

WWS450



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Table of Contents

Important Notices	1
For USA.....	1
For Canada	1
For Hand-held Product with RF Functions	2
For Product with Laser	2
Safety Precautions	3
Care and Maintenance	3
Chapter 1 – Introduction	4
1.1 About the WWS450 and WWS450 CR (cradle)	5
1.1.1 <i>Installing the Battery in the WWS450</i>	5
1.1.2 <i>Setting Up the WWS450 Cradle</i>	6
1.1.3 <i>Charging the Battery via the WWS450 Cradle</i>	8
1.1.4 <i>Charging the Battery Via the Charger</i>	10
1.2 Inside the Package	11
1.3 Product Highlights	12
1.4 Supported Symbolologies	13
Chapter 2 – Quick Start	16
2.1 Enter Configuration Mode	18
2.2 Exit Configuration Mode	18
2.3 Default Settings	20
2.3.1 <i>Save User Settings as Default</i>	20
2.3.2 <i>Restore User Defaults</i>	20
2.3.3 <i>Restore System Defaults</i>	20
2.4 Read a Setup Barcode	21
2.4.1 <i>Configure Parameters</i>	21

2.4.3 List the Current Settings.....	27
2.4.2 Create One-Scan Setup Barcodes.....	30
Chapter 3 – Understanding the Barcode Scanner.....	31
3.1 Battery	31
3.1.1 Turn Off/On the Scanner	32
3.1.2 Power Economy	32
3.1.3 Power Economy vs WPAN Connection.....	36
3.2 Memory	38
3.2.1 Transmit Buffer	38
3.2.2 Memory Mode.....	39
3.3 LED Indicator.....	42
3.3.1 Good Read LED	44
3.3.2 Good Read LED Duration	44
3.4 Beeper.....	45
3.4.1 Beeper Volume.....	47
3.4.2 Good Read Beep.....	48
3.4.3 Low Battery Alarm	49
3.5 Send NR to Host	50
3.6 Scan Modes	51
3.6.1 Test Mode.....	52
3.6.2 Laser Mode.....	52
3.6.3 Auto Off Mode.....	52
3.6.4 Auto Power Off Mode	53
3.6.5 Aiming Mode.....	53
3.6.6 Multi-barcode Mode.....	54
3.6.7 Presentation Mode	54

3.7 Scanning Timeout.....	55
3.8 Delay between Re-read.....	56
3.9 Read Redundancy (1D).....	57
3.10 Add On Security for UPC/EAN Barcodes.....	58
3.11 Auto-Sense Mode	59
3.12 Negative Barcodes	60
3.13 Pick List Mode	61
Chapter 4 – Selecting Output Interface	62
4.1 BT HID.....	62
4.1.1 Activate BT HID & Select Keyboard Type	63
4.1.2 Reset Connection.....	64
4.1.3 Keyboard Settings.....	65
4.1.4 Inter-Character Delay	75
4.1.5 Inter-Function Delay	75
4.1.6 HID Character Transmit Mode.....	76
4.1.7 Keypad Support for iPhone/iPad.....	76
4.2 BT SPP Slave.....	77
4.2.1 Activate BT SPP Slave Mode	77
4.2.2 Inter-function Delay	77
4.2.3 ACK/NAK Timeout.....	77
4.3 BT SPP Master.....	78
4.3.1 Activate BT SPP Master Mode	79
4.3.2 Inter-Function Delay	80
4.3.3 ACK/NAK Timeout.....	81
4.3.4 Switch Between Master and Slave.....	81
4.4 Keyboard Wedge Via WWS450 Cradle	82

4.4.1 Activate Keyboard Wedge & Select Keyboard Type	83
4.4.2 Keyboard Settings	85
4.4.3 Inter-Character Delay	96
4.4.4 Inter-Function Delay	96
4.5 RS-232 Via WWS450 Cradle	97
4.5.1 Activate RS-232 Interface.....	97
4.5.2 Baud Rate.....	98
4.5.3 Data Bits	99
4.5.4 Parity	99
4.5.5 Stop Bit	99
4.5.6 Flow Control	100
4.5.7 Inter-Character Delay	101
4.5.8 Inter-Function Delay	101
4.5.9 ACK/NAK Timeout.....	102
4.6 USB HID Via WWS 450 Cradle.....	103
4.6.1 Activate USB HID & Select Keyboard Type.....	104
4.6.2 Keyboard Settings	105
4.6.3 Inter-Character Delay	115
4.6.4 Inter-Function Delay	115
4.6.5 HID Character Transmit Mode.....	116
4.7 USB Virtual COM VIA WWS450 Cradle.....	117
4.7.1 Activate USB Virtual COM.....	117
4.7.2 Inter-Function Delay	117
4.7.3 ACK/NAK Timeout.....	118
Chapter 5 – Setting Up a WPAN Connection	119
5.1 Connecting Via the WWS450 Cradle	121

5.1.1 Connect to WWS450 Cradle	121
5.1.2 Change Interface	122
5.1.3 Configure Related Settings	123
5.2 Connecting Via Bluetooth® Dongle.....	124
5.2.1 Change Interface	124
5.2.2 Configure Related Settings	125
5.2.3 Connect the Dongle.....	131
Chapter 6 – Changing Symbology Settings.....	140
6.1 Codabar.....	140
6.1.1 Start/Stop Transmission.....	140
6.1.2 CLSI Conversion	141
6.1.3 Code Length Qualification	141
6.2 Code 25 – Industrial 25	143
6.2.1 Code Length Qualification	143
6.3 Code 25 – Interleaved 25	144
6.3.1 Verify Check Digit.....	144
6.3.2 Transmit Check Digit	145
6.3.3 Convert to EAN-13	145
6.3.4 Code Length Qualification	147
6.4 Code 25 – Matrix 25	148
6.4.1 Verify Check Digit	148
6.4.2 Transmit Check Digit	148
6.4.3 Code Length Qualification	149
6.5 Code 25 – Chinese 25.....	150
6.6 Italian Pharmacode (Code 32)	150
6.7 Code 39.....	151

6.7.1 Verify Check Digit	151
6.7.2 Transmit Check Digit	151
6.7.3 Standard/Full ASCII Code 39	152
6.7.4 Code Length Qualification	152
6.8 Trioptic Code 39	153
6.9 Code 93	154
6.9.1 Code Length Qualification	154
6.10 Code 128	155
6.11 GS1-128 (EAN-128)	156
6.11.1 Transmit Code ID	156
6.11.2 Field Separator (GS Character)	156
6.12 ISBT Concatenation	157
6.12.2 ISBT Concatenation Redundancy	157
6.13 GS1 Databar (RSS Family)	158
6.13.1 Select Code ID	158
6.13.2 GS1 Databar Omnidirectional (RSS-14)	160
6.13.3 GS1 Databar Expanded (RSS Extended)	162
6.13.4 GS1 Databar Limited (RSS Limited)	163
6.13.5 Convert to UPC/EAN	164
6.14 MSI	165
6.14.1 Verify Check Digit	166
6.14.2 Transmit Check Digit	166
6.14.3 Code Length Qualification	167
6.15 EAN-8	168
6.16 EAN-13	169
6.16.1 Convert to ISBN	170

6.16.2 Convert to ISSN.....	170
6.17 UCC Coupon Extended Code	171
6.18 UPC-A	172
6.18.1 Transmit System Number	173
6.18.2 Transmit Check Digit	173
6.19 UPC-E	174
6.19.1 Select System Number.....	175
6.19.2 Convert to UPC-A.....	175
6.19.3 Transmit System Number	176
6.19.4 Transmit Check Digit	176
6.20 Code 11	177
6.20.1 Verify Check Digit	177
6.20.3 Code Length Qualification	178
6.21 Composite Code.....	180
6.21.1 Composite CC-A/B	180
6.21.2 Composite CC-C	180
6.21.3 Composite TLC-39	180
6.21.4 UPC Composite Mode.....	181
6.21.5 GSI-128 Emulation Mode for UCC/EAN Composite Codes.....	181
6.22 US Postal Code	182
6.22.1 US POSTNET.....	182
6.22.2 US PLANET.....	182
6.22.3 Transmit Check Digit	182
6.23 UK Postal Code	184
6.23.1 UK POSTAL.....	184
6.23.2 Transmit Check Digit	184

6.24 More Postal Code.....	185
6.24.1 Japan POSTAL.....	185
6.24.2 Australian POSTAL.....	185
6.24.3 Dutch POSTAL	185
6.24.5 UPU FICS POSTAL.....	186
6.25 2D Symbologies	187
6.25.1 PDF417	187
6.25.2 MicroPDF417.....	187
6.25.3 Data Matrix	188
6.25.4 Maxicode	189
6.25.5 QR Code.....	189
6.25.6 MicroQR	189
6.25.7 AZTEC.....	190
6.26 MACRO PDF	191
6.26.1 Transmit/Decode Mode	191
6.26.2 Escape Characters.....	192
6.26.3 Transmit Control Header	192
Chapter 7 – Defining Output Format.....	193
7.1 Letter Case	193
7.2 Character Substitution.....	194
7.2.1 Select a Set for Character Substitution	195
7.2.2 Symbologies for Character Substitution (All 3 Sets)	197
7.3 Prefix/Suffix Code.....	212
7.4 Code ID	213
7.4.1 Select Pre-Defined Code ID.....	214
7.4.2 Change ID Code.....	218

7.4.3 Clear Code ID Settings.....	223
7.5 Length Code.....	224
7.6 Multi-Barcode Editor.....	235
7.6.1 Edit a Concatenation of Barcodes.....	236
7.6.2 Activate the Concatenation of Barcodes	239
7.7 Removal of Special Character.....	240
Chapter 8 – Applying Formats for Data Editing	241
8.1 Activating Editing Formats.....	242
8.1.1 Activate Editing Formats.....	242
8.1.2 Exclusive Data Editing.....	243
8.2 How to Configure Editing Formats	245
8.2.1 Select Format to Configure	246
8.2.2 Restore Default Format.....	247
8.3 Configuring Format – Define Data Criteria.....	248
8.3.1 Applicable Code Type.....	248
8.3.2 Data Length	261
8.3.3 Matching String & Location.....	262
8.4 Configuring Format – Define Data Field.....	263
8.4.1 Start Position	263
8.4.2 Field Adjustment.....	263
8.4.3 Total Number of Fields.....	264
8.4.4 Field Settings.....	265
8.4.5 Pause Field Setting	272
8.5 Configuring Format – Define Transmission Sequence	273
8.6 Programming Examples.....	275
8.6.1 Example 1.....	275

8.6.2 Example 2.....	276
Specifications.....	277
Using Bluetooth® Dongle	Error! Bookmark not defined.
Keyboard Wedge Table	280
Key Type and Status	281
<i>Key Type.....</i>	<i>281</i>
Numeral Systems.....	283
Decimal System	283
Hexadecimal System.....	284
ASCII Table.....	285
Entering PIN Code for Authentication	286
<i>Use Preset Pin.....</i>	<i>286</i>
<i>Disable Authentication or Use Random Pin</i>	<i>287</i>

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 Hand-held Product with RF Functions

The WWS450 unit (FCC ID: Q3N-WWS450) complies with FCC radiation exposure limits set forth for uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. The unit has very low level of RF energy that it is deemed to comply without testing of specific absorption ratio (SAR).

The WWS450 Cradle unit (FCC ID: Q3N-WWS450 Cradle) complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body. It only operated in hand-held used. If you only transfer data to the host wirelessly, please keep the minimum distance 20 cm between machine & your body.

For Product with Laser



CAUTION

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

Safety Precautions

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

- The use of any batteries or charging devices, which are not originally sold or manufactured by CipherLab, will void your warranty and may cause damage to human body or the product itself.
- DO NOT disassemble, incinerate or short circuit the battery.
- DO NOT expose the scanner or the battery to any flammable sources.
- For green-environment issue, it's important that batteries should be recycled in a proper way.
- Under no circumstances, internal components are self-serviceable.
- The charging device uses an AC power adaptor. A socket outlet shall be installed near the equipment and shall be easily accessible. Make sure there is stable power supply for the scanner or its peripherals to operate properly.

