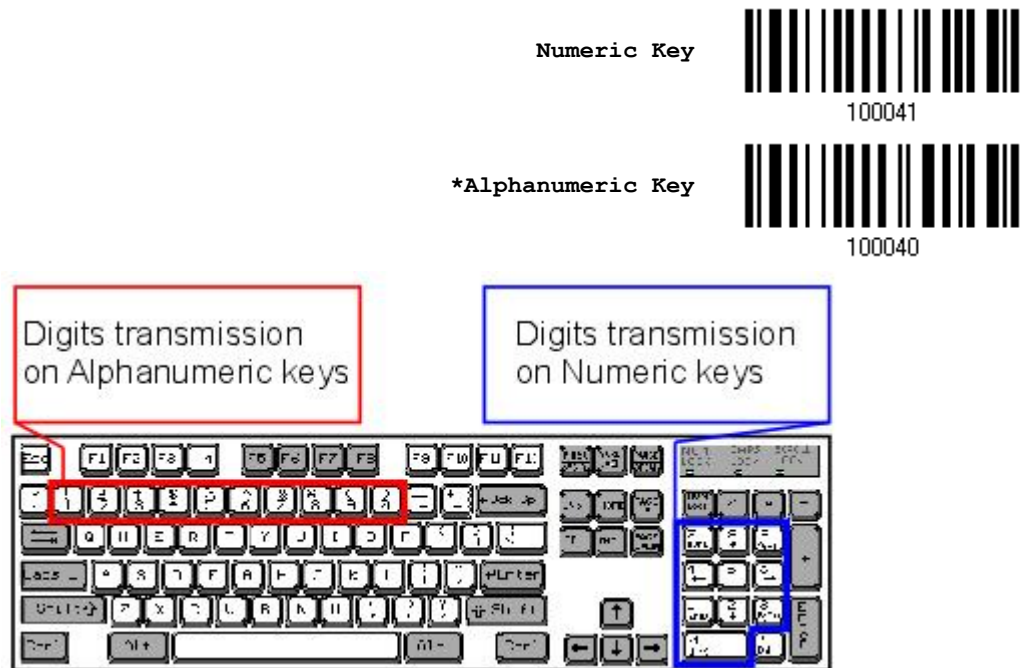
4. Check Capital Lock setting

*Capital Lock OFF		
Capital Lock ON		
Auto Detection		



Digits Transmission

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



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

Kanji Transmission

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

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



2.6.3 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.

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



- 1) Read the barcode above to specify the inter-character delay.
- 2) Read the "[Decimal Value](#)" barcode on page 251 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 251 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



100064

*By Character



100065

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

2.6.6 SPECIAL KEYBOARD FEATURE

By default, this interface employs special function codes (0x01 ~ 0x1F) defined in the Keyboard Wedge Table. However, users may want to get rid of these special codes within the barcodes to avoid data error. You can decide whether to apply the special keyboard feature. For further details please refer to [Keyboard Wedge Table](#).

*Apply



100018

Bypass



100019

2.6.7 USB HID VIA CRADLE AUTO-RECONNECTION

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 scanned



100169



Auto reconnect off



2.6.8 UTF8 CONVERSION

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

Enable



*Disable



2.6.9 USB POLLING INTERVAL

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

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



- 1) Read the barcode above to specify the USB polling interval time.
- 2) Read the "[Decimal Value](#)" barcode on page 251.
- 3) Read the "Validate" barcode on the same page to complete this setting.



2.7 USB VIRTUAL COM VIA BT CRADLE

Use the USB cable to connect the scanner via 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 cradle 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 Cradle
USB Virtual COM



100004

2.7.2 ACTIVATE USB VIRTUAL COM_CDC

Activate BT Cradle
USB Virtual COM_CDC



100031

2.7.3 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 251 for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on the same page to complete this setting.



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

ACK/NAK Error Beep

Enable Error Beep



100015

*Disable Error Beep






100014

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



2.7.5 USB VCOM VIA CRADLE AUTO-RECONNECTION

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 scanned	 100169
Auto reconnect off	 100170



Chapter 3

SETTING UP A WPAN CONNECTION

The scanner can be configured to send data to a host computer wirelessly via the cradle, 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 Cradle after reading “Set Connection” and “Serial No.” labels ...



Interface Option	Reference
Keyboard Wedge	2.4 Keyboard Wedge via BT Cradle
RS-232	2.5 RS-232 via BT Cradle
USB HID	2.6 USB HID via BT Cradle
USB Virtual COM	2.7 USB Virtual COM via BT Cradle

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



Interface Option	Reference
BT HID	2.1 BT HID
BT SPP	2.2 BT SPP Slave , 2.3 BT SPP Master

IN THIS CHAPTER

3.1 Connecting via Cradle.....	98
3.2 Connecting via <i>Bluetooth</i> ® Dongle.....	100



3.1 CONNECTING VIA CRADLE

By default, the interface of the cradle is set to "USB HID". Use the interface cable to connect the scanner via 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 CRADLE

By scanning the setting barcode at the back of the cradle

Connect any scanner to the cradle by reading the barcode label at the back of the cradle. The scanner will respond with one beep upon reading the label.

▶ CrAdLexxxxxxxxxxxx

After reading the label (12 digits of 'x' represent the cradle MAC address), the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to the 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).

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



3.1.2 CHANGE INTERFACE

If you want to change the interface cable of the cradle, use one of the scanners to configure the interface-related settings and it will pass the new settings to the 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 the cradle.
- 2) Within two minutes, connect the interface cable between the 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 the 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 the cradle, it will pass the interface-related settings to the cradle.
- 8) Upon receipt of the new settings, the cradle will initialize itself.
- 9) Updated with new settings, the 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



Disable



3.2 CONNECTING VIA *BLUETOOTH*® DONGLE

3.2.1 CHANGE INTERFACE

Below is the procedure to configure the scanner before establishing a WPAN connection via *Bluetooth*® 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*® 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*® 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).

Changing Device Name

By default, the device name (local hostname) combines the model name with serial number (for example, 2564BH3000001). Users are allowed to configure the device name with length up to 13 bytes.

Change Bluetooth
Local Hostname



100140



- 1) Read the barcode above to configure the device name.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.



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 251 or the "[Hexadecimal Value](#)" barcode on page 252 for the desired digits or character string.

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

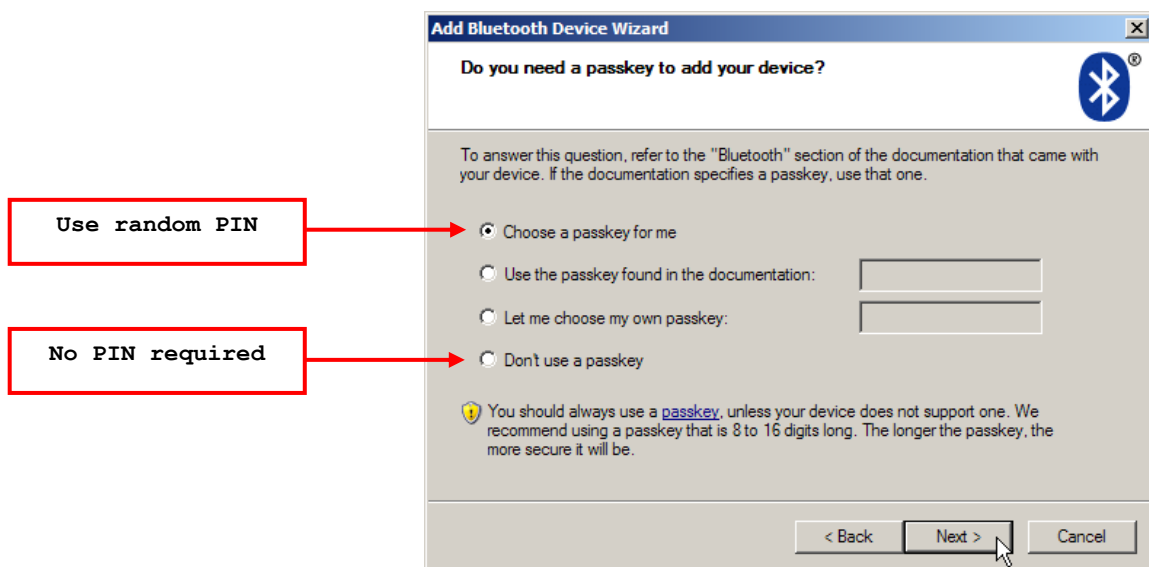


4. Read the "Validate" barcode to complete this setting.

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](#).

Secure Simple Pairing (SSP)

Secure Simple Pairing (SSP), introduced in *Bluetooth*® Core Specification 2.1 + EDR, is a new feature designed to ease the pairing process while keeping up the communication security level. This function is enabled by default.

Disable



*Enable



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

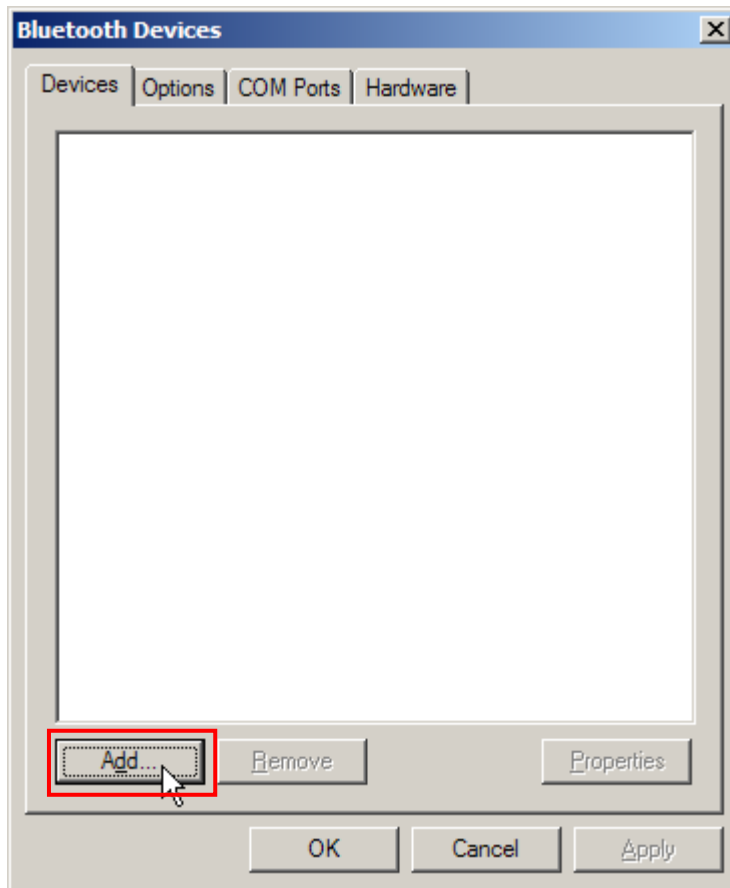
By default, BT HID is activated on the scanner, and the keyboard type is set to PCAT (US). When BT HID is re-activated, you will have to select a keyboard type to complete this setting.

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].