Care and Maintenance

- Use a clean cloth to wipe dust off the scanning window and the body of the scanner as well as the charging device. DO NOT use/mix any bleach or cleaner.
- If you want to put away the scanner for a period of time, download the collected data to a host computer when in the memory mode, and then take out the battery. Store the scanner and battery separately.
- When the scanner resumes its work, make sure the battery is fully charged before use.
- If you shall find the scanner malfunctioning, write down the specific scenario and consult your local sales representative.

Chapter 1 – Introduction

The Wasp WWS450 Series Barcode Scanners are specifically designed to answer your mobile demands. The versatile scanners are designed to help accelerate productivity while lowering the total cost of ownership. Intensive data collection jobs are made easier with fast, accurate barcode scanning in various working environments, especially in small businesses. Integrating short-distance wireless technology to small-form-factor scanners, the WWS450 Series Barcode Scanners are ideal for carrying around, and thus give workers tether-free mobility anytime anywhere and get job done more efficiently. This line of scanners deliver data over a wireless personal network at a range of up to 90 meters and a prolonged battery life to keep business running. A new ordering option is provided for adapting a 2D scan engine to read both 1D and 2D barcodes.

Owing to the slim, ergonomic design, extremely low power consumption, and powerful decoding capability, the WWS450 Series Barcode Scanners are the best choice for the following applications –

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

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

Thank you for choosing Wasp products!



Update

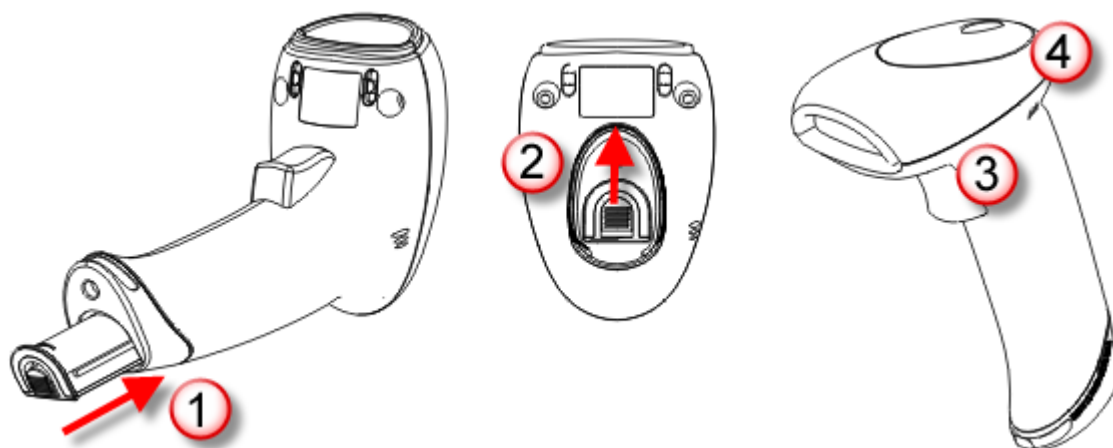
1.1 About the WWS450 and WWS450 CR (cradle)

1.1.1 Installing the Battery in the WWS450

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 WWS450 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. Refer to settings of "[Auto Power Off](#)".

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

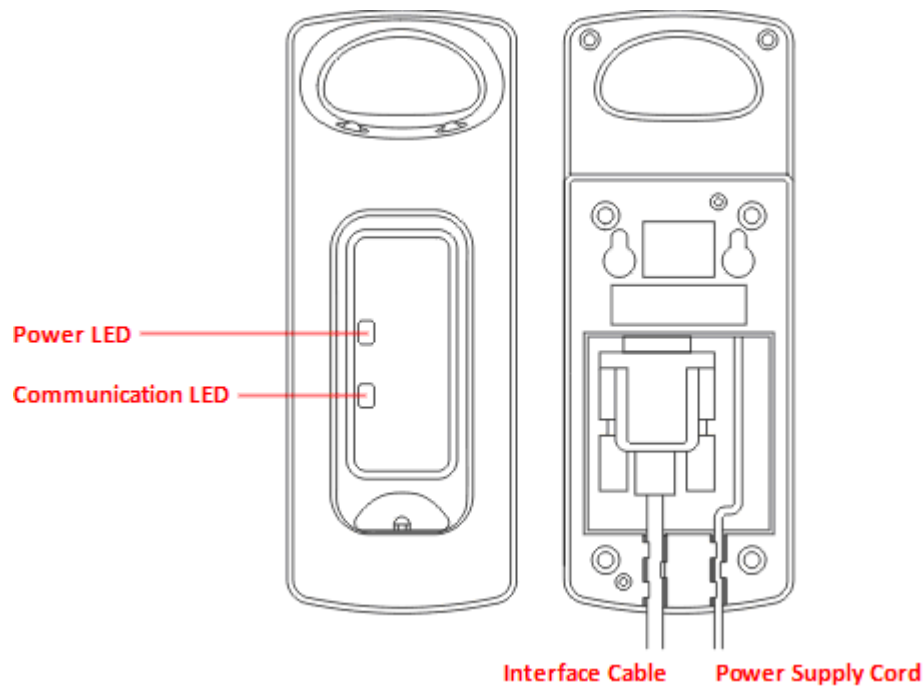
(3) When the battery charge becomes low, you will find the scanner cannot emit a scan beam and its power-on beep sounds different.



Enter Setup

1.1.2 Setting Up the WWS450 Cradle

Capable of charging the WWS450, the cradle is specifically designed for the scanner to communicate with a host computer wirelessly. The connection between the scanners and cradle is made easy and reliable. Refer to [Error! Reference source not found.](#)



Two LED indicators are provided for power and communications status.



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



Enter Setup

1.1.3 Charging the Battery via the WWS450 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).

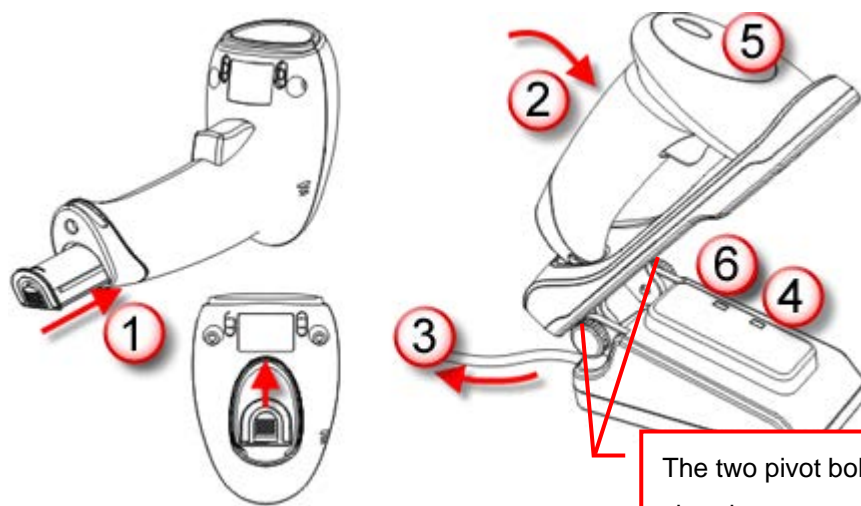
Note: Battery charging stops when the temperature drops below 0° C or exceeds 40 ° C. It is recommended to charge the battery at room temperature (18° C to 25 ° C) for optimal performance.

- 1 Install the battery to the scanner.
- 2 Seat the scanner in the WWS450 cradle.
- 3 Connect the WWS450 cradle stand to your computer or notebook via the USB or RS-232 cable.
- 4 Connect the power supply cord from the WWS450 cradle to a proper power outlet.

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

- 5 The LED for power indication on WWS450 Cradle will become solid red.
- 6 The scanner LED will be flashing red during charging.
- 7 When the charging is done, the LED will turn off.
- 8 When charging error occurs, the LED will turn solid red.
- 9 The LED for communications on WWS450 Cradle will first become solid blue while initializing. Refer to the table above for details on different stage of communications.





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



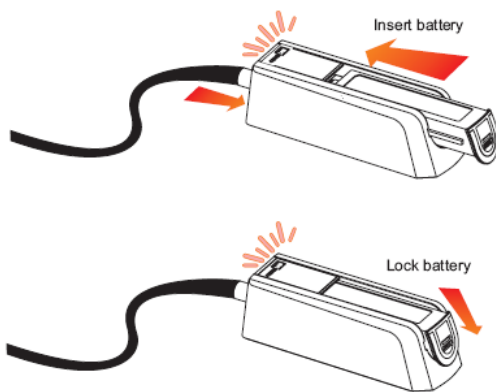
Enter Setup

1.1.4 Charging the Battery Via the Charger

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

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

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



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

1.2 Inside the Package

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



Enter Setup

- Barcode Scanner: WWS450
- BT Cradle (WWS450 CR)
- Rechargeable Li-ion battery
- Product CD

Note: The CD-ROM includes this manual and Windows-based *ScanMaster* software for configuration, as well as the USB Virtual COM driver.

1.3 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^{Note}
- User feedback via LED indicator and beeper
- Beeping tone and duration programmable for Good Read
- 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.

Note: In any scan mode other than Multi-Barcode Mode, a barcode acceptable to WWS450 can only contain data of 7 KB at most.



1.4 Supported Symbolologies

Most of the popular barcode symbolologies are supported, as listed below. Each can be individually enabled or disabled. The scanner will automatically discriminate and recognize all the symbolologies that are enabled. Refer to [Chapter 6 – Changing Symbology Settings](#) for details of each symbology.



Enter Setup

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



Update

(RSS)	GS1 DataBar Truncated		Disabled
	GS1 DataBar Stacked		Disabled
	GS1 DataBar Stacked Omnidirectional		Disabled
	GS1 DataBar Limited (RSS Limited)		Disabled
	GS1 DataBar Expanded (RSS Expanded)		Disabled
	GS1 DataBar Expanded Stacked		Disabled
Code 11			Disabled
Composite Code	Composite CC-A/B		Disabled
	Composite CC-C		Disabled
	Composite TLC-39		Disabled
Postal Code	US Postnet	Enabled	
	US Planet	Enabled	
	UK Postal	Enabled	
	Japan Postal	Enabled	
	Australian Postal	Enabled	
	Dutch Postal	Enabled	
	USPS 4CB/One Code/Intelligent Mail		Disabled
	UPU FICS Postal		Disabled
2D Symbolologies	PDF417	Enabled	
	MicroPDF417		Disabled
	Data Matrix	Enabled	
	Maxicode	Enabled	
	QR Code	Enabled	
	MicroQR	Enabled	
	Aztec	Enabled	



Enter Setup

Chapter 2 – 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.

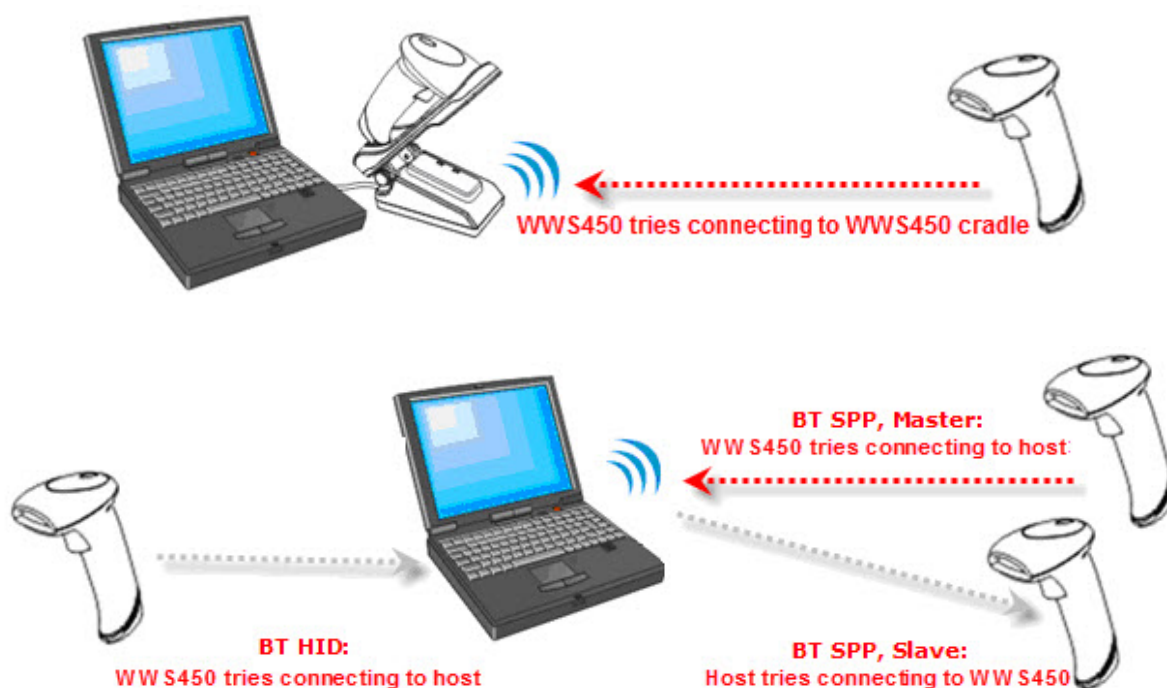


Update

Note: Refer to [Appendix II Host Serial Commands](#) for how to configure the WWS450 Cradle stand by having the scanner read WWS450 Cradle-related setup barcodes or using serial commands.