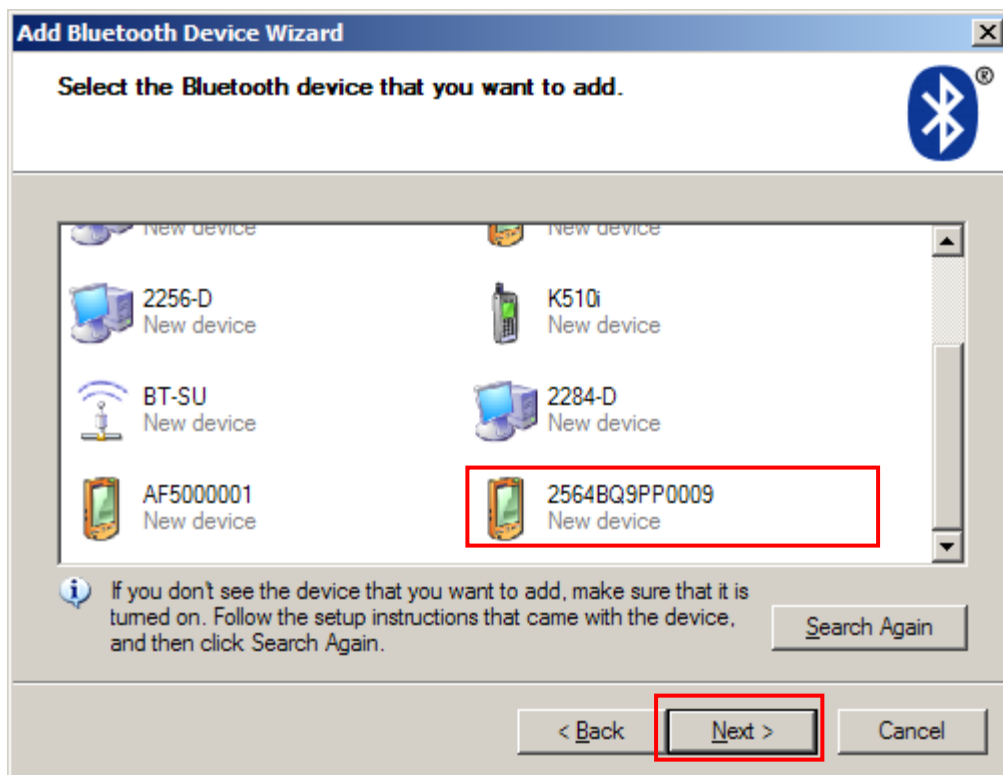


6. Wait for a few seconds for the Wizard to search available devices nearby.

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.



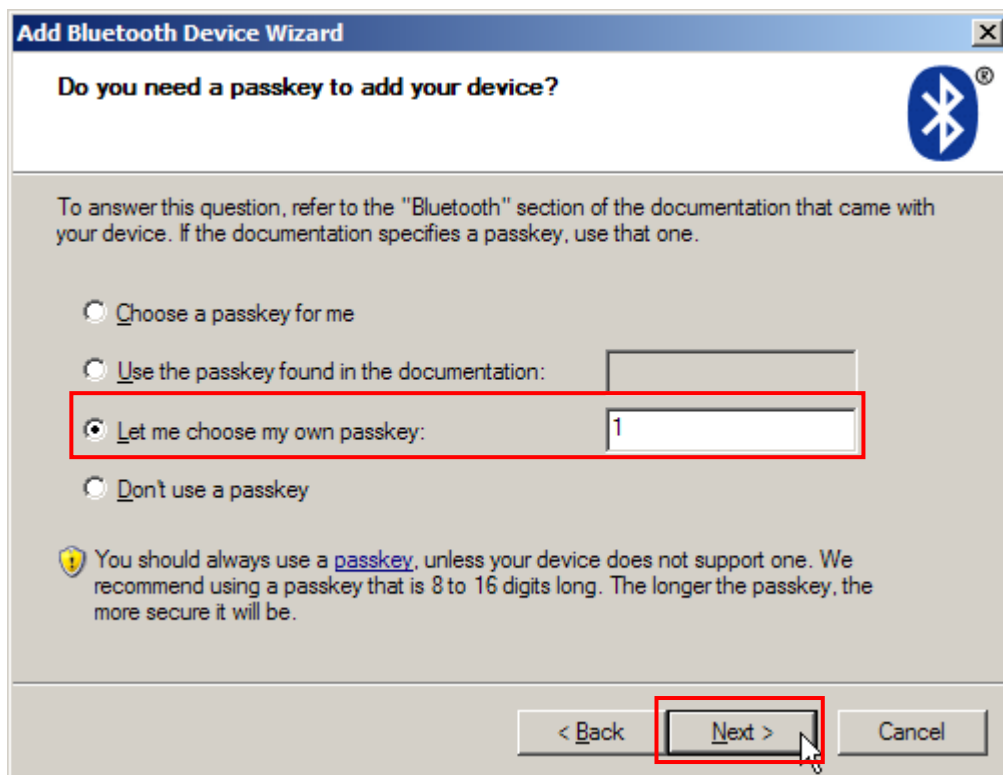
7. Click [Next].



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.



Add Bluetooth Device Wizard

Do you need a passkey to add your device?

To answer this question, refer to the "Bluetooth" section of the documentation that came with your device. If the documentation specifies a passkey, use that one.

☐ Choose a passkey for me

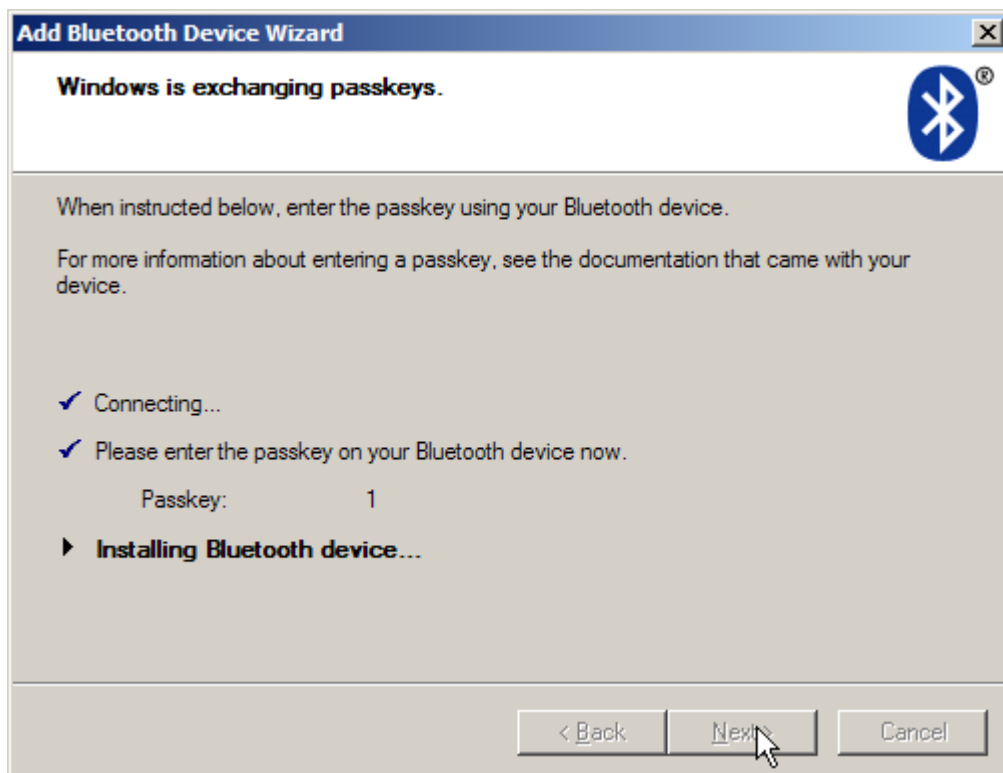
☐ Use the passkey found in the documentation:

☒ Let me choose my own passkey:

☐ Don't use a passkey

You should always use a [passkey](#), unless your device does not support one. We recommend using a passkey that is 8 to 16 digits long. The longer the passkey, the more secure it will be.

< Back Next > Cancel



Add Bluetooth Device Wizard

Windows is exchanging passkeys.

When instructed below, enter the passkey using your Bluetooth device.

For more information about entering a passkey, see the documentation that came with your device.

✓ Connecting...

✓ Please enter the passkey on your Bluetooth device now.

Passkey: 1

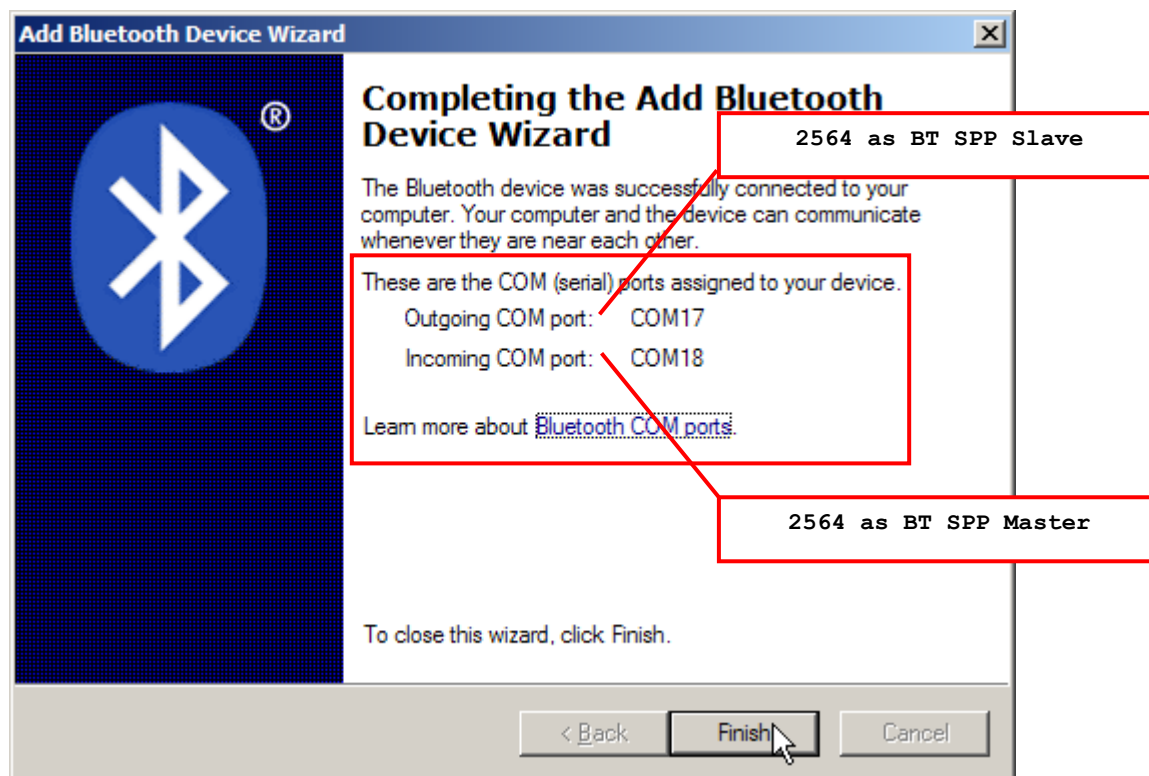
► Installing Bluetooth device...