Working Mode

Upon powering up, the scanner will try to establish a connection with the WWS450 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 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 Setup

2.1 Enter Configuration Mode

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

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

Enter Setup



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

2.2 Exit Configuration Mode

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

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



Update

Update



109999

Abort



109998



Enter Setup

2.3 Default Settings

2.3.1 Save User Settings as Default

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

Save as User
Defaults



2.3.2 Restore User Defaults

For the scanner to restore the user defaults, which you have saved earlier, you must have it read the “Restore User Defaults” barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone). After reading the “Update” barcode, all the parameters of the scanner will return to their customized values.

Restore User
Defaults



2.3.3 Restore System Defaults

For the scanner to restore the factory defaults, you must have it read the “Restore System Defaults” barcode. This is a normal setup barcode, and the scanner will respond with two beeps (low-high tone). After reading the “Update” barcode, all the parameters of the scanner will return to their default values. The current connection record will be cleared as well.

Restore System
Defaults



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



Update

2.4 Read a Setup Barcode

2.4.1 Configure Parameters

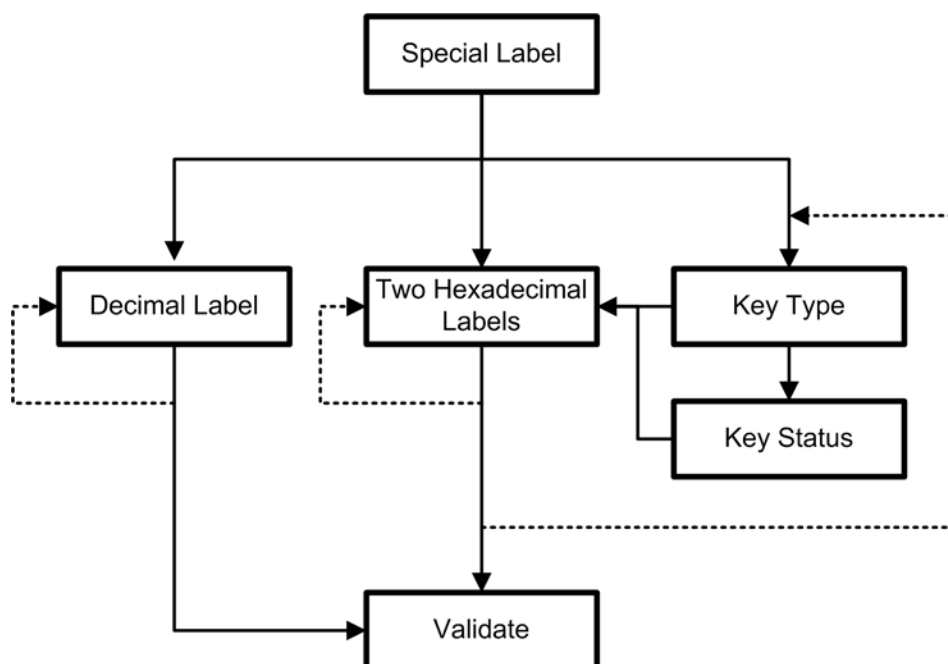
For most of the scanner parameters, only one read is required to set them to new values. The scanner will respond with two beeps (low-high tone) when each parameter is set successfully.

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

These special parameters may require reading one or more setup barcodes, such as






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

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



Enter Setup

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

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... <div>Enter Setup </div>	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, <div>*Enable Industrial 25  100307 Save as User Default  109986</div>	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.
4	Exit the Configuration Mode... <div>Update  109999</div> OR <div>Abort  109998</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> .
*	When any configuration error occurs...	The scanner will respond with one long beep (low tone).




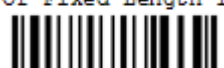







Update

The example below shows how to set numeric parameters:



Enter Setup

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... <div style="text-align: center;"> 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 style="border: 1px solid red; padding: 5px; display: inline-block; margin-bottom: 10px;">Normal setup</div> <div style="text-align: center;"> *Enable Interleaved 25  100309 </div>	
	<div style="border: 1px solid red; padding: 5px; display: inline-block; margin-bottom: 10px;">Normal setup</div> <div style="text-align: center;"> Enable Fixed Length(s) ...  100604 </div>	
	<div style="border: 1px solid red; padding: 5px; display: inline-block; margin-bottom: 10px;">Special setup</div> <div style="text-align: center;"> Max. Length (*126) Or Fixed Length 1  100606 </div>	The scanner will respond with one short beep if reading a special setup barcode such as "Max. Length", indicating the setup requires reading more barcodes.
	<div style="border: 1px solid red; padding: 5px; display: inline-block; margin-bottom: 10px;">Decimal barcodes</div> <div style="text-align: center;"> 1  109901 </div> <div style="text-align: center;"> 5  109905 </div> <div style="text-align: center;"> Validate  109994 </div>	<p>Read the "Decimal Value" barcode(s).</p> <ul style="list-style-type: none"> Refer to Appendix IV "Decimal System"
4	Exit the Configuration Mode... <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> Update  109999 </div> <div>OR</div> <div style="text-align: center;"> Abort  109998 </div> </div>	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .












Update

The example below shows how to set string parameters:



Enter Setup

Steps	Action	User Feedback if Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... <div style="text-align: center;"> 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, <div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 5px; margin-right: 10px;">Special setup</div> <div style="text-align: center;"> Configure Prefix  101230 *Normal  109926 Add Left Alt  109932 </div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid red; padding: 5px; margin-right: 10px;">Hexadecimal</div> <div style="text-align: center;"> 2  109902 B  109911 Validate  109994 </div> </div>	<p>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.</p> <p>When “BT HID”, “USB HID” or “Keyboard Wedge” is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to change key status when “Normal Key” is selected for Key Type. Refer to Appendix III</p> <p>Read the “Hexadecimal Value” barcodes for the desired character string. For example, read “2” and “B” for the scanner to prefix the character “+”.</p> <ul style="list-style-type: none"> Refer to Appendix IV “Hexidecimal System” <p>The scanner will respond with two beeps (low-high tone) when the input values are validated.</p>
4	Exit the Configuration Mode... <div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center;"> Update  109999 </div> <div style="margin: 0 10px;">OR</div> <div style="text-align: center;"> Abort  109998 </div> </div>	Same as for <i>Enter the Configuration Mode</i> .
5	The scanner will automatically restart itself...	Same as for <i>Power on the scanner</i> .



Update

2.4.3 List the Current Settings

The current settings of all scanner parameters can be sent to the host computer for user inspection.

The listing includes pages as shown below. You can select the page of interest by having the scanner read the “List Page x” barcode. The scanner will respond with two beeps (low-high tone) and send the selected page to the host immediately. (Table begins on next page.)



Enter Setup

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

List Page 1



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

List Page 2



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

List Page 3



List settings regarding Code ID

List Page 4



List settings regarding: Readable Symbolologies (1/2)

List Page 5



List settings regarding: Readable Symbolologies (2/2)

List Page 6



List settings regarding Symbology Parameters (1/3)

List Page 7



List settings regarding Symbology Parameters (2/3)

List Page 8



List settings regarding Symbology Parameters (3/3)

List Page 9



Reserved

List Page 10



Update

List settings regarding Editing Format 1
(1/2)

List Page 11



List settings regarding Editing Format 1
(2/2)

List Page 12



List settings regarding Editing Format 2
(1/2)

List Page 13



List settings regarding Editing Format 2
(2/2)

List Page 14



List settings regarding Editing Format 3
(1/2)

List Page 15



List settings regarding Editing Format 3
(2/2)

List Page 16



List settings regarding Editing Format 4
(1/2)

List Page 17



List settings regarding Editing Format 4
(2/2)

List Page 18



List settings regarding Editing Format 5
(1/2)

List Page 19



List settings regarding Editing Format 5
(2/2)

List Page 20



2.4.2 Create One-Scan Setup Barcodes

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

The requirements of a One-Scan setup barcode are:

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

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

Enter Setup



List Page 3



109952

Update



109999

Now, it requires only one read:

One-Scan Setup Barcode for
109952



#@109952#



Update

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

Chapter 3 – Understanding the Barcode Scanner

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

3.1 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.



Enter Setup

Note: The scanner supports power economy. Refer to settings of “[Power Economy](#)”, “[Sniff Mode](#)”, as well as “[Low Battery Alarm](#)”.

3.1.1 Turn Off/On 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.

3.1.2 Power Economy

The scanner features “Power-Saving”, “Auto Power Off” and “Auto Power Off Ignoring Scan Mode” giving consideration to the power issue that is generally critical for Bluetooth-enabled devices. By the scanner’s support of power economy, its power consumption may progress by the following transition: running at full CPU speed at power-on

- 1 shifting to low CPU speed (Power-Saving)
- 2 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.

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)



Read the barcode above to enable the scanner to enter low-speed "Power-Saving".

Assign the time for the scanner to enter low-speed mode by reading the "[Decimal Value](#)" barcode on page **Error! Bookmark not defined.** For example, read "5" for the scanner to enter low-speed mode after idleness of 5 minutes.

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

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

- (1) the scanner has already established a BT HID/SPP connection,
 - (2) the scanner is in the configuration mode,
 - (3) the scan mode is set to Test Mode,
 - (4) the setting value of Power-Saving is greater than that of Auto Power Off.
-

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.



- When the scan mode is set to Test Mode, you need to enable “Auto Power Off Ignoring Scan Mode” in addition to enabling “Auto Power Off”. See the following section [1.1.2.3 Auto Power Off Ignoring Scan Mode](#).

Note: When the scanner is set to any scan mode other than Test Mode, you can ignore “Auto Power Off Ignoring Scan Mode”.

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



Read the barcode above to enable the scanner to automatically turn off at a specified time after power-on.

Assign the auto power off time by reading the “[Decimal Value](#)” barcode. For example, read “1” and “5” for the scanner to automatically turn off after idleness of 15 minutes.

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.

Auto Power Off Ignoring Scanner Mode

This mode is intended only for Test Mode. To force a scanner that is set to Test Mode to automatically power off to save power, you need the following settings:

Enable “Auto Power Off” and set a time for the scanner to automatically power off after power-on. See the foregoing section Auto Power Off.

Enable “Auto Power Off Ignoring Scan Mode” by reading the barcode below:



Update

Enable



*Disable



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

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



Enter Setup

3.1.3 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 WWS450 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 WWS450 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 WWS450 Cradle, the scanner tries to re-connect WWS450 Cradle unless you turn off the scanner.



Enter Setup

3.2 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.

3.2.1 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!



Update

3.2.2 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.

Enable



*Disable



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



Enter Setup

Memory Data Delay

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

***None**



100238

250 ms



100239

500 ms



100240

1 sec



100241

2 sec



100242

3 sec



100243

5 sec



100244

8 sec



100245

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”



Update

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



3.3 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.