< Back Next Cancel



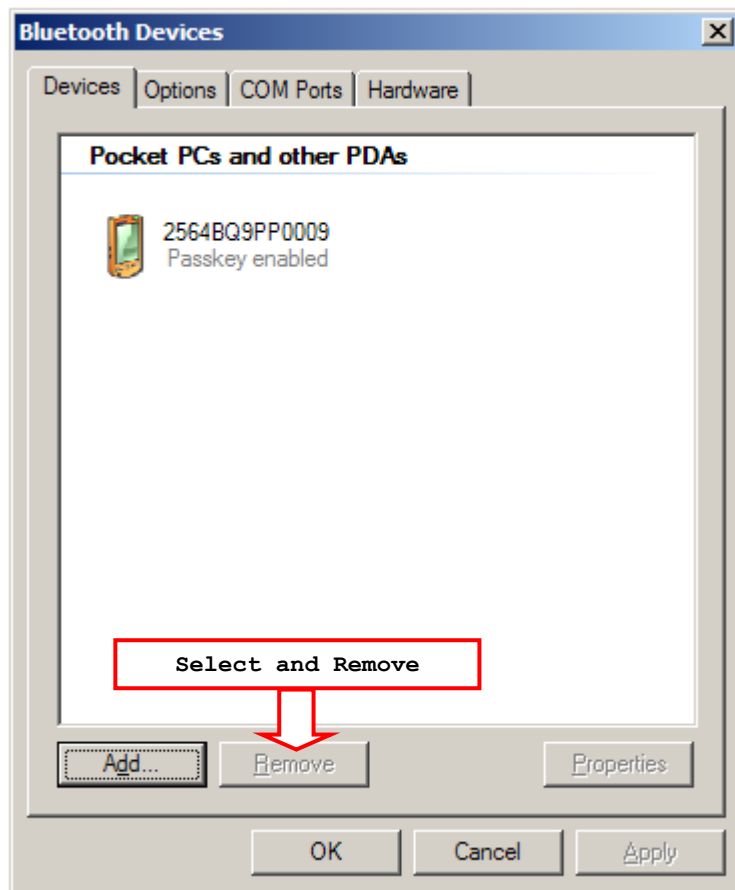
Note: When Bluetooth security is enabled without providing a pre-set PIN code, dynamic input of PIN code is supported.

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.



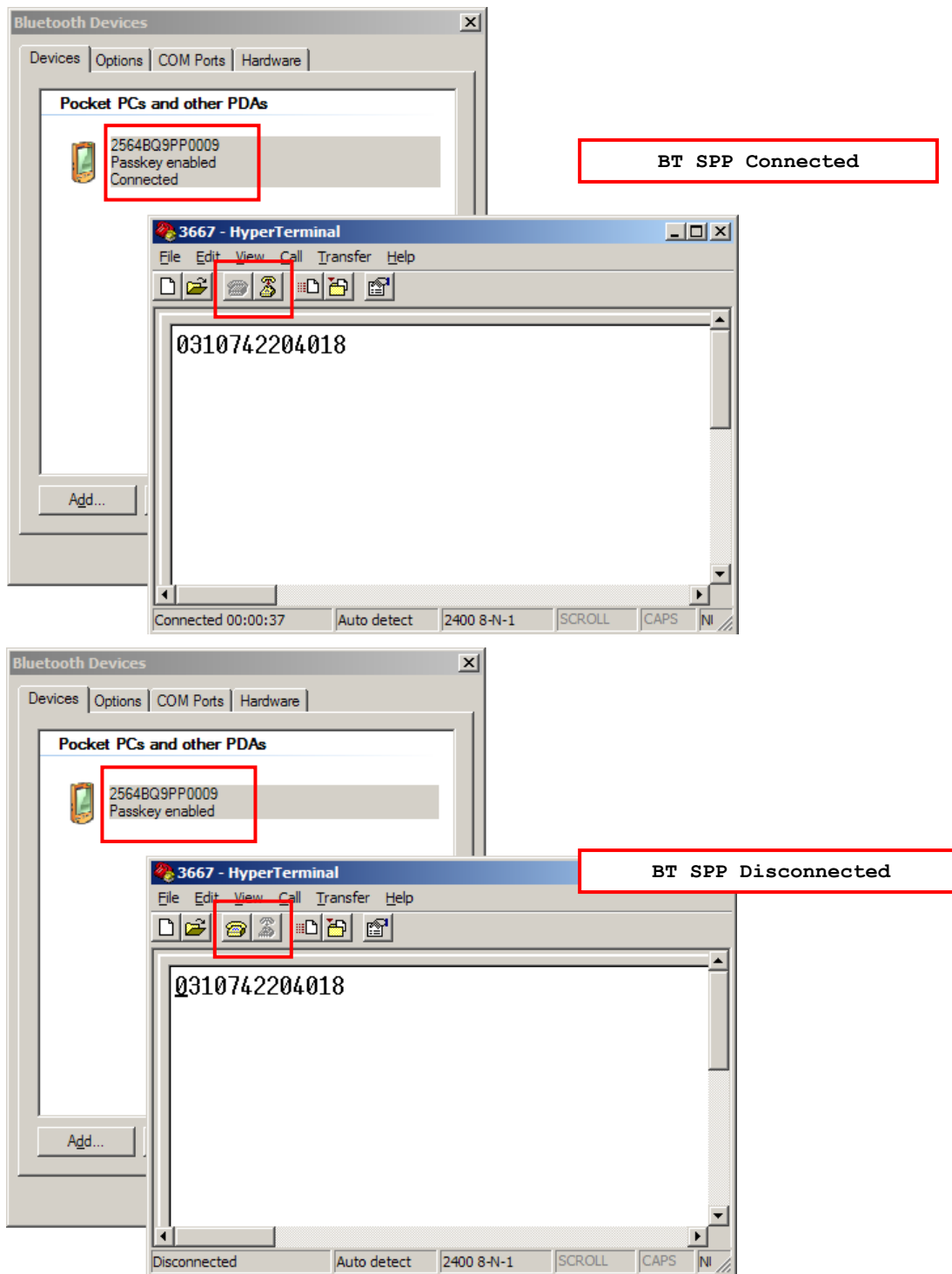
Note: When any changes are made to authentication and PIN code on the scanner side, or you want to change to use BT HID, it is suggested that you remove the scanner from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

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](#).





CHANGING SYMBOLOGY SETTINGS

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

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

Enable



109805

Disable



109804

Settings for each particular symbology will be depicted as follows.

IN THIS CHAPTER

4.1 Codabar.....	114
4.2 Code 25 – Industrial 25	117
4.3 Code 25 – Interleaved 25.....	120
4.4 Code 25 – Matrix 25.....	123
4.5 Code 39.....	126
4.6 Code 93	129
4.7 Code 128	131
4.8 EAN-8.....	132
4.9 EAN-13.....	134
4.10 GS1-128 (EAN-128)	139
4.11 ISBT 128.....	141
4.12 MSI	142
4.13 French Pharmacode	144
4.14 Italian Pharmacode	144
4.15 Plessey	145
4.16 GS1 DataBar (RSS Family)	146
4.17 Telepen.....	151
4.18 UPC-A.....	153
4.19 UPC-E.....	155
4.20 Code 11	158
4.21 Composite Code.....	161
4.22 2D Symbologies.....	163



4.1 CODABAR

***Enable**



Disable



4.1.1 SECURITY LEVEL

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

***Normal**



High



4.1.2 START/STOP TRANSMISSION

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

**Transmit Start/Stop
Characters**



***Do Not Transmit**



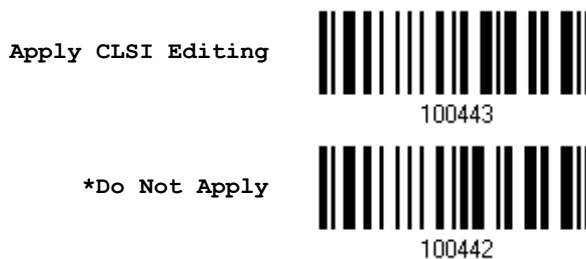
4.1.3 START/STOP CHARACTER SELECTION

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



4.1.4 CLSI CONVERSION

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



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



4.1.5 CODE LENGTH QUALIFICATION

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

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

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

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

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



102222

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



102221

- 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**



102223

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



102224

- 3) Read the "[Decimal Value](#)" barcode on page 251 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



4.2 CODE 25 – INDUSTRIAL 25

***Enable**



100307

Disable



100306

4.2.1 SELECT START/STOP PATTERN

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

***Industrial 25
Start/Stop Pattern**



100412

**Interleaved 25
Start/Stop Pattern**



100413

**Matrix 25
Start/Stop Pattern**



100414

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.



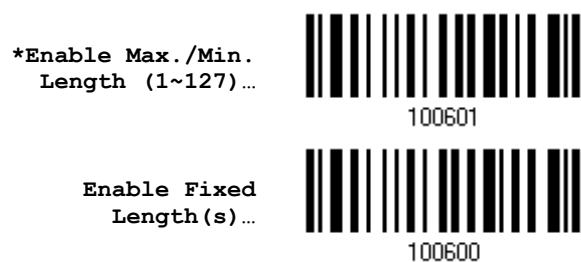
4.2.4 CODE LENGTH QUALIFICATION

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.

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

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



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



Max. Length (*127) or
Fixed Length 1



100602

Min. Length (*4) or
Fixed Length 2



100603

- 3) Read the "[Decimal Value](#)" barcode on page 251 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



4.3 CODE 25 – INTERLEAVED 25

*Enable



100309

Disable



100308

4.3.1 SELECT START/STOP PATTERN

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



100429

*Do Not Verify



100428



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.

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

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

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



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



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



Max. Length (*126) or
Fixed Length 1



100606

Min. Length (*4) or
Fixed Length 2



100607

- 3) Read the "[Decimal Value](#)" barcode on page 251 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



4.4 CODE 25 – MATRIX 25

Enable



100311

*Disable



100310

4.4.1 SELECT START/STOP PATTERN

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

Industrial 25
Start/Stop Pattern



100420

Interleaved 25
Start/Stop Pattern



100421

*Matrix 25
Start/Stop Pattern



100422

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.

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

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

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



Enable Fixed
Length(s)...



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

Max. Length (*127) or
Fixed Length 1



Min. Length (*4) or
Fixed Length 2



- 3) Read the "[Decimal Value](#)" barcode on page 251 for the desired length.
- 4) Read the "Validate" barcode on the same page to complete this setting.



4.5 CODE 39

***Enable**



100301

Disable



100300

4.5.1 TRANSMIT START/STOP CHARACTERS

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

**Transmit Code 39
Start/Stop
Characters**



100403

***Do Not Transmit**



100402

4.5.2 VERIFY CHECK DIGIT

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

**Verify Code 39
Check Digit**



100405

***Do Not Verify**



100404



4.5.3 TRANSMIT CHECK DIGIT

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

*Transmit Code 39
Check Digit



Do Not Transmit



4.5.4 STANDARD/FULL ASCII CODE 39

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

Code 39 Full ASCII



*Standard Code 39



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.

*Normal



High



4.5.6 ASTERISKS (*) AS DATA CHARACTERS

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



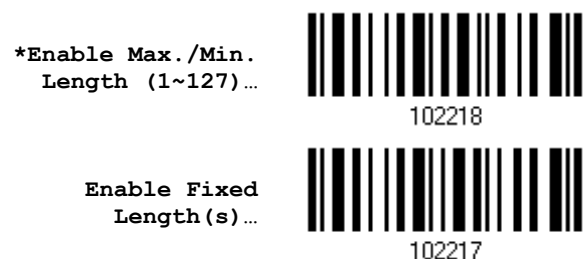
4.5.7 CODE LENGTH QUALIFICATION

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

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

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

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



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

4.6 CODE 93

*Enable



Disable



4.6.1 CODE LENGTH QUALIFICATION

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

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

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

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



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



**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 251 for the desired length.
4) Read the "Validate" barcode on the same page to complete this setting.



4.7 CODE 128

***Enable**



100317

Disable



100316

4.7.1 SECURITY LEVEL

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

***Normal**



100493

High



100492



4.8 EAN-8

EAN-8

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



Disable



EAN-8 Addon 2

Enable EAN-8 Addon 2



***Disable**



EAN-8 Addon 5

Enable EAN-8 Addon 5



***Disable**



4.8.1 CONVERT TO EAN-13

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

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

**Convert EAN-8 to
EAN-13**



***Do Not Convert**



4.8.2 TRANSMIT CHECK DIGIT

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

*Transmit EAN-8
Check Digit



Do Not Transmit



4.8.3 CONVERSION FORMAT

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

*Default Format



GTIN-13 Format



4.9 EAN-13

EAN-13

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



Disable



EAN-13 Addon 2

Enable EAN-13 Addon 2



***Disable**



EAN-13 Addon 5

Enable EAN-13 Addon 5



***Disable**



4.9.1 EAN-13 ADDON MODES

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

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

Enable



*Disable



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

EAN-13 378/379 Addon Mode

Enable



*Disable



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

EAN-13 977 Addon Mode

Enable



*Disable



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

EAN-13 978 Addon Mode

Enable



***Disable**



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

EAN-13 979 Addon Mode

Enable



***Disable**



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

EAN-13 491 Addon Mode

Enable



***Disable**



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

EAN-13 529 Addon Mode



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

EAN-13 Addon Mode Buzzer



4.9.2 CONVERT TO ISBN

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



4.9.3 CONVERT TO ISSN

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



Convert EAN-13 to
ISSN



*Do Not Convert



4.9.4 TRANSMIT CHECK DIGIT

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

*Transmit EAN-13
Check Digit



Do Not Transmit



4.9.5 SECURITY LEVEL

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

*Normal



High



4.10 GS1-128 (EAN-128)

***Enable**



Disable



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

4.10.1 TRANSMIT CODE ID

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

**Transmit GS1-128
Code ID**



***Do Not Transmit**



4.10.2 FIELD SEPARATOR (GS CHARACTER)

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

**Enable Field
Separator...**



- 1) Read the barcode above to enable field separator.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

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



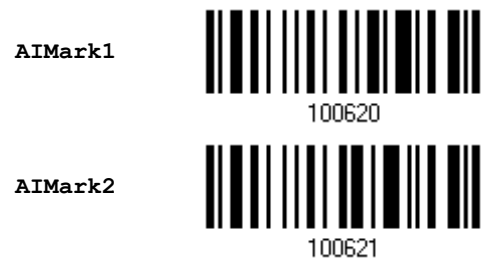
4.10.3 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-128.



4.10.4 APPLICATION ID MARK

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



- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal System](#)" barcode on page 252 for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



4.11 ISBT 128

***Enable**



100355

Disable



100354

4.11.1 ISBT CONCATENATION

Decide whether to decode and concatenate pairs of ISBT barcodes.

- ▶ **Auto-discriminate ISBT Concatenation**

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

- ▶ **Enable ISBT Concatenation**

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

- ▶ **Disable ISBT Concatenation**

It will not concatenate pairs of ISBT barcodes it encounters.

Auto-discriminate



102239

Enable



102238

***Disable**



102237



4.12 MSI

Enable



100345

*Disable



100344

4.12.1 VERIFY CHECK DIGIT

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

*Single Modulo 10



100448

Double Modulo 10



100449

Modulo 10 & 11



100450

4.12.2 TRANSMIT CHECK DIGIT

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

*Last Digit Not
Transmitted



100452

Both Digits
Transmitted



100453

Both Digits
Not Transmitted



100454



4.12.3 CODE LENGTH QUALIFICATION

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

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

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

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



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



4.13 FRENCH PHARMACODE

Enable



100305

*Disable



100304

4.13.1 TRANSMIT CHECK DIGIT

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

*Transmit
French Pharmacode
Check Digit



100411

Do Not Transmit



100410

4.14 ITALIAN PHARMACODE

Enable



100303

*Disable



100302

4.14.1 TRANSMIT CHECK DIGIT

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

*Transmit
Italian Pharmacode
Check Digit



100409

Do Not Transmit



100408



4.15 PLESSEY

Enable



100347

*Disable



100346

4.15.1 CONVERT TO UK PLESSEY

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

Convert to UK Plessey



100447

*Do Not Convert



100446

4.15.2 TRANSMIT CHECK DIGIT

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

*Transmit Plessey
Check Digits



100445

Do Not Transmit



100444



4.16 GS1 DATABAR (RSS FAMILY)

It is categorized into three groups:

Group I – GS1 DataBar Omnidirectional (RSS-14)

This group consists of the following:

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

Group II – GS1 DataBar Expanded (RSS Expanded)

This group consists of the following:

- ▶ GS1 DataBar Expanded
- ▶ GS1 DataBar Expanded Stacked

Group III – GS1 DataBar Limited (RSS Limited)

This group consists of the following:

- ▶ GS1 DataBar Limited

4.16.1 SELECT CODE ID

Select a desired Code ID to use:

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

Use "]c1"



100517

*Use "]e0"



100516



4.16.2 GS1 DATABAR OMNIDIRECTIONAL (RSS-14)

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



100349

*Disable



100348

The settings below apply to Group I symbologies only:

- ▶ GS1 DataBar Omnidirectional
- ▶ GS1 DataBar Truncated

Transmit Code ID

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

*Transmit RSS-14
Code ID



100523

Do Not Transmit



100522

Transmit Application ID

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

*Transmit RSS-14
Application ID



100529

Do Not Transmit



100528

Transmit Check Digit

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

*Transmit RSS-14
Check Digit



100481



Do Not Transmit



100480

4.16.3 GS1 DATABAR EXPANDED (RSS EXPANDED)

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



100349

*Disable



100348

The settings below apply to Group II symbologies only:

- ▶ GS1 DataBar Expanded

Transmit Code ID

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

*Transmit
RSS Expanded Code ID



100527

Do Not Transmit



100526



4.16.4 GS1 DATABAR LIMITED (RSS LIMITED)

Enable RSS Limited
(Group III)



100351

*Disable



100350

Transmit Code ID

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

*Transmit
RSS Limited Code ID



100525

Do Not Transmit



100524

Transmit Application ID

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

*Transmit
RSS Limited
Application ID



100531

Do Not Transmit



100530

Transmit Check Digit

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

*Transmit
RSS Limited
Check Digit



100483

Do Not Transmit



100482



Update

4.16.5 FIELD SEPARATOR (GS CHARACTER)

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

Enable Field
Separator...



- 1) Read the barcode above to enable field separator.
- 2) Read the "[Hexadecimal System](#)" barcode on page 252 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

4.16.6 GS1 FORMATTING

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

Enable



*Disable



4.16.7 APPLICATION ID MARK

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

AIMark1



AIMark2



- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal System](#)" barcode on page 252 for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode to complete this setting.



4.16.8 GS1 DATABAR SECURITY LEVEL

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



4.17 TELEPEN



4.17.1 TELEPEN OUTPUT ASCII/NUMERIC

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

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



4.18 UPC-A

UPC-A

*Enable UPC-A
(No Addon)



Disable



UPC-A Addon 2

Enable UPC-A Addon 2



*Disable



UPC-A Addon 5

Enable UPC-A Addon 5



*Disable



4.18.1 CONVERT TO EAN-13

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

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

Convert UPC-A to
EAN-13



*Do Not Convert



4.18.2 TRANSMIT SYSTEM NUMBER

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

*Transmit UPC-A
System Number



Do Not Transmit



4.18.3 TRANSMIT CHECK DIGIT

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

*Transmit UPC-A
Check Digit



Do Not Transmit



4.19 UPC-E

UPC-E

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



Disable



UPC-E Addon 2

Enable UPC-E Addon 2



***Disable**



UPC-E Addon 5

Enable UPC-E Addon 5



***Disable**



4.19.1 SELECT SYSTEM NUMBER

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

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

System Number 0 & 1



100479

*System Number 0 Only



100478

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

4.19.2 CONVERT TO UPC-A

Decide whether 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



4.19.3 TRANSMIT SYSTEM NUMBER

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

Transmit UPC-E
System Number



*Do Not Transmit



4.19.4 TRANSMIT CHECK DIGIT

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

*Transmit UPC-E
Check Digit



Do Not Transmit



4.20 CODE 11

Enable



100359

*Disable



100358

4.20.1 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

4.20.2 TRANSMIT CHECK DIGIT

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

*Transmit Check
Digit



100542

Do Not Transmit

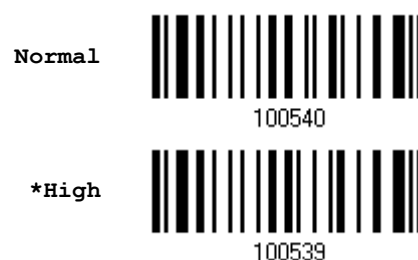


100541



4.20.3 SECURITY LEVEL

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



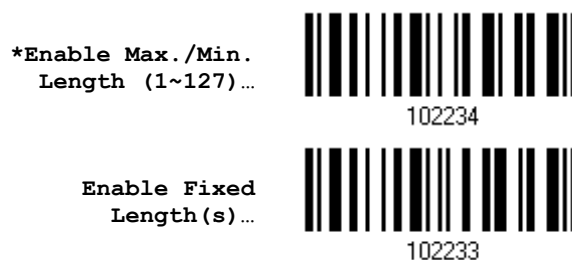
4.20.4 CODE LENGTH QUALIFICATION

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

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

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

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



- 2) Read the barcode for Max. Length or Fixed Length 1, and follow steps 3~4. Repeat steps 2~4 for Min. Length or Fixed Length 2.
- 3) Read the "[Decimal Value](#)" barcode on page 251 for the desired length.



Max. Length (*127) or
Fixed Length 1



102235

Min. Length (*4) or
Fixed Length 2



102236

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



4.21 COMPOSITE CODE

4.21.1 COMPOSITE CC-A/B

Decide whether to enable Composite CC-A/B.

Enable Composite
CC-A/B



102009

*Disable



102008

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

Enable



101492

*Disable



101491

4.21.2 COMPOSITE CC-C

Decide whether to enable Composite CC-C.

Enable Composite
CC-C



102011

*Disable



102010

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

Enable



101494

*Disable



101493



4.21.3 UPC COMPOSITE MODE

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

- ▶ **UPC Never Linked**

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

- ▶ **UPC Always Linked**

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

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

- ▶ **Auto-discriminate UPC Composites**

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

UPC Never Linked



***UPC Always Linked**



Auto-discriminate



4.22 2D SYMBOLOGIES

4.22.1 PDF417

***Enable PDF417**



102033

Disable



102032

4.22.2 MICROPDF417

Decide whether to enable MicroPDF417 barcodes.

Enable MicroPDF417



102035

***Disable**



102034

4.22.3 DATA MATRIX

Decide whether to enable Data Matrix barcodes.

***Enable Data Matrix**



102037

Disable



102036

DATA MATRIX MIRROR

Decide whether to decode mirror image Data Matrix barcodes.

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



***Never**

102118

Always

102119

Auto102120

DATA MATRIX INVERSE

Decide whether to decode inverse Data Matrix barcodes.

***Never**

102060

Always

102061

Auto102062

GS1 FORMATTING

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

Enable

101498

***Disable**101497

FIELD SEPARATOR

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



Specify Field
Separator...



100616

- 1) Read the barcode above to enable field separator.
- 2) Read the "[Hexadecimal System](#)" barcode on page 252 for the desired character string.
- 3) Read the "Validate" barcode to complete this setting.

APPLICATION ID MARK

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

AIMark1



100620

AIMark2



100621

- 1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the "[Hexadecimal System](#)" barcode on page 252 for the desired character.
- 3) Read '00' if you want to remove the AI mark. Read the "Validate" barcode to complete this setting.



4.22.4 QR CODE

***Enable QR Code**



102041

Disable



102040

QR CODE MIRROR

Decide whether to decode mirror image QR Code barcodes.

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

***Never**



102048

Always



102049

Auto



102050

QR CODE INVERSE

Decide whether to decode inverse QR Code barcodes.

***Never**



102051

Always



102052

Auto



102053



4.22.5 MicroQR

Enable MicroQR



102043

*Disable



102042

4.22.6 MAXICODE

*Enable Maxicode



102039

Disable



102038

4.22.7 AZTEC

*Enable Aztec



102045

Disable



102044

AZTEC MIRROR

Decide whether to decode mirror image Aztec barcodes.