Update

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	---	---	<p>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 —</p> <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	---	<p>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.</p> <p>It is ready for connection only while the LED is flashing blue —</p> <ul style="list-style-type: none"> SPP Slave: waiting host to connect HID or SPP Master: trying to connect to host Using WWS450 Cradle: trying to connect to WWS450 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,	Green,	Flashing blue and green (On/Off ratio 0.1 s: 0.1 s) indicates an error



Enter Setup

Scanner LED			Meaning
	flashing	flashing	occurs while entering the PIN code. Press the trigger to get ready for re-connecting.

3.3.1 Good Read LED

***Enable
Good Read LED**



**Disable
Good Read LED**



3.3.2 Good Read LED Duration

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

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



- 1 Read the barcode above to specify the time interval before the Good Read LED goes off.
- 2 Read the "[Decimal Value](#)" barcode. 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.



Update

3.4 Beeper

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



Enter Setup

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone <ul style="list-style-type: none"> • Programmable, default to 4 KHz 	Good Read, with green LED on-off quickly
Six short beeps <ul style="list-style-type: none"> • High-low tone repeats three times 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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



3.4.1 Beeper Volume

Mute



Minimum Volume



Medium Volume



***Maximum Volume**



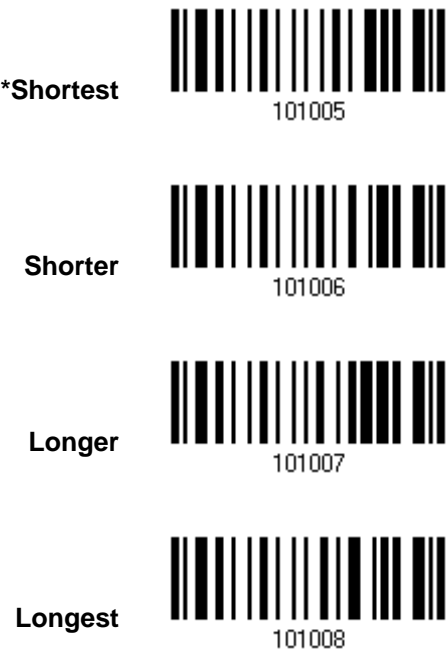
Enter Setup

3.4.2 Good Read Beep

Frequency



Duration



Update

3.4.3 Low Battery Alarm

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

No Alarm



*Low Battery Alarm



Enter Setup

3.5 Send NR to Host

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

Enable



100267

*Disable



100266



Update

3.6 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.

- A barcode acceptable to WWS450 can only contain data of 7 KB at most.

Scan Mode	Start to Scan				Stop Scanning			
	Always	Press trigger once	Hold trigger	Press trigger twice	Release trigger	Press trigger once	Barcode being read	Timeout
Test mode	✓							
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.



Enter Setup

3.6.1 Test Mode

The scanner is always scanning.

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

Test Mode



3.6.2 Laser Mode

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

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

Note: Refer to “Scanning Timeout”.

*Laser Mode



3.6.3 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



Update

3.6.4 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



3.6.5 Aiming Mode

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

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

Aiming Mode



Aiming Timeout

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

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



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



3.6.6 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 WWS450 to decode 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](#).

3.6.7 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 it in the Auto-Sense Stand for hands-free operation.

Presentation Mode



Update

3.7 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)



Read the barcode above to specify the time interval before the scan engine times out.

Read the “[Decimal Value](#)” barcode. For example, read “1” and “5” for the scanner to automatically shut down after being idle for 15 seconds.

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



Enter Setup

3.8 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



Update

3.9 Read Redundancy (1D)

Select the level of reading security. For example,

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

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

***No Redundancy**



100262

One Time



100263

Two Times



100264



Enter Setup

3.10 Add On Security for UPC/EAN Barcodes

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

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

Addon Security Level
(*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. 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.

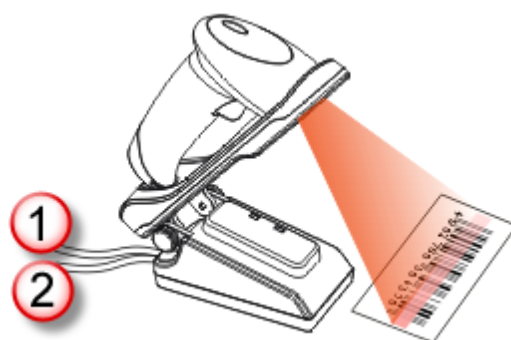


Update

3.11 Auto-Sense Mode

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

Note: To stop this mode, you may remove the scanner from the stand or have the scanner read the “Disable (Auto-Sense)” barcode below. It will return to Laser mode. If Laser mode is not desired, proceed to select a scan mode best suits your application.



Note: For Auto-Sense mode to work, you must connect both the power supply cord and the interface cable to the Auto-Sense stand. USB power is insufficient.

Enable



100271

*Disable



100270



Enter Setup

3.12 Negative Barcodes

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

- All 1D symbologies
- Data Matrix
- QR Code
- Aztec

Enable



100225

***Disable**



100224



Update

3.13 Pick List Mode

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

Enable



102201

***Disable**



102200



Enter Setup

Chapter 4 – Selecting Output Interface

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

1. Install the battery and hold down the trigger for about 2 seconds to turn on the scanner.
2. Have the scanner read the “Enter Setup” barcode to enter the configuration mode.
3. Have the scanner read the associated barcodes to activate the desired interface.
See the following sections for output interfaces supported.
4. Have the scanner read the barcodes for related settings.
5. Have the scanner read the “Update” barcode to exit the configuration mode.
6. Turn on your computer or laptop and establish a WPAN connection with the scanner.

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

4.1 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)



Update

4.1.1 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. 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)	71	PCAT (Belgium)
65	PCAT (French)	72	PCAT (Spanish)
66	PCAT (German)	73	PCAT (Portuguese)
67	PCAT (Italy)	74	PS55 A01-2 (Japanese)
68	PCAT (Swedish)	75	User-defined table
69	PCAT (Norwegian)	76	PCAT (Turkish)
70	PCAT (UK)	77	PCAT (Hungarian)



Enter Setup

4.1.2 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.



Update

Reset Connection



109919

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

4.1.3 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



Enter Setup

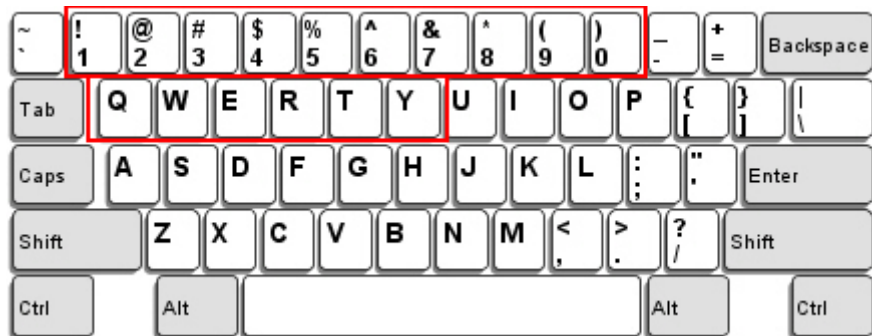
Note: This setting only works when the keyboard type selected is US keyboard, such as PCAT (US).
The Alphabets Layout and Digits Layout setting must match your keyboard.



Update

US Keyboard Style – Normal

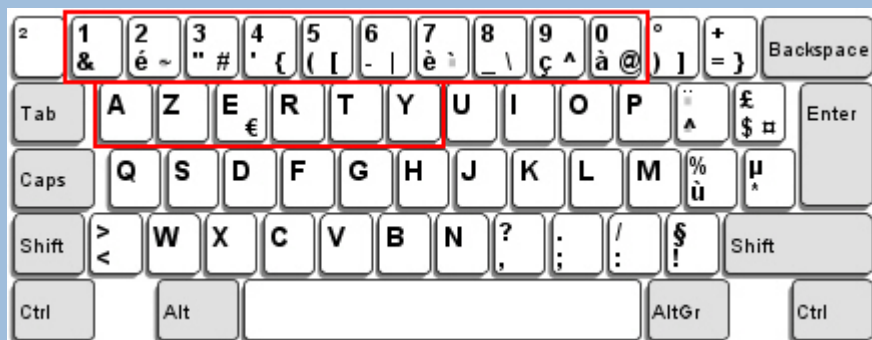
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



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

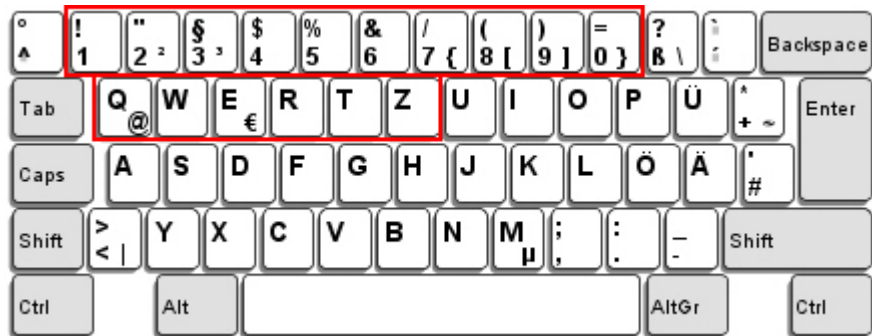
-
-
-
-
-
-
-
-
-
-



Enter Setup

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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



Digits Layout

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

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

*Normal



Upper Row



Lower Row



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



Enter Setup

Capital Lock Type & Setting

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

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

***Normal**



Shift Lock



Capital Lock



Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). <ul style="list-style-type: none"> Refer to the Capital Lock Type above.



Update

Auto Detection	<p>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).</p> <ul style="list-style-type: none">• This setting is not supported on PDAs.
----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Auto Detect



Capital Lock ON



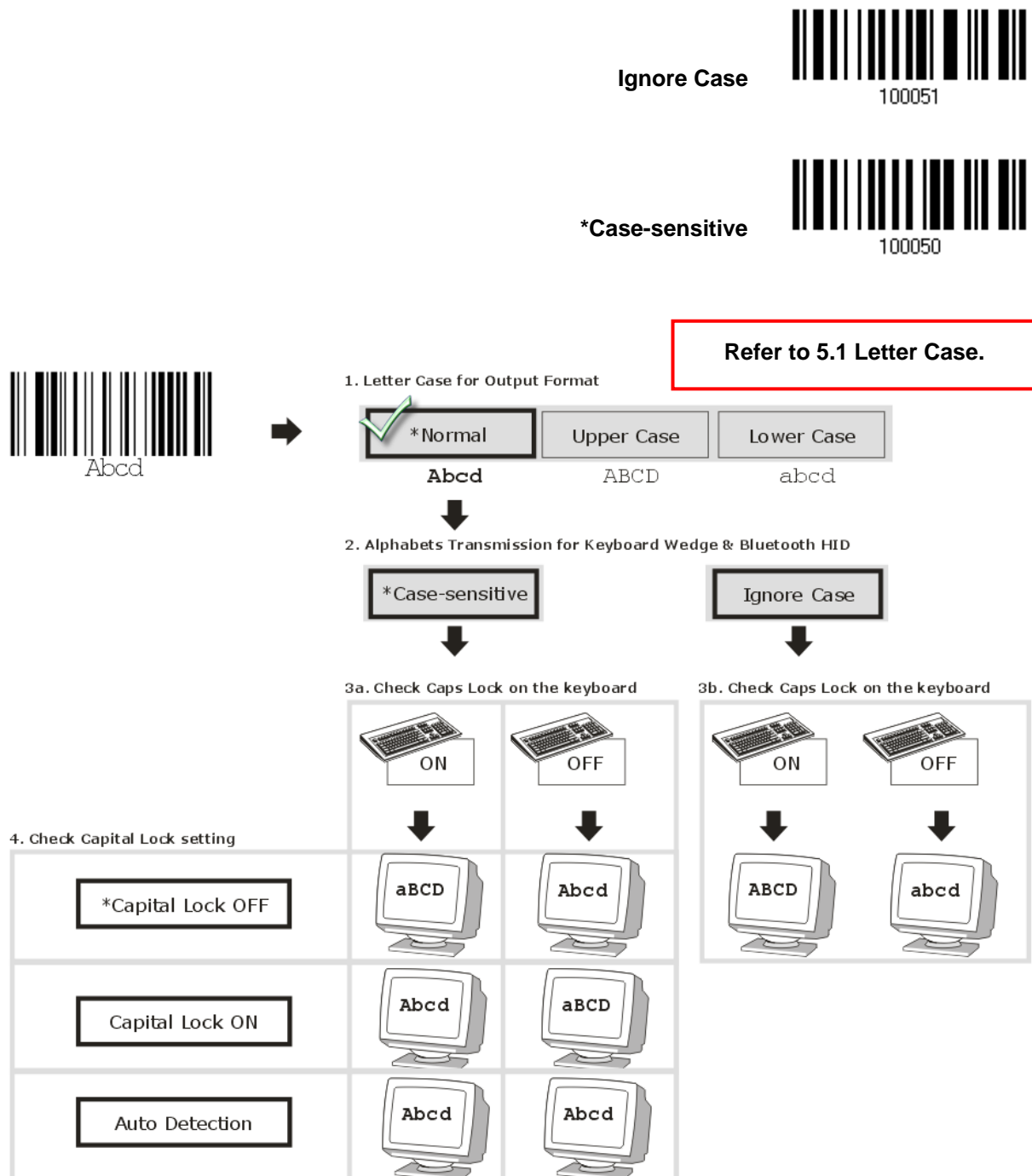
*Capital Lock OFF



Enter Setup

Alphabets Transmission

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



Update



Enter Setup

Digits Transmission

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

Numeric Key



*Alphanumeric Key



Digits transmission
on Alphanumeric keys

Digits transmission
on Numeric keys



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 WWS450 Cradle or USB HID via WWS450 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



Update

*Disable



4.1.4 Inter-Character Delay

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

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



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

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



4.1.6 HID Character Transmit Mode

By default, HID interface sends data to the host in batch. You may have the scanner read the “By Character” barcode to process data one character at a time.

*Batch Processing



100064

By Character



100065

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

4.1.7 Keypad Support for iPhone/iPad

When the scanner has been successfully connected to iPhone or iPad for data collection, the onscreen keypad of iPhone or iPad will disappear.

Have the scanner read the following barcode to show or hide the keypad if necessary.

Show or Hide Keypad



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



Update

4.2 BT SPP Slave

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

4.2.1 Activate BT SPP Slave Mode

This is SPP Slave Mode.

Activate BT SPP,
Slave Mode



4.2.2 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)



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

4.2.3 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)



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

ACK/NAK Error Beep

Enable Error Beep



*Disable Error Beep



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

4.3 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](#).



Update

4.3.1 Activate BT SPP Master Mode

Activate BT SPP,
Master Mode



How to connect with the target device?

Produce two setup barcodes for the target SPP slave device, just like what we do for WWS450 Cradle.

- “Set Connection”
- “MAC ID”

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

Usage:

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

Set Connection



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

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

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



Enter MAC ID in
Hexadecimal...



Usage:

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

Exit SPP Master Mode

To stop such re-connection, have the scanner 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 whole process in [Connect to Dongle](#) to establish a new WPAN connection.

Reset Connection



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



Update

4.3.3 ACK/NAK Timeout

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

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



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

ACK/NAK Error Beep

Enable Error Beep



*Disable Error Beep



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

4.3.4 Switch Between Master and Slave

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 WWS450 Cradle.



4.4 Keyboard Wedge Via WWS450 Cradle

The Y cable allows you to connect the scanner via WWS450 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)



4.4.1 Activate Keyboard Wedge & Select Keyboard Type

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

**Activate WWS450
Cradle Keyboard
Wedge & Select
Keyboard Type...**



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



Enter Setup

Keyboard Wedge via WWS450 Cradle

By default, the keyboard type is set to PCAT (US). The following keyboard types are supported when using the WWS450 Cradle with the keyboard wedge cable provided —

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



4.4.2 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 your keyboard.

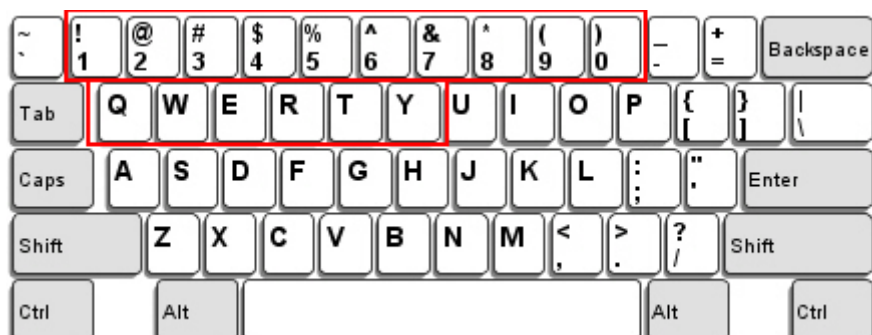




Update

US Keyboard Style – Normal

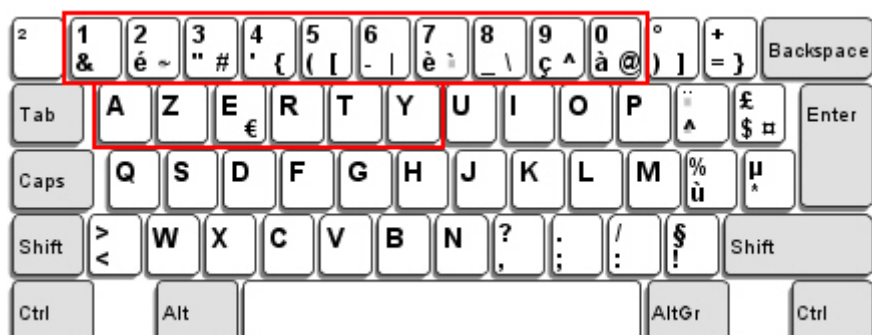
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



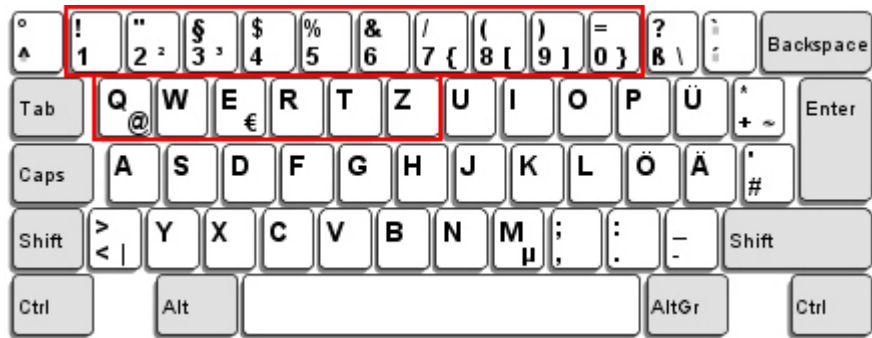
- Select “Upper Row” for the “Digits Layout” setting for the lower row is for special characters.

German Keyboard Layout – QWERTZ



Enter Setup

German layout; see below for German Keyboard Style.



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



Update

Digits Layout

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

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

***Normal**



Upper Row



Lower Row



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

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.



Enter Setup

Shift Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. In addition, this affects the number or punctuation keys.
------------	---------------------------------------------------------------------------------------------------------------------------------------------------

***Normal****Shift Lock****Capital Lock**

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). <ul style="list-style-type: none"> Refer to the Capital Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).

Auto Detect**Capital Lock ON**

Update

*Capital Lock OFF



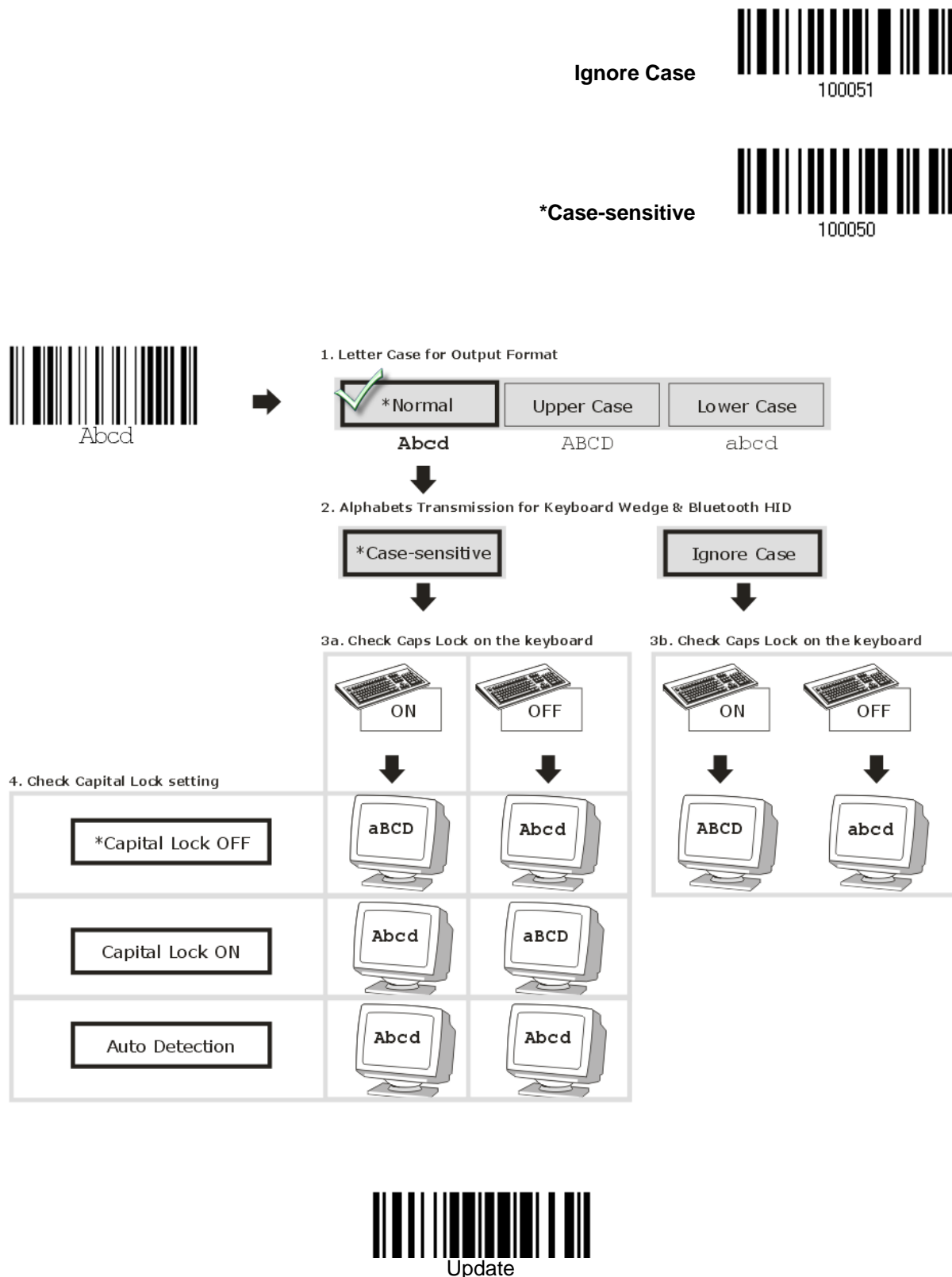
100052



Enter Setup

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.