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

*Never



102054

Always



102055



Auto



102056

AZTEC INVERSE

Decide whether to decode inverse Aztec barcodes.

*Never



102057

Always



102058

Auto



102059

4.22.8 HAN XIN

Enable Han Xin



102047

*Disable



102046



DEFINING OUTPUT FORMAT

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

- 1) Perform character substitution on the data scanned.
- 2) Add [Code ID](#) and [Length Code](#) to the front of the data: [Code ID] [Length Code] [Data]
- 3) Process the whole data in step 2 with user formats. Data is now divided into fields by user specified rules. Refer to [Chapter 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 169

5.2 Character Substitution 170

5.3 Prefix/Suffix Code 180

5.4 Code ID 181

5.5 Length Code..... 189

5.6 Multi-Barcode Editor..... 194


5.7 Removal of Special Character 200

Ошибка! Источник ссылки не найден.Ошибка! Закладка не определена.


5.1 LETTER CASE

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


*Normal


101202

Upper Case


101203

Lower Case


101204

5.2 CHARACTER SUBSTITUTION

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

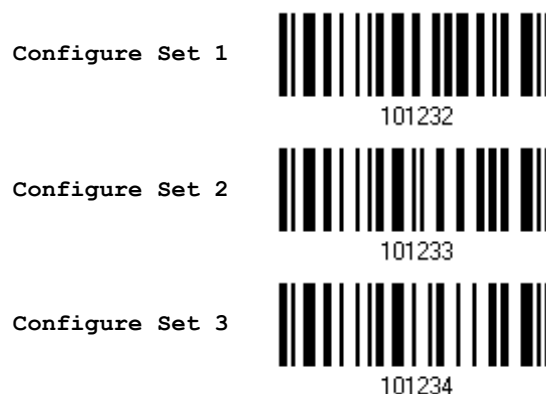
- ▶ The first character will be replaced by the second character(s).
- ▶ Up to three sets of character substitution can be configured.
- ▶ If “Keyboard Wedge” or “USB HID” is configured for interface, [Key Type](#) and [Key Status](#) will then become applicable. Decide whether or not to apply Key Status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

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

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



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 252 for the desired character substitution. For example,

KEY TYPE = NORMAL

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

KEY TYPE = SCAN CODE

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

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

KEY TYPE = NORMAL + KEY STATUS = SHIFT

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

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

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



5.2.2 SYBBOLOGIES FOR CHARACTER SUBSTITUTION (ALL 3 SETS)

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

Character Substitution for Codabar

***Apply**



101253

Do Not Apply



101252

Character Substitution for Code 39

***Apply**



101241

Do Not Apply



101240

Character Substitution for Code 93

***Apply**



101255

Do Not Apply



101254

Character Substitution for Code 128

***Apply**



101257

Do Not Apply



101256



Character Substitution for GS1-128

***Apply**



101259

Do Not Apply



101258

Character Substitution for ISBT 128

***Apply**



101293

Do Not Apply



101292

Character Substitution for EAN-8 (No Addon)

***Apply**



101267

Do Not Apply



101266

Character Substitution for EAN-8 Addon 2

***Apply**



101269

Do Not Apply



101268

Character Substitution for EAN-8 Addon 5

***Apply**



101271

Do Not Apply



101270



Character Substitution for EAN-13 (No Addon)

***Apply**



101273

Do Not Apply



101272

Character Substitution for EAN-13 Addon 2

***Apply**



101275

Do Not Apply



101274

Character Substitution for EAN-13 Addon 5

***Apply**



101277

Do Not Apply



101276

Character Substitution for French Pharmacode

***Apply**



101245

Do Not Apply



101244

Character Substitution for Italian Pharmacode

***Apply**



101243

Do Not Apply



101242



Character Substitution for Industrial 25

***Apply**



101247

Do Not Apply



101246

Character Substitution for Interleaved 25

***Apply**



101249

Do Not Apply



101248

Character Substitution for Matrix 25

***Apply**



101251

Do Not Apply



101250

Character Substitution for MSI

***Apply**



101285

Do Not Apply



101284

Character Substitution for Plessey

***Apply**



101287

Do Not Apply



101286



Character Substitution for GS1 DataBar

*Apply	 101291
Do Not Apply	 101290

Character Substitution for Telepen

*Apply	 101289
Do Not Apply	 101288

Character Substitution for UPC-A (No Addon)

*Apply	 101279
Do Not Apply	 101278

Character Substitution for UPC-A Addon 2

*Apply	 101281
Do Not Apply	 101280

Character Substitution for UPC-A Addon 5

*Apply	 101283
Do Not Apply	 101282



Character Substitution for UPC-E (No Addon)

***Apply**



101261

Do Not Apply



101260

Character Substitution for UPC-E Addon 2

***Apply**



101263

Do Not Apply



101262

Character Substitution for UPC-E Addon 5

***Apply**



101265

Do Not Apply



101264

Character Substitution for Code 11

***Apply**



101297

Do Not Apply



101296

Character Substitution for Comoposite CC-A/B

***Apply**



102611

Do Not Apply



102610



Character Substitution for Comopsite CC-C

***Apply**



102613

Do Not Apply



102612

Character Substitution for PDF417

***Apply**



102635

Do Not Apply



102634

Character Substitution for MicroPDF417

***Apply**



102637

Do Not Apply



102636

Character Substitution for Data Matrix

***Apply**



102639

Do Not Apply



102638

Character Substitution for Maxicode

***Apply**



102641



Do Not Apply





102640





Character Substitution for QR Code

*Apply	 102643
Do Not Apply	 102642



Character Substitution for MicroQR

*Apply	 102645
Do Not Apply	 102644

Character Substitution for Aztec

*Apply	 102647
Do Not Apply	 102646

Character Substitution for Han Xin

*Apply	 102649
Do Not Apply	 102648



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 have the string appear in front of the barcode read, like this – "Barcode_1234567890".

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

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

Configure Prefix



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 252 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 can select one and make necessary changes on it.

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

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

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



5.4.1 SELECT PRE-DEFINED CODE ID

Apply Code ID Set 1



109961

Apply Code ID Set 2



109962

Apply Code ID Set 3



109963

Apply Code ID Set 4



109964

Apply Code ID Set 5



109965



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

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

Enable AIM Code ID



*Disable AIM Code ID



102269

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

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



Plessey	P	No options specified. Always transmit 0.
Industrial 25	S	No options specified. Always transmit 0.
Telepen	B	No options specified. Always transmit 0.
UPC/EAN	E	0: Standard data packet in full EAN format (13 digits for EAN-13, UPC-A, and UPC-E; does not include add-on data) 3: Combined data packet comprising 13 digits from EAN-13, UPC-A, or UPC-E symbol and 2 or 5 digits from add-on symbol 4: EAN-8 data packet
DataMatrix	d	1: ECC 200
Aztec	z	0: Aztec symbol C: Aztec Rune symbol
Maxicode	U	0: Symbol in Mode 4 or 5 1: Symbol in Mode 2 or 3
PDF417/Micro PDF417	L	2: Reader set to follow protocol of ENV 12925 for Extended Channel Interpretation
QR/Micro QR	Q	1: Model 2 symbol, ECI protocol not implemented



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 252 for the desired character string.
For example, read "4" and "4" for applying the character [D] for Code ID.
- 3) Read the "Validate" barcode to complete this setting.