Enter Setup

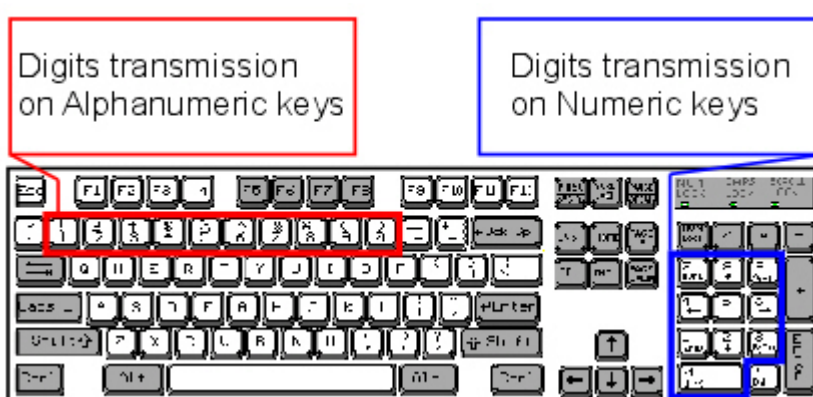
Digits Transmission

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

Numeric Key



*Alphanumeric Key



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

Kanji Transmission

Kanji Transmission is supported by the scanner when either Bluetooth HID, Keyboard Wedge via WWS450 Cradle or USB HID via WWS450 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



***Disable**



ALT Composing

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

Yes



***No**



Laptop Support

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

Enable



***Disable**



4.4.3 Inter-Character Delay

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

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



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

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



4.5 RS-232 Via WWS450 Cradle

Use the RS-232 cable to connect the scanner via WWS450 Cradle to the serial port of PC, and connect the power supply cord. The associated RS-232 parameters must match those configured on the computer. You may run HyperTerminal.exe on your computer, and the scanned data will be transmitted to the computer.

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

4.5.1 Activate RS-232 Interface

Activate WWS450
Cradle RS-232
Interface



4.5.2 Baud Rate

***115200 bps**



57600 bps



38400 bps



19200 bps



9600 bps



4800 bps



2400 bps



1200 bps



600 bps



Update

4.5.3 Data Bits

*8 bits



100093

7 bits



100092

4.5.4 Parity

*No parity



100088

Even



100090

Odd



100091

4.5.5 Stop Bit

2 stop bits



100099

*1 stop bit



100098



Enter Setup

4.5.6 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



Update

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

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



Enter Setup

4.5.9 ACK/NAK Timeout

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

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



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

ACK/NAK Error Beep

Enable Error Beep



*Disable Error Beep



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



4.6 USB HID Via WWS 450 Cradle

For USB HID, use the USB cable to connect the scanner via WWS450 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 WWS450 Cradle stand is solely on USB power, the current may be insufficient for it to function normally. You must connect the power supply cord.

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



Enter Setup

4.6.1 Activate USB HID & Select Keyboard Type

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



1. Read the barcode above to activate USB HID and select a keyboard type.
2. Read the "[Decimal Value](#)" barcode. 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)	71	PCAT (Belgium)
65	PCAT (French)	72	PCAT (Spanish)
66	PCAT (German)	73	PCAT (Portuguese)
67	PCAT (Italy)	74	PS55 A01-2 (Japanese)
68	PCAT (Swedish)	75	User-defined table
69	PCAT (Norwegian)	76	PCAT (Turkish)
70	PCAT (UK)	77	PCAT (Hungarian)



Update

4.6.2 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.

***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.



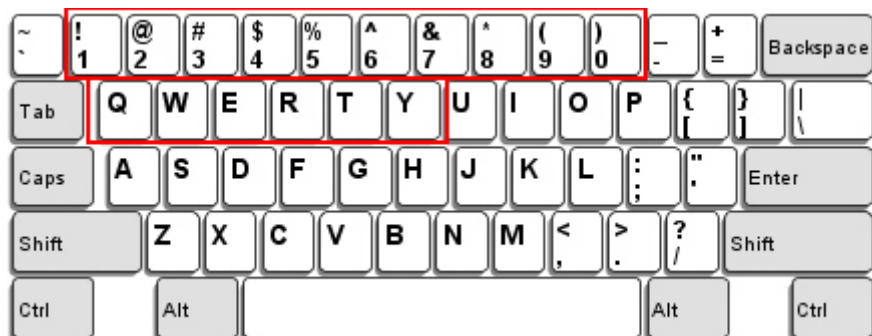
Enter Setup



Update

US Keyboard Style – Normal

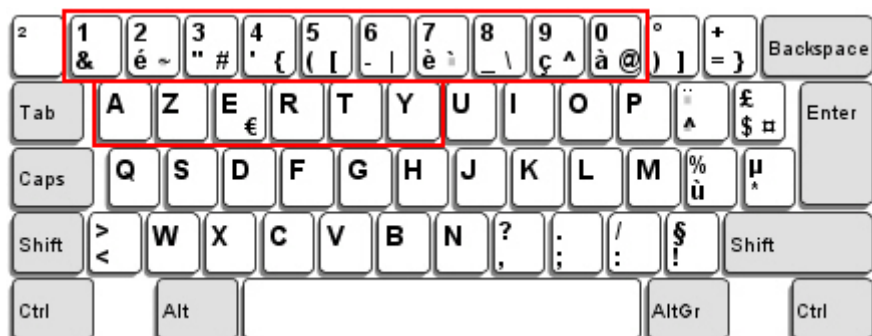
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

French layout; see below for French Keyboard Style.



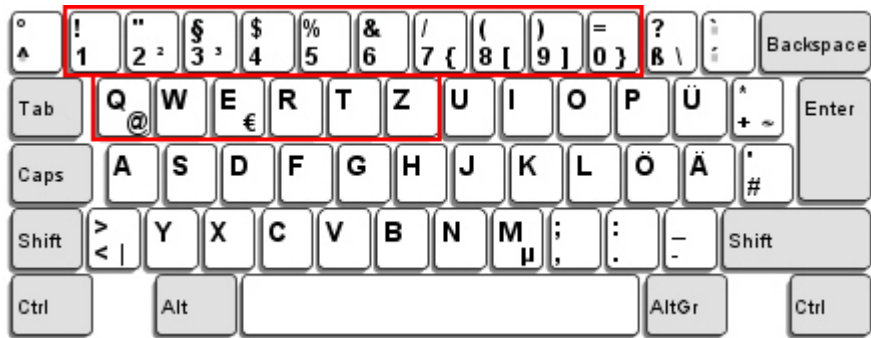
- Select “Upper Row” for the “Digits Layout” setting for the lower row is for special characters.

German Keyboard Layout – QWERTZ



Enter Setup

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

*Normal



Upper Row



Lower Row



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





Enter Setup

Capital Lock Type & Setting

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

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

***Normal**



Shift Lock



Capital Lock



Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). <ul style="list-style-type: none"> Refer to the Capital Lock Type above.



Update

Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Auto Detect



Capital Lock ON



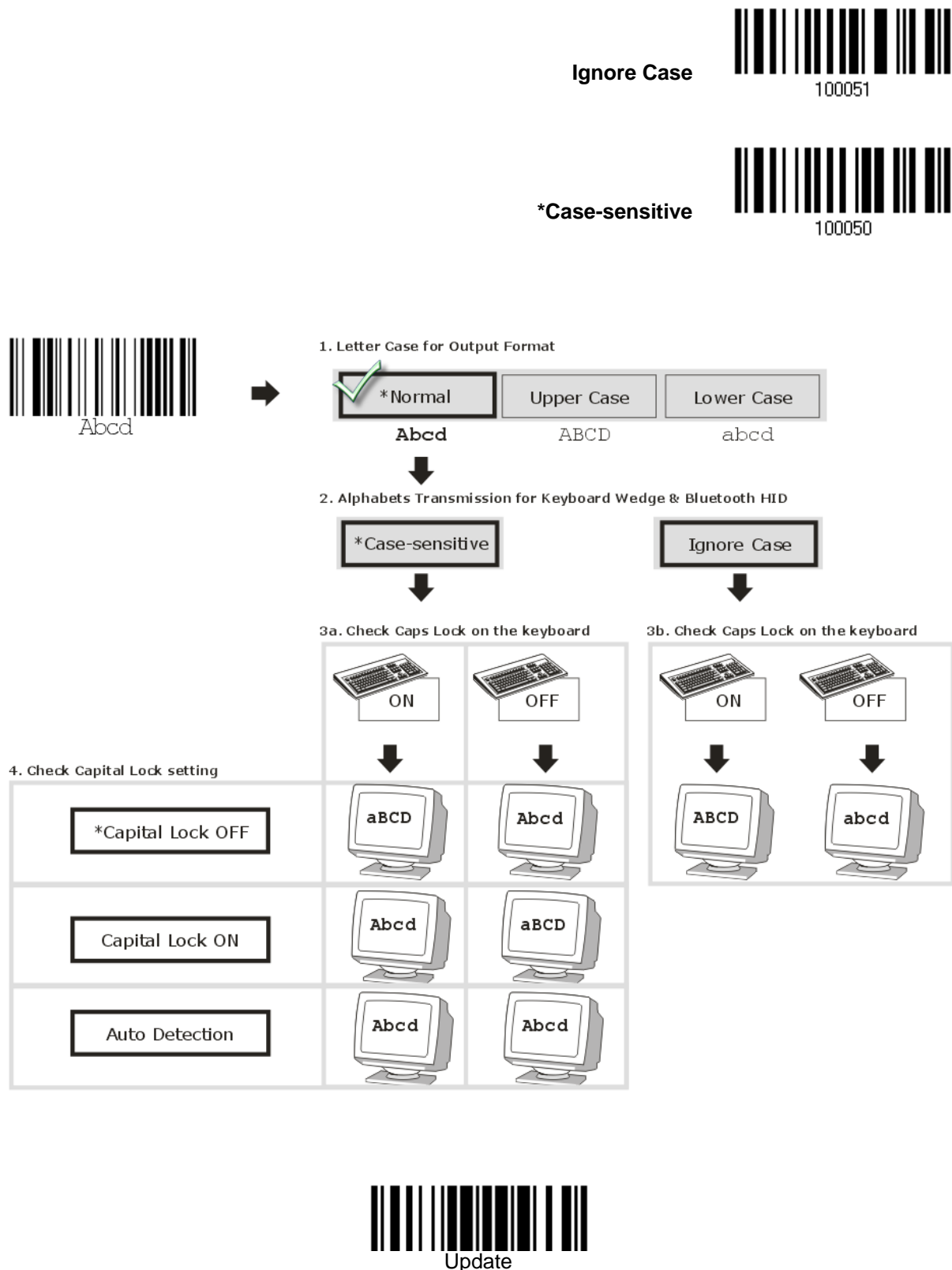
***Capital Lock OFF**



Enter Setup

Alphabets Transmission

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



Digits Transmission

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

Numeric Key



*Alphanumeric Key



Digits transmission
on Alphanumeric keys

Digits transmission
on Numeric keys



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

Kanji Transmission

Kanji Transmission is supported by the scanner when either Bluetooth HID, Keyboard Wedge via WWS450 Cradle or USB HID via WWS450 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



Enter Setup

***Disable**



100066



Update

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

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



4.6.5 HID Character Transmit Mode

By default, HID interface sends data to the host in batch. You may have the scanner read the “By Character” barcode to process data one character at a time.

***Batch Processing**



By Character



Update

4.7 USB Virtual COM VIA WWS450 Cradle

Use the USB cable to connect the scanner via the WWS450 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 WWS450 Cradle stand is solely on USB power, the current may be insufficient for it to function normally. You must connect the power supply cord.

Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM. Driver version 5.3 or later is required. Please remove older versions!

4.7.1 Activate USB Virtual COM

Activate WWS450
Cradle USB
Virtual COM



4.7.2 Inter-Function Delay

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

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



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



4.7.3 ACK/NAK Timeout

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

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



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

ACK/NAK Error Beep

Enable Error Beep



*Disable Error Beep



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



Update

Chapter 5 – Setting Up a WPAN Connection

The WWS450 scanner can be configured to send data to a host computer wirelessly via the WWS450 Cradle stand, or to a notebook computer or PDA with *Bluetooth*® wireless technology. Upon powering up, the scanner will be ready for establishing a WPAN connection.



Enter Setup

To establish a connection via the WWS450 Cradle after reading “Set Connection” and “Serial No.” labels ...



Interface Option	Reference
Keyboard Wedge	4.4 Keyboard Wedge via WWS450 Cradle
RS-232	4.5 RS-232 Via WWS450 Cradle
USB HID	4.6 USB HID Via WWS450 Cradle
USB Virtual COM	4.7 USB Virtual COM Via WWS450 Cradle

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



Interface Option	Reference
BT HID	4.1 BIT HID
BT SPP	4.2 BT SPP Slave , 4.3 BT SPP Master



Update

5.1 Connecting Via the WWS450 Cradle

By default, the interface of WWS450 Cradle is set to "USB HID". Use the interface cable to connect the scanner via WWS450 Cradle to PC. You can have up to seven scanners connected to one computer at the same time.

Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM. Driver version 5.3 or later is required. Please remove older versions!

5.1.1 Connect to WWS450 Cradle

You can connect any scanner to WWS450 Cradle by having the scanner read the two labels at the back of WWS450 Cradle. The scanner will respond with one beep upon reading each of the labels.

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

After reading these labels, the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to the WWS450 Cradle stand 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 becomes flashing blue (On/Off ratio 0.02 s: 3 s). When getting out of range, the scanner will respond with three short beeps (tone descending from high to low).

Read the "Set Connection" label first, and then the "Serial Number" label. If the "Set Connection" label on WWS450 Cradle is illegible, try this one —

Set Connection



Note: The WWS450 Cradle settings will overwrite the interface-related settings on the scanners that are currently connected to WWS450 Cradle.



Enter Setup

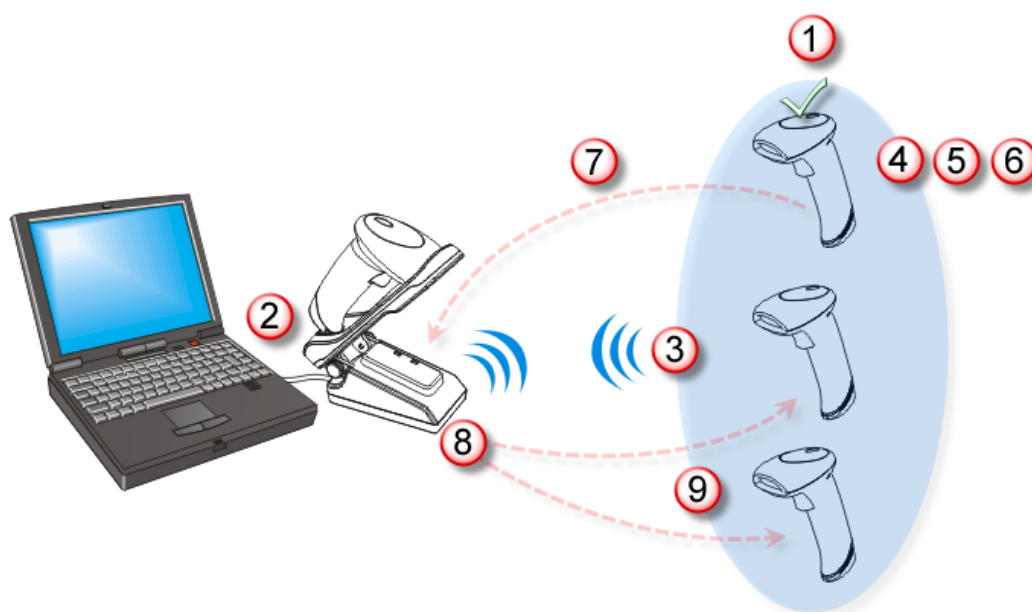
5.1.2 Change Interface

If you want to change the interface cable of WWS450 Cradle, use one of the scanners to configure the interface-related settings and it will pass the new settings to WWS450 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 WWS450 Cradle.
2. Within two minutes, connect the interface cable between WWS450 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 WWS450 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 WWS450 Cradle, it will pass the interface-related settings to WWS450 Cradle.
8. Upon receipt of the new settings, WWS450 Cradle will initialize itself.
9. Updated with new settings, WWS450 Cradle will pass the settings to other connected scanners.



Update



5.1.3 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



Enter Setup

5.2 Connecting Via Bluetooth® Dongle

5.2.1 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).
6. Once connected, when getting out of range, the scanner will respond with three short beeps (tone descending from high to low).



Update

5.2.2 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.



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.



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





Update



Enter Setup

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 [5.2.3 Connect the Dongle](#).

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

Use 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.

**Enter PIN in
Hexadecimal ...**



**Enter PIN in
Decimal...**



3. Read the “[Decimal Value](#)” barcode or the “[Hexadecimal Value](#)” barcode 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

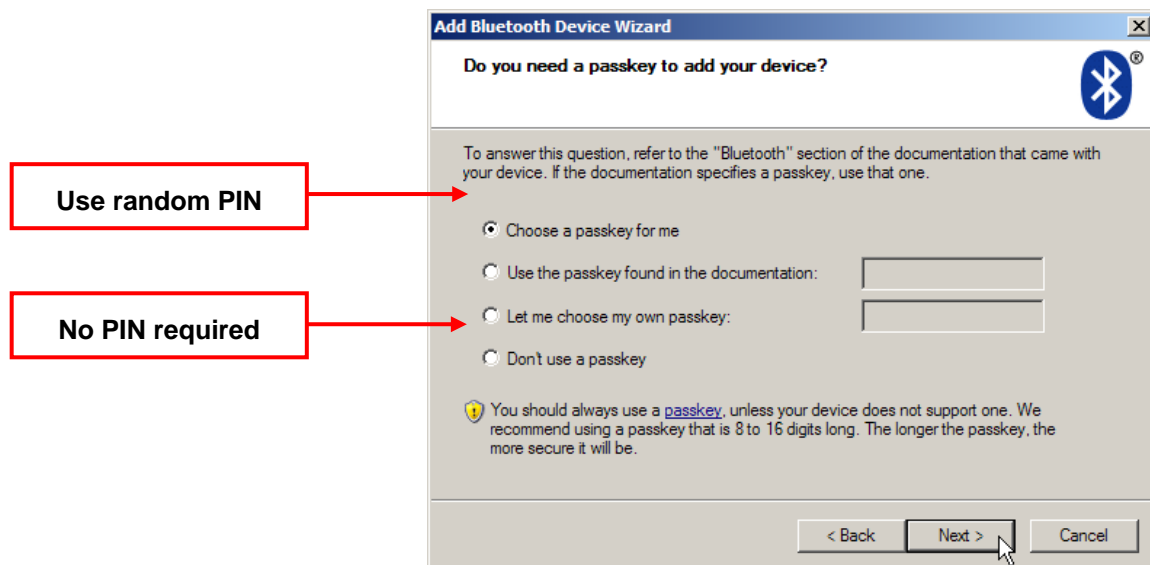


4. Read the "Validate" barcode to complete this setting.

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.)

***No PIN or
use random PIN**



Enter Setup

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.



Update

5.2.3 Connect the 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.



Enter Setup

BT HID Procedure

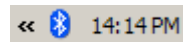
By default, BT HID is activated on the scanner, and the keyboard type is set to PCAT (US). When BT HID is re-activated, you will have to select a keyboard type to complete this setting.

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

BT SPP Procedure

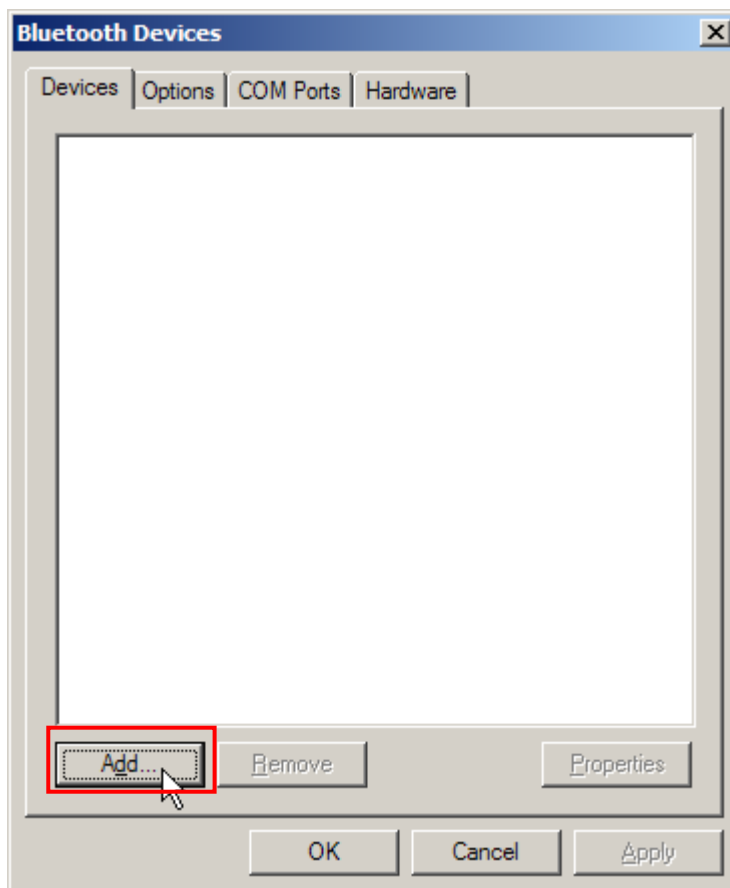
1. Turn on the *Bluetooth*® function on your computer, running Windows XP SP2.

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



Update

of [My device is set up and ready to be found] on your computer.

5. Click [Next].



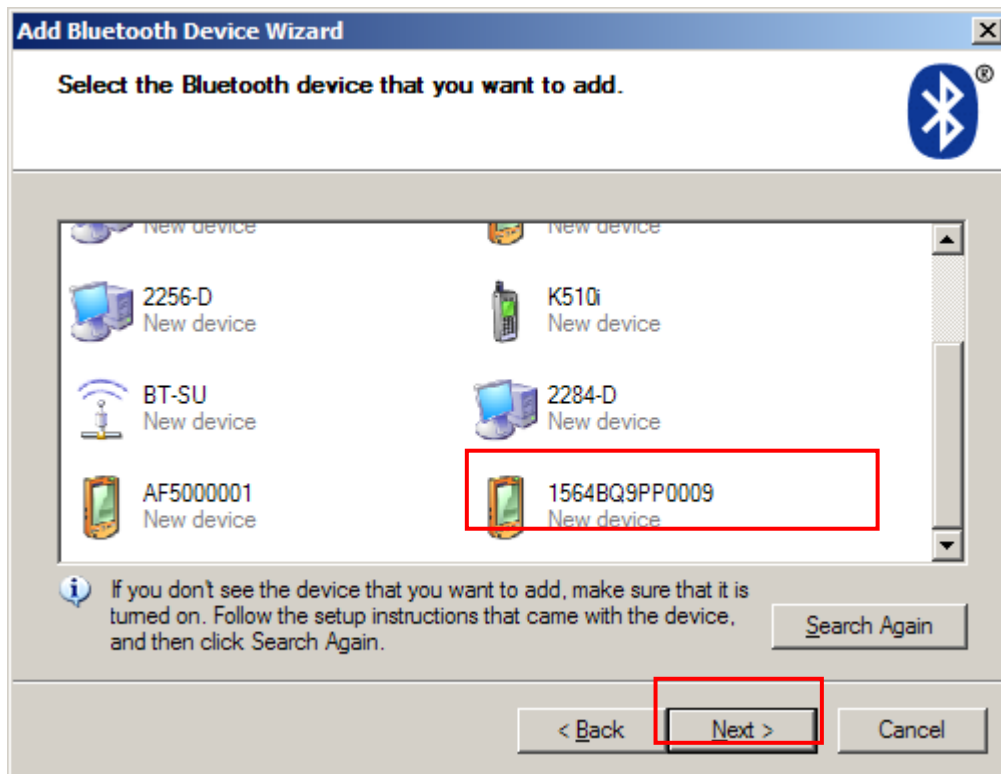
6. Wait for a few seconds for the Wizard to search available devices nearby.

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.



Enter Setup

- Click [Next].