Configure Code ID for
Codabar



101456

Configure Code ID for
Code 39



101450

Configure Code ID for
Code 93



101457

Configure Code ID for
Code 128



101458

Configure Code ID for
ISBT 128



101466

Configure Code ID for
EAN-8



101460

Configure Code ID for
EAN-13



101461

Configure Code ID for
French Pharmacode



101452

Configure Code ID for
Italian Pharmacode



101451

Configure Code ID for
Industrial 25



101453



Configure Code ID for
Interleaved 25



101454

Configure Code ID for
Matrix 25



101455

Configure Code ID for
MSI



101463

Configure Code ID for
Plessey



101464

Configure Code ID for
Telepen



101465

Configure Code ID for
UPC-A



101462

Configure Code ID for
UPC-E



101459

Configure Code ID for
Code 11



101499

Configure Code ID for
Composite CC-A/B



102568

Configure Code ID for
Composite CC-C



102569

Configure Code ID for
PDF417



102580

Configure Code ID for
MicroPDF417



102581



Configure Code ID for
Data Matrix



102582

Configure Code ID for
Maxicode



102583

Configure Code ID for
QR Code



102584

Configure Code ID for
MicroQR



102585

Configure Code ID for
Aztec



102586

Configure Code ID for
Han Xin



102590

5.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID
Settings



109960



5.5 LENGTH CODE

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

Length Code for Codabar

Apply



*Do Not Apply



Length Code for Code 39

Apply



*Do Not Apply



Length Code for Code 93

Apply



*Do Not Apply



Length Code for Code 128

Apply



*Do Not Apply



Length Code for GS1-128 & GS1 DataBar

Apply



101419

*Do Not Apply



101418

Length Code for ISBT 128

Apply



101435

*Do Not Apply



101434

Length Code for EAN-8

Apply



101423

*Do Not Apply



101422

Length Code for EAN-13

Apply



101425

*Do Not Apply



101424

Length Code for French Pharmacode

Apply



101405

*Do Not Apply



101404



Length Code for Italian Pharmacode

Apply



101403

*Do Not Apply



101402

Length Code for Industrial 25

Apply



101407

*Do Not Apply



101406

Length Code for Interleaved 25

Apply



101409

*Do Not Apply



101408

Length Code for Matrix 25

Apply



101411

*Do Not Apply



101410

Length Code for MSI



102515



102514



Length Code for Pleesey

Apply



101431

*Do Not Apply



101430

Length Code for Telepen

Apply



101433

*Do Not Apply



101432

Length Code for UPC-A

Apply



101427

*Do Not Apply



101426

Length Code for UPC-E

Apply



101421

*Do Not Apply



101420

Length Code for Code 11

Apply



101439

*Do Not Apply



101438



Length Code for Composite CC-A/B

Apply



102509

*Do Not Apply



102508

Length Code for Composite CC-C

Apply



102511

*Do Not Apply



102510

Length Code for PDF417

Apply



102533

*Do Not Apply



102532

Length Code for MicroPDF417

Apply



102535

*Do Not Apply



102534

Length Code for Data Matrix

Apply



102537

*Do Not Apply



102536



Length Code for Maxicode

Apply



102539

*Do Not Apply



102538

Length Code for QR Code

Apply



102541

*Do Not Apply



102540

Length Code for MicroQR

Apply



102543

*Do Not Apply



102542

Length Code for Aztec

Apply



102545

*Do Not Apply



102544

Length Code for Han Xin

Apply



102547

*Do Not Apply



102546



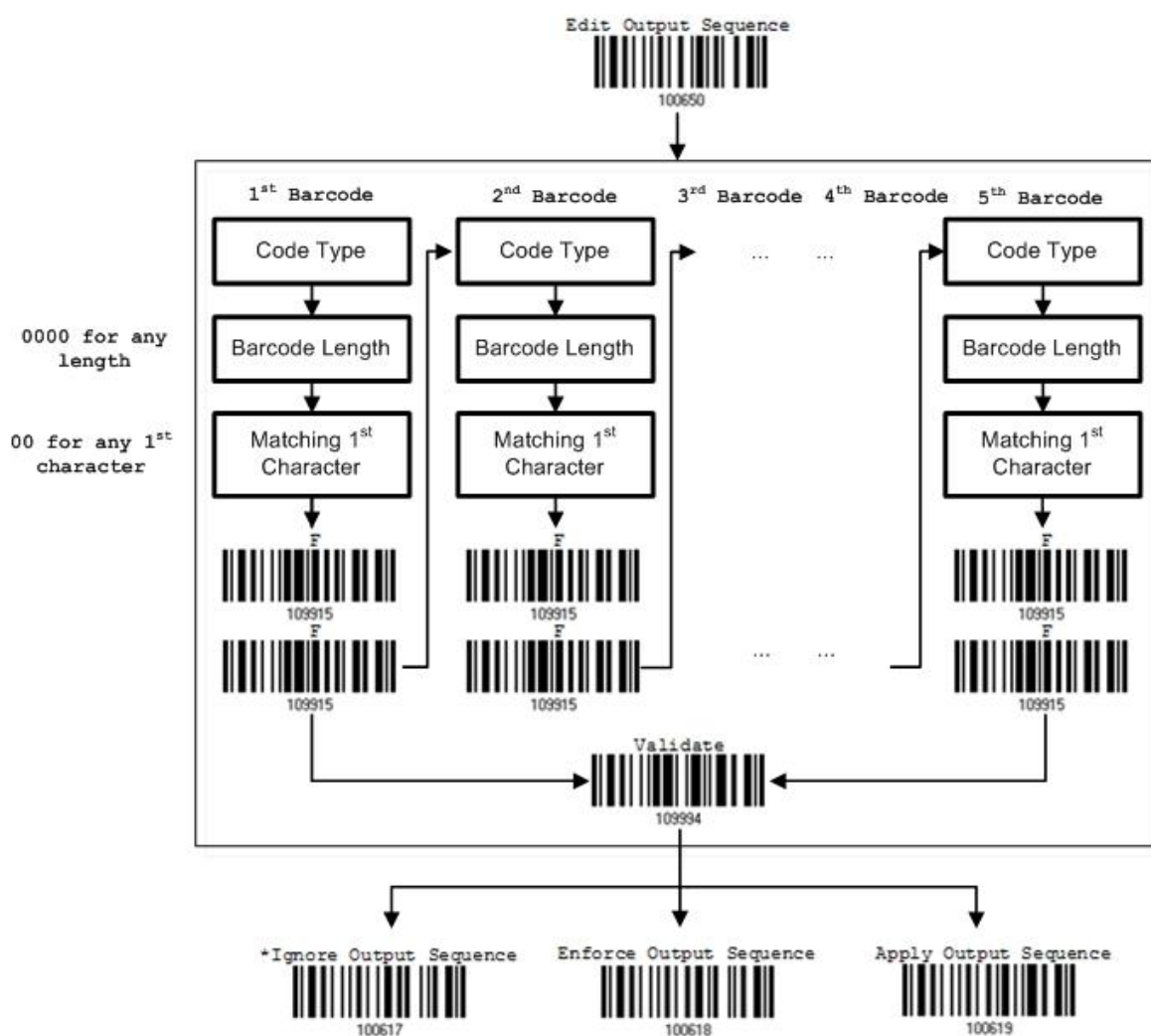
5.6 MULTI-BARCODE EDITOR

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

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

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

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



5.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence



- 1) Read the barcode above to start editing a concatenation of barcodes.
- 2) Code Type setting – read the [“Hexadecimal Value”](#) barcode on page 252 for Code Type of the (first) barcode. For example, read “4” and “1” for Code 39.



Code Type	Symbology	Code Type	Symbology
3E (>)	Han Xin		
40 (@)	ISBT 128		
41 (A)	Code 39		
42 (B)	Italian Pharmacode		
43 (C)	French Pharmacode		
44 (D)	Industrial 25		
45 (E)	Interleaved 25		
46 (F)	Matrix 25		
47 (G)	Codabar (NW7)	67 (g)	Code 11
48 (H)	Code 93		
49 (I)	Code 128		
4A (J)	UPC-E0 / UPC-E1	6A (j)	Composite CC-C
4B (K)	UPC-E with Addon 2	6B (k)	PDF417
4C (L)	UPC-E with Addon 5	6C (l)	MicroPDF417
4D (M)	EAN-8	6D (m)	Data Matrix
4E (N)	EAN-8 with Addon 2	6E (n)	Maxicode
4F (O)	EAN-8 with Addon 5	6F (o)	QR Code
50 (P)	EAN-13		
51 (Q)	EAN-13 with Addon 2		
52 (R)	EAN-13 with Addon 5		
53 (S)	MSI		
54 (T)	Plessey		
55 (U)	GS1-128 (EAN-128)		
56 (V)	UPC-A	76 (v)	Composite CC-A/B
57 (W)	UPC-A with Addon 2		
58 (X)	UPC-A with Addon 5		
5A (Z)	Telepen	7A (z)	Aztec
5B ([)	GS1 DataBar (RSS)	7B ({)	Micro QR

- 3) Barcode Length setting – read the “[Decimal Value](#)” barcode on page 251 for the 4-digit length of the (first) barcode. For example, read “0065” for barcode length of 65 characters or read “0000” for any length.



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

- 4) Matching Character setting – read the “[Hexadecimal Value](#)” barcode on page 252 for the 1st character that must be found matching in the (first) barcode. For example, read “4” and “1” for matching character “A” as the first character in the barcode or read “00” for any character.
- 5) Read twice the “F” barcode on page 252 (“FF”) to complete the setting of each barcode.
- 6) 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).



*Ignore Output
Sequence



100617

Enforce Output
Sequence



100618

Apply Output
Sequence



100619

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



5.7 REMOVAL OF SPECIAL CHARACTER

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

Remove Special
Character



101470

- 1) Read the barcode above to remove the specified character.
- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string. For example, read "3" and "0" for the scanner to remove the character "0".
- 3) Read the "Validate" barcode to complete this setting.



APPLYING FORMATS FOR DATA EDITING

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

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

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

IN THIS CHAPTER

6.1 Activating Editing Formats	202
6.2 How to Configure Editing Formats	204
6.3 Configuring Format — Define Data Criteria	207
6.4 Configuring Format — Define Data Field.....	218
6.5 Configuring Format — Define Transmission Sequence....	226
6.6 Programming Examples	229



6.1 ACTIVATING EDITING FORMATS

6.1.1 ACTIVATE EDITING FORMATS

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

Editing Format 1

Enable



101301

***Disable**



101300

Editing Format 2

Enable



101303

***Disable**



101302

Editing Format 3

Enable



101305

***Disable**



101304

Editing Format 4

Enable



101307

***Disable**



101306



Editing Format 5

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

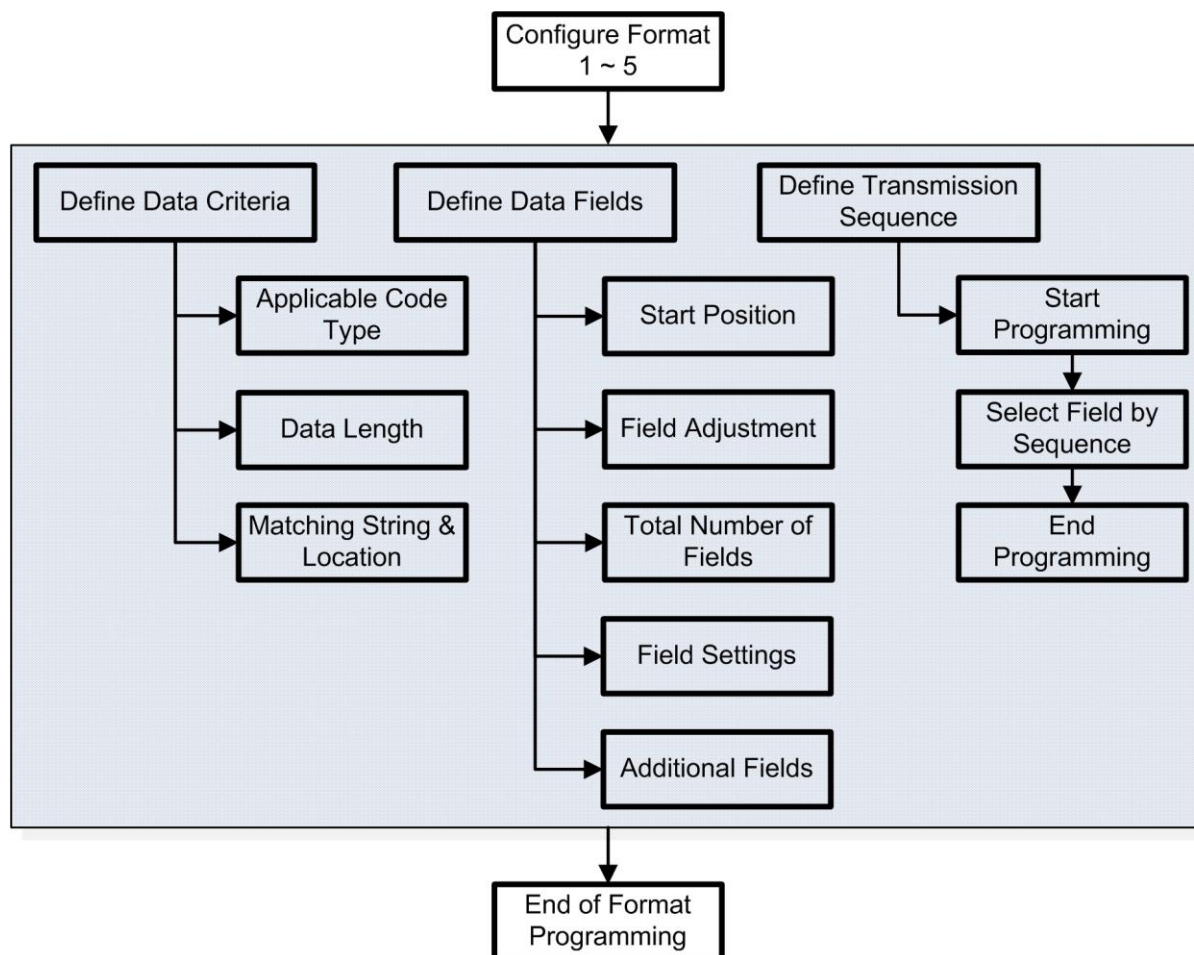
*No



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.

Configure Format 1



Configure Format 2



Configure Format 3



Configure Format 4



Configure Format 5



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

End Programming Format

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

End Programming
Format



6.2.2 RESTORE DEFAULT FORMAT

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

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

Restore Default
Format



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 previously configured and enabled. For quick configuration, first clear all, and then select the desired symbologies.

Note: It must have at least one symbology selected.

*Apply to All



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 Code 93

***Apply**



101515

Do Not Apply



101514

Editing Format for Code 128

***Apply**



101517

Do Not Apply



101516

Editing Format for GS1-128 & GS1 DataBar

***Apply**



101519

Do Not Apply



101518



Editing Format for ISBT 128

***Apply**



101553

Do Not Apply



101552

Editing Format for EAN-8

***Apply**



101527

Do Not Apply



101526

Editing Format for EAN-8 Addon 2

***Apply**



101529

Do Not Apply



101528

Editing Format for EAN-8 Addon 5

***Apply**



101531

Do Not Apply



101530

Editing Format for EAN-13

***Apply**



101533

Do Not Apply



101532



Editing Format for EAN-13 Addon 2

***Apply**



101535

Do Not Apply



101534

Editing Format for EAN-13 Addon 5

***Apply**



101537

Do Not Apply



101536

Editing Format for French Pharmacode

***Apply**



100412

Do Not Apply



101504

Editing Format for Italian Pharmacode

***Apply**



101503

Do Not Apply



101502

Editing Format for Industrial 25

***Apply**



101507

Do Not Apply



101506



Editing Format for Interleaved 25

***Apply**



101509

Do Not Apply



101508

Editing Format for Matrix 25

***Apply**



101511

Do Not Apply



101510

Editing Format for MSI

***Apply**



101545

Do Not Apply



101544

Editing Format for Plessey

***Apply**



101547

Do Not Apply



101546

Editing Format for Telepen

***Apply**



101549

Do Not Apply



101548



Editing Format for UPC-A

***Apply**



101539

Do Not Apply



101538

Editing Format for UPC-A Addon 2

***Apply**



101541

Do Not Apply



101540

Editing Format for UPC-A Addon 5

***Apply**



101543

Do Not Apply



101542

Editing Format for UPC-E

***Apply**



101521

Do Not Apply



101520

Editing Format for UPC-E Addon 2

***Apply**



101523

Do Not Apply



101522



Editing Format for UPC-E Addon 5

***Apply**



101525

Do Not Apply



101524

Editing Format for Code 11

***Apply**



101557

Do Not Apply



101556

Editing Format for Composite CC-A/B

***Apply**



101629

Do Not Apply



101628

Editing Format for Composite CC-C

***Apply**



101631

Do Not Apply



101630

Editing Format for PDF417

***Apply**



101653

Do Not Apply



101652



Editing Format for MicroPDF417

***Apply**



101655

Do Not Apply



101654

Editing Format for Data Matrix

***Apply**



101657

Do Not Apply



101656

Editing Format for Maxicode

***Apply**



101659

Do Not Apply



101658

Editing Format for QR Code

***Apply**



101661

Do Not Apply



101660

Editing Format for MicroQR

***Apply**



101663

Do Not Apply



101662



Editing Format for Aztec

*Apply



101665

Do Not Apply



101664

Editing Format for Han Xin

*Apply



101667

Do Not Apply



101666

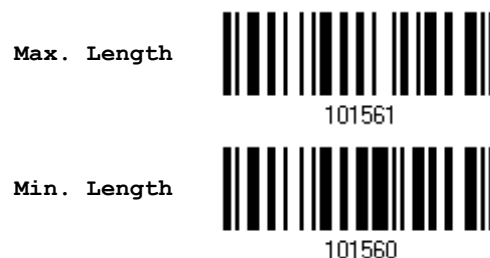


6.3.2 DATA LENGTH

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.

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

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



- 2) Read the "[Decimal Value](#)" barcode on page 251 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. Enable this feature by specifying a matching string; up to four characters are allowed.

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

- 1) Read the barcode to specify a matching string.



- 2) Read the "[Hexadecimal Value](#)" barcode on page 252 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...



101563

- 5) Read the "[Decimal Value](#)" barcode on page 251 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**



101600

From Tail



101601

6.4.2 FIELD ADJUSTMENT

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

***No adjustment**



101602

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



101603

- 1) Read the barcode above to adjust field by length.
- 2) Read the "[Decimal Value](#)" barcode on page 251 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
Five Fields	 101594
Six Fields	 101595

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



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.

By Length

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

Field 1 Setting

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

Select
Field Separator
to Divide Field 1...



2. Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



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

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

Divide Field 1
by Length



2. Read the "[Decimal Value](#)" barcode on page 251 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 252 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 251 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Field 3 Setting

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

Select
Field Separator
to Divide Field 3...



2. Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



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

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

Divide Field 3
by Length



2. Read the "[Decimal Value](#)" barcode on page 251 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Field 4 Setting

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

Select
Field Separator
to Divide Field 4...



2. Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



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

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

Divide Field 4
by Length



2. Read the "[Decimal Value](#)" barcode on page 251 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Field 5 Setting

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

Select
Field Separator
to Divide Field 5...



2. Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

*Include Separator



Discard Separator



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

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

Divide Field 5
by Length



2. Read the "[Decimal Value](#)" barcode on page 251 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.



Additional Fields

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

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

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

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

Additional Field 1...



Additional Field 2...



Additional Field 3...



Additional Field 4...



Additional Field 5...



2. Read the "[Hexadecimal Value](#)" barcode on page 252 for the desired additional field.
3. Read the "Validate" barcode to complete this setting.



6.4.5 PAUSE FIELD SETTING

Pause Field Time

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

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



1. Read the barcode above to specify the time interval for the Pause Field. (It is set to 1 by default.)
2. Read the "[Decimal Value](#)" barcode on page 251. 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...



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

Field 1



Field 2



Field 3



Field 4



Field 5



Field 6



Additional Field 1



Additional Field 2



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 1st character to the 9th character.
6. Read the "Divide Field 2 by Length" barcode, and set length to 10.
Field 2 data starts from the 10th character to the 19th character.
7. Read the "Start (Programming)" barcode to program the transmission sequence.
8. Read the "Field 2" barcode.
9. Read the "End" barcode to complete the transmission sequence setting.
10. Read the "End Programming Format" barcode to complete the setting of Editing Format 1.
11. Read the "Enable Format 1" barcode to apply Editing Format 1 to Code 128.
12. Read the "Update" barcode to exit the Configuration Mode.



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

Data will be transmitted like this:

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

The editing format should be configured as follows:

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



SPECIFICATIONS



Optical Characteristics	2564
Scan Engine	2D Imager
Light Source	Aiming pattern: 620~630nm LED Illumination: Warm White LED
RF Characteristics	
WPAN Module	Wireless PAN BT Class 2 compliance
Coverage (line-of-sight)	100 meters with the cradle
Interface Supported	<ul style="list-style-type: none">▶ Serial Port Profile (BT SPP)▶ Human Interface Device Profile (BT HID)▶ Cradle
Physical Characteristics	
Memory	<ul style="list-style-type: none">▶ 10 KB for transmit buffer▶ 4 MB flash for memory mode
Switch	Tactile switch
Indication	Triple-color LED (Red/Green/Blue) and beeper
Weight	Approx. 185 g
Dimensions	160.5 x 96.2 x 66 mm



Electrical Characteristics		
Battery		Rechargeable Li-ion battery – 3.7 V, 800 mAh
Power Adaptor		
Input		AC 100~240 V, 47/63 Hz
Output		DC 5V, 1A
Operating Temperature		0 °C to 40 °C
Environmental Characteristics		
Temperature	Operating	0 °C to 50 °C
	Storage	-40 °C to 70 °C
Humidity (Non-condensing)	Operating	10% to 90%
	Storage	5% to 95%
Resistance		
Impact Resistance		1.8 m, 5 drops per 6 sides
Splash / Dust Resistance		IP 54
Electrostatic Discharge		± 20 kV air discharge, ± 10 kV contact discharge
Programming Support		
Configuration		Setup barcodes or host serial commands.
Software		Windows®-based ScanMaster
Firmware upgradeable		Download firmware updates via the download utility.
Accessories (√ means “supported”)		
Rechargeable Li-ion Battery		√
Battery Charger		√
Cradle		√
USB Cable		√
RS-232 Cable		√
Keyboard Wedge Cable		√

Note: The cradle is not only capable of charging the 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 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 SCANNER FIRMWARE

USING THE CRADLE

- 1) Connect the interface cable, RS-232 or USB, between the cradle and your computer. For USB Virtual COM, you may need to install its driver first!
- 2) Connect the power supply cord from the cradle to a proper power outlet.
- 3) Refer to [3.1.1 Connect to Cradle](#) for the target scanner to connect to the cradle. Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of the cradle.
- 4) Read the following barcodes in sequence to configure the scanner to use RS-232 as download interface.

Enter Setup



Activate RS-232



100001

115200 bps



100080

Update



109999

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



Enter Setup


Activate Cradle
USB Virtual COM


100004

Update



109999

- 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.

Enter Setup



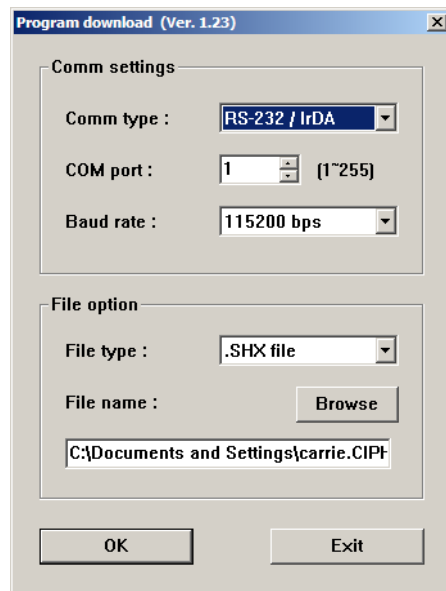
Download



109997

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

Kernel Program	User Program
K2564_V*.shx	STD2564_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 restart the scanner manually.

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



Enter Setup

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

USING *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.

Enter Setup



Activate BT SPP



100003

Update



109999

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

Enter Setup



Download

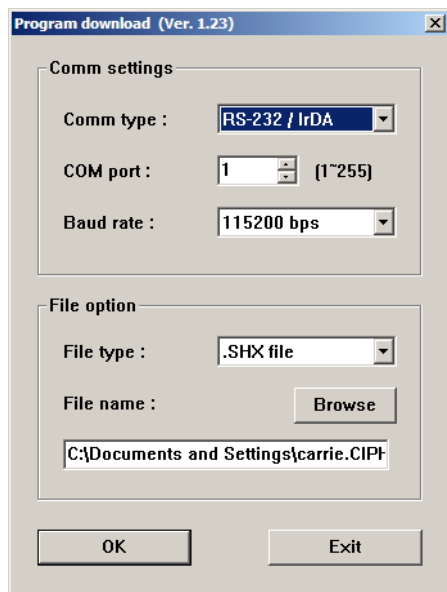


109997

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



Kernel Program	User Program
K2564_V*.shx	STD2564_V*.shx



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

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

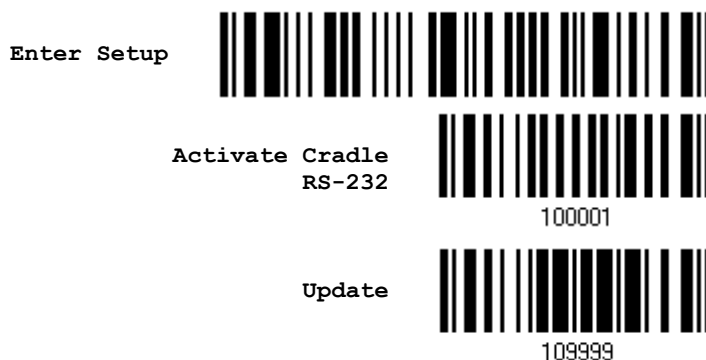
After upgrading the user program, the scanner will automatically restart itself once the download is completed successfully.

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

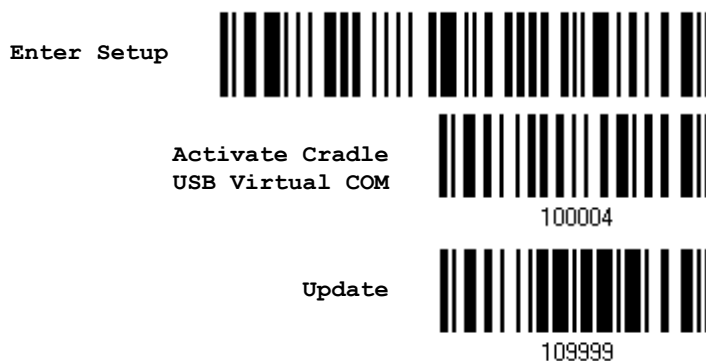


HOW TO UPGRADE BT CRADLE FIRMWARE

- 1) Connect the interface cable, RS-232 or USB, between the cradle and your computer. For USB Virtual COM, you may need to install its driver first!
- 2) Connect the power supply cord from the cradle to a proper power outlet.
- 3) Refer to 3.1.1 Connect to Cradle for the target scanner to connect to the cradle. Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of the 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.