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

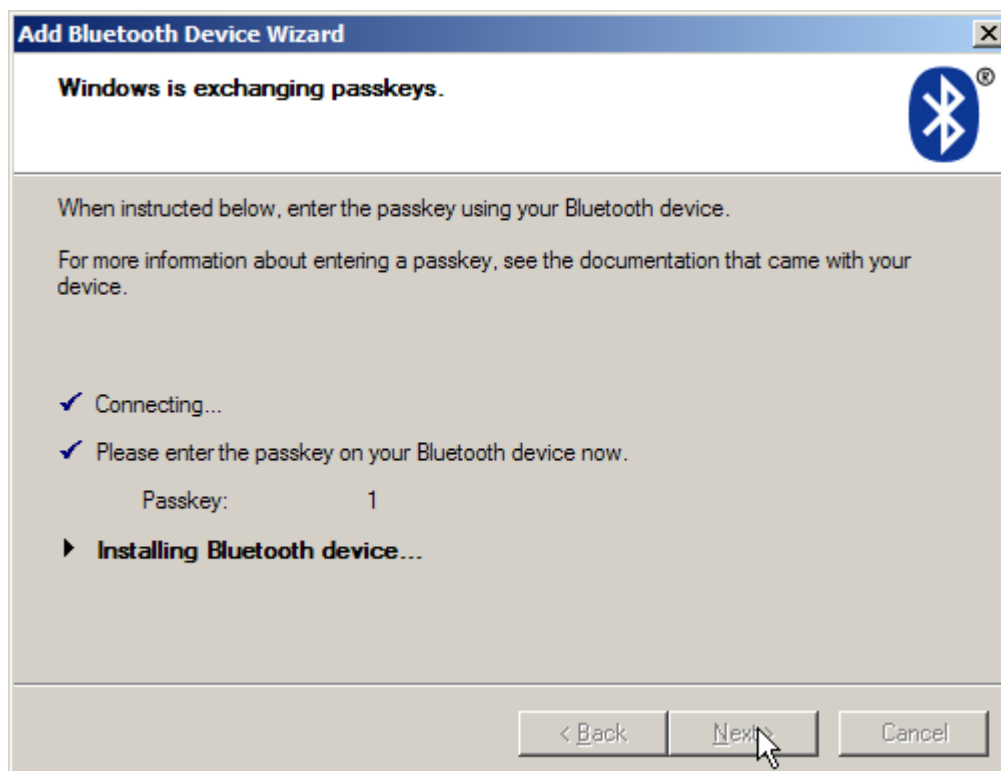
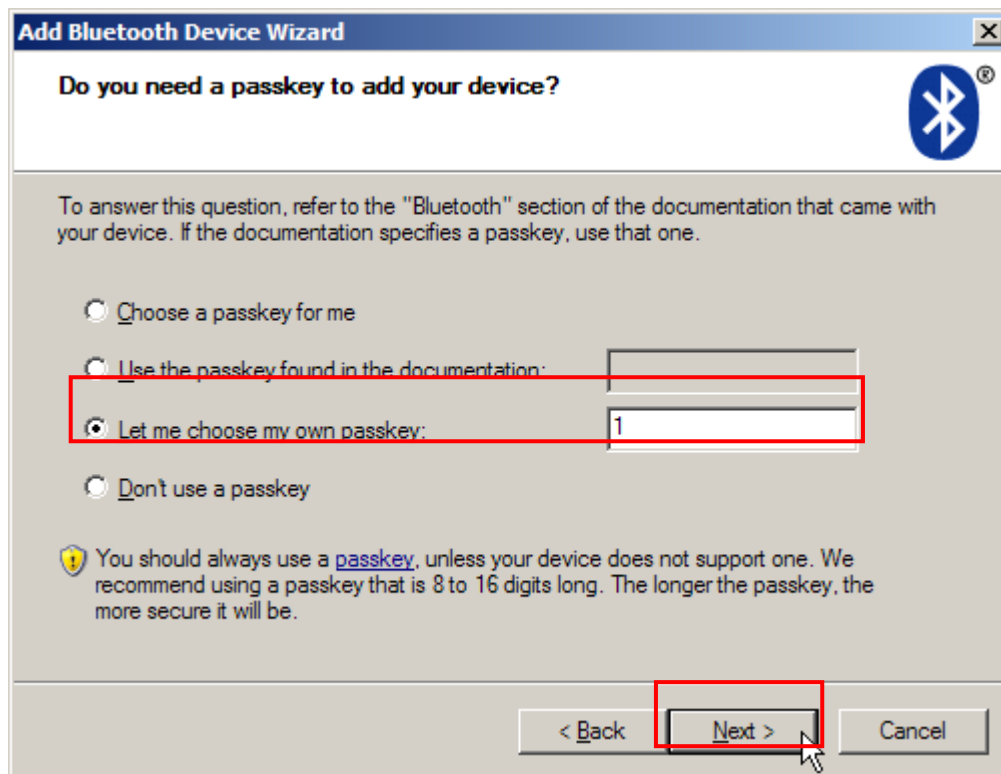


Update



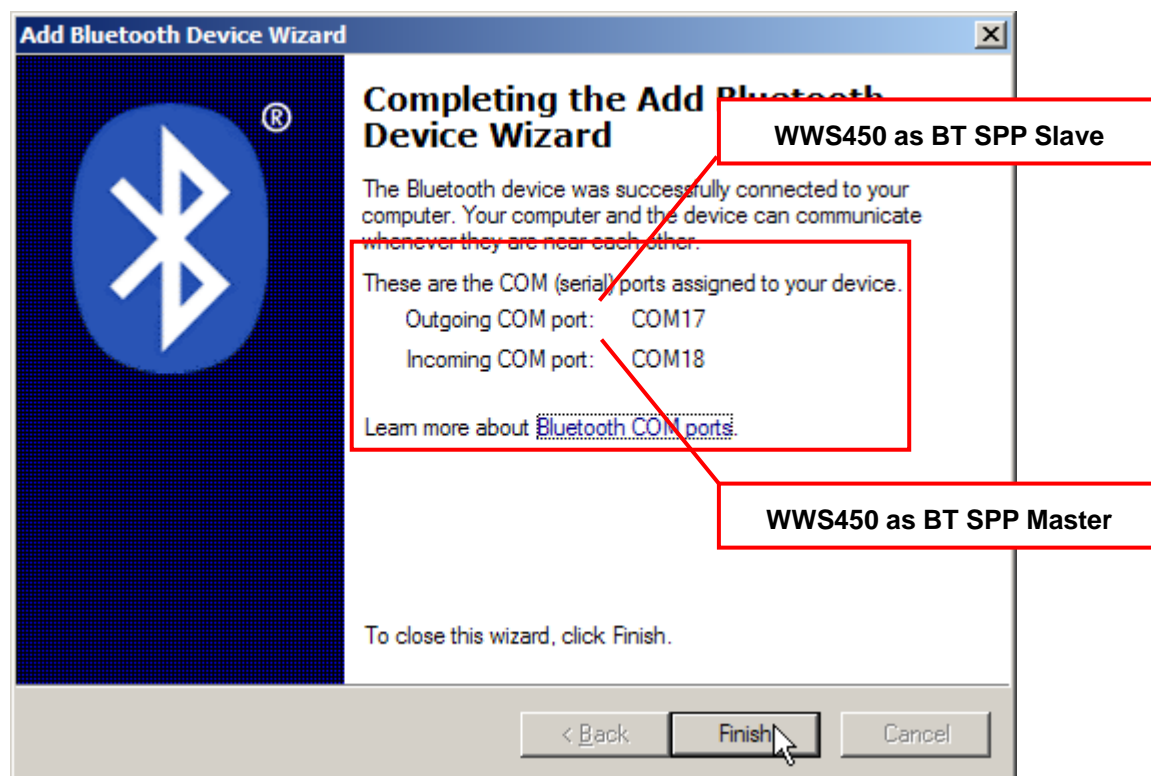
Enter Setup

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



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

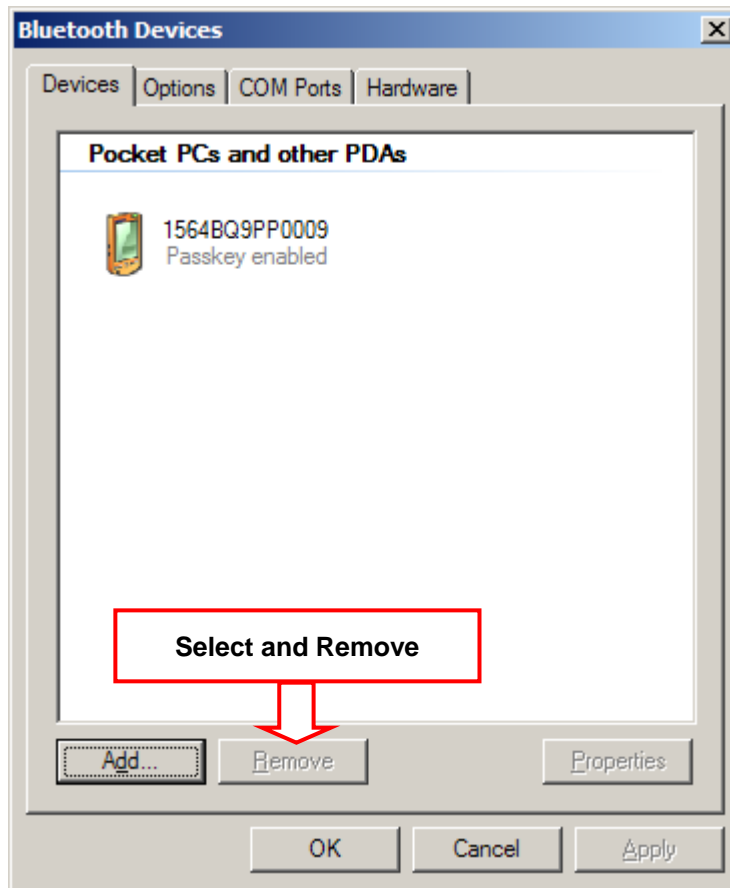
10. Click [Finish].



Enter Setup

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.

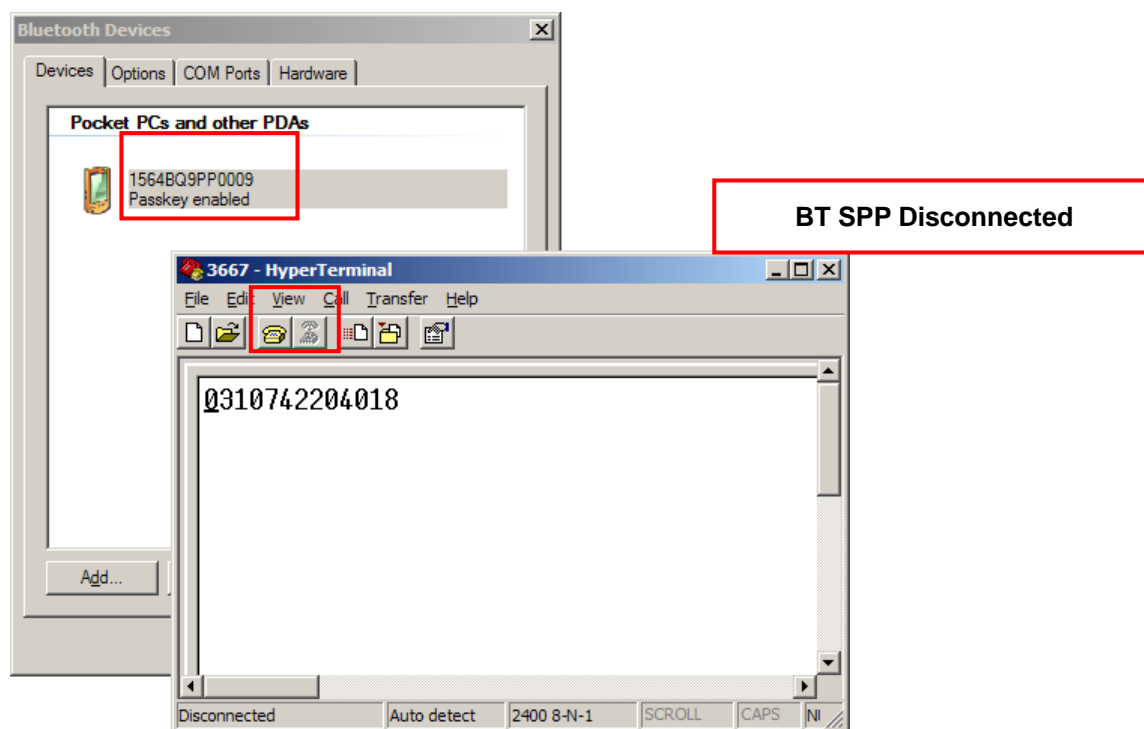