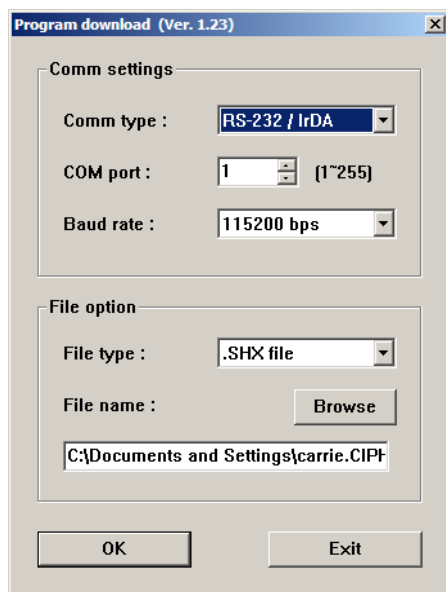


- 5) Read the following barcodes in sequence for the cradle to enter the download mode. The Communication LED on the cradle will be flashing red to indicate it is ready for downloading.



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

Kernel Program	User Program
2564CradleKV*.shx	2564CradleUV*.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 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


SERIAL COMMANDS


D	
Purpose	To disable the scanner.
Remarks	"D"

E	
Purpose	To enable the scanner.
Remarks	"E"

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

List Page 3


109952



Serial Command

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

Note: After configuring the scanner, 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"

#@BEEP, nn<CR>

Purpose	Have the scanner beep as many times as you specified ranging from 00 to 99 times (00 is to stop the work). The length of beep time is based on the duration of Good Read Beep setting and the constant interval between two beeps is 100ms.
Remarks	nn – the two digits of command parameters For example, `#@BEEP,09` is to have the scanner beep for 9 times. "0x23" + "0x40" + "0x42" + "0x45" + "0x45" + "0x50" + "0x2c" + "0x30" + "0x39" + "0x0d"

#@RLED, nn<CR>

Purpose	Have the scanner's red LED indicator blink as many times as you specified ranging from 00 to 99 (00 is to stop the work). The length of blinking time is based on the Good Read LED Duration setting and the constant interval between two flashes is 200ms.
Remarks	nn –the two digits of command parameters For example, `#@RLED,09` is to have the scanner blink for 9 times. "0x23" + "0x40" + "0x52" + "0x4c" + "0x45" + "0x44" + "0x2c" + "0x30" + "0x39" + "0x0d"

#@GLED, nn<CR>

Purpose	Have the scanner's green LED indicator blink as many times as you specified ranging from 00 to 99 (00 is to stop the work). The length of blinking time is based on the Good Read LED Duration setting and the constant interval between two flashes is 200ms.
Remarks	nn – the two digits of command parameters



For example, `#@GLED,09` is to have the scanner blink for 9 times.
 "0x23" + "0x40" + "0x47" + "0x4c" + "0x45" + "0x44" + "0x2c" + "0x30"
 + "0x39" + "0x0d"

EXAMPLE

You may run HyperTerminal.exe on the host computer to send serial commands to the barcode 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>
- ▶ For the scanner to beep for nine times –
 #@BEEP,09<CR>
- ▶ For the scanner's LED indicator to blink in red for nine times –
 #@RLED,09<CR>
- ▶ For the scanner's LED indicator to blink in green for nine times –
 #@GLED,09<CR>



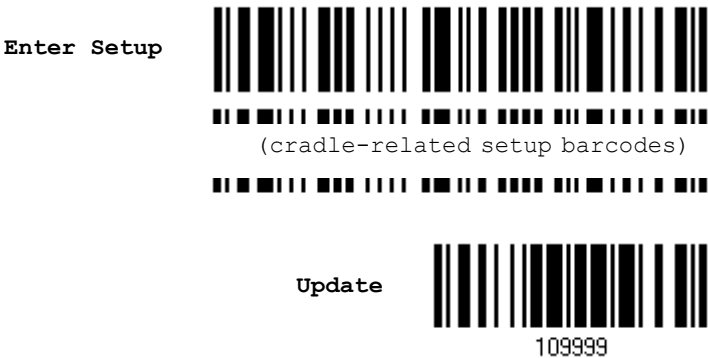
Note: (1) For RS-232 or USB Virtual COM, you can only configure the first scanner that connects to the cradle. To identify the scanner, you may send the serial command to have it respond with a beep.
(2) For BT SPP, you can configure up to seven scanners at the same time.



BT CRADLE SETUP BARCODES & SERIAL COMMANDS

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

- 1) Connect the interface cable, RS-232, Keyboard Wedge or USB, between the cradle and your computer.
- 2) For USB Virtual COM, you may need to install its driver first!
- 3) Connect the power supply cord from the cradle to a proper power outlet.
Read the "Set Connection" label first, and then the "Serial Number" label. Both labels can be located at the back of the cradle.
- 4) Refer to 3.1.1 Connect to Cradle for the target scanner to connect to the cradle.
- 5) Read the following barcodes in sequence to configure the cradle.



For 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.



BT CRADLE SERIAL COMMAND AND EQUIVALENT SETUP BARCODES

Config<CR>

Purpose To configure the 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 the cradle.
Here is the setup barcode for this serial command:



MultiConnection<CR>

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



UseOnePortforAll<CR>

Purpose To use one Virtual COM port for all whenever connecting the cradle to PC via USB. This setting requires you to connect one cradle at a time, and will facilitate configuring a great amount of cradles 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 cradle to PC via



USB.

Here is the setup barcode for this serial command:



Version<CR>

Purpose To get the firmware versions.

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 the cradle via RS-232 or USB.

Here is the setup barcode for this serial command:



EXAMPLE

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

- 1) Connect the interface cable, RS-232 or USB, between the cradle and your computer. For USB Virtual COM, you may need to install its driver first!
- 2) Connect the power supply cord from the cradle to a proper power outlet.

The Communication LED will indicate when the 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 the 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 the 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 the 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

The table below features special keyboard wedge codes applied to the scanner by default. If you have determined to bypass this special keyboard, please refer to the table on the next page.

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

Note: (1) ⑩~⑨: Digits of numeric keypad.
 (2) CR*/ENTER*: ENTER key on the numeric keypad.



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



KEY TYPE & STATUS

KEY TYPE

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

*Normal



109926

Scan Code



109936

KEY STATUS

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

Add Shift



109930

Add Left Ctrl



109931

Add Right Ctrl



109933

Add Left Alt



109932

Add Right Alt



109934



EXAMPLE**KEY TYPE = NORMAL**

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

1. Read the “Configure Prefix” barcode.
2. Read the “[Hexadecimal Value](#)” barcode on page 252 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 252 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 252 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 252 for “4”, “1” (= “A”).
4. Read the “Add Left Ctrl” barcode.
5. Read the “[Hexadecimal Value](#)” barcode on page 252 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	



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 265 or the "Hexadecimal Value" barcode on page 266 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.

Update



Abort



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 251 or the "[Hexadecimal Value](#)" barcode on page 252 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.



READING DRIVER LICENSES

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

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

LICENSE PARSING SETUP

*License Parse Disable



103000

License Parse Enable



103001

Parse Field Clear



103002

FILE TYPE

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

*Enable



103004

Disable



103003

Update













Abort















OUTPUT SEQUENCE SETUP

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

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



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

Update















Abort



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















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

Update














Abort



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



Restrictions Description	 103069
Permit Class	 103070
Permit Expiration Date	 103071
Permit ID Number	 103072
Permit Issue Date	 103073
Permit Restrictions	 103074
Permit endorsements	 103075
Issuer ID Number	 103076
Family Name Truncation	 103077
First Name Truncation	 103078
Middle Name Truncation	 103079

Update













Abort



SEPARATORS AND FIELDS

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

Note: Up to 5 separators can be assigned.


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




EDIT SEPARATORS

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


Edit Separator 1


103138


Edit Separator 2


103139


Edit Separator 3


103140

Edit Separator 4


103141

Edit Separator 5


103142

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

EDIT FIELDS

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

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

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

Edit Additional
Field 1



103143

Edit Additional
Field 2



103144

Edit Additional
Field 3



103145

Edit Additional
Field 4



103146

Edit Additional
Field 5



103147

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



Appendix VI

KEYBOARD TYPE ONE-SCAN BARCODE

BLUETOOTH HID

PCAT (US)



#@BH0064#

PCAT (French)



#@BH0065#

PCAT (German)



#@BH0066#

PCAT (Italian)



#@BH0067#

PCAT (Swedish)



#@BH0068#

PCAT (Norwegian)



#@BH0069#

PCAT (UK)



#@BH0070#

PCAT (Belgium)



#@BH0071#

PCAT (Spanish)



PCAT (Portuguese)



PS55 A01-2 (Japanese)



User-defined table



PCAT (Turkish)



PCAT (Hungarian)



PCAT (Swiss German)



PCAT (Danish)



PCAT (Russian)



PCAT (Cyrillic on Russian)



#@BH0088#

PCAT (Armenian)



#@BH0089#

PCAT (Thai)



#@BH0090#

KEYBOARD WEDGE (CRADLE)

PCAT (US)



#@KW0001#

PCAT (French)



#@KW0002#

PCAT (German)



#@KW0003#

PCAT (Italian)



#@KW0004#

PCAT (Swedish)



#@KW0005#

PCAT (Norwegian)



#@KW0006#

PCAT (UK)



#@KW0007#

PCAT (Belgium)



#@KW0008#

PCAT (Spanish)



#@KW0009#

PCAT (Portuguese)



#@Kw0010#

PS55 A01-1



#@Kw0011#

PS55 A01-2 (Japanese)



#@Kw0012#

PS55 A01-3



#@Kw0013#

PS55 001-1



#@Kw0014#

PS55 001-81



#@Kw0015#

PS55 001-2



#@Kw0016#

PS55 001-82



#@Kw0017#

PS55 001-3



#@Kw0018#

PS55 001-8A



PS55 002-1, 003-1



PS55 002-81, 003-81



PS55 002-2, 003-2



PS55 002-82, 003-82



PS55 002-3, 003-3



PS55 002-8A, 003-8A



IBM 3477 Type 4 (Japanese)



PS2-30



IBM 34XX/319X, Memorex Telex 122 Keys



#@Kw0028#

User-defined table



#@Kw0029#

PCAT (Turkish)



#@Kw0030#

PCAT (Hungarian)



#@Kw0031#

PCAT (Swiss German)



#@Kw0032#

PCAT (Danish)



#@Kw0033#

PCAT (Russian)



#@Kw0037#

PCAT (Cyrillic on Russian)



#@Kw0042#

PCAT (Armenian)



#@Kw0043#

PCAT (Thai)



#@KW0044#

REMOTE USB HID (CRADLE)

PCAT (US)



#@RH0064#

PCAT (French)



#@RH0065#

PCAT (German)



#@RH0066#

PCAT (Italian)



#@RH0067#

PCAT (Swedish)



#@RH0068#

PCAT (Norwegian)



#@RH0069#

PCAT (UK)



#@RH0070#

PCAT (Belgium)



#@RH0071#

PCAT (Spanish)



#@RH0072#

PCAT (Portuguese)



#@RH0073#

PS55 A01-2 (Japanese)



#@RH0074#

User-defined table



#@RH0075#

PCAT (Turkish)



#@RH0076#

PCAT (Hungarian)



#@DH0077#

PCAT (Swiss German)



#@RH0078#

PCAT (Danish)



#@RH0079#

PCAT (Russian)



#@RH0083#

PCAT (Cyrillic on Russian)



#@RH0088#

PCAT (Armenian)



#@RH0089#

PCAT (Thai)



#@RH0090#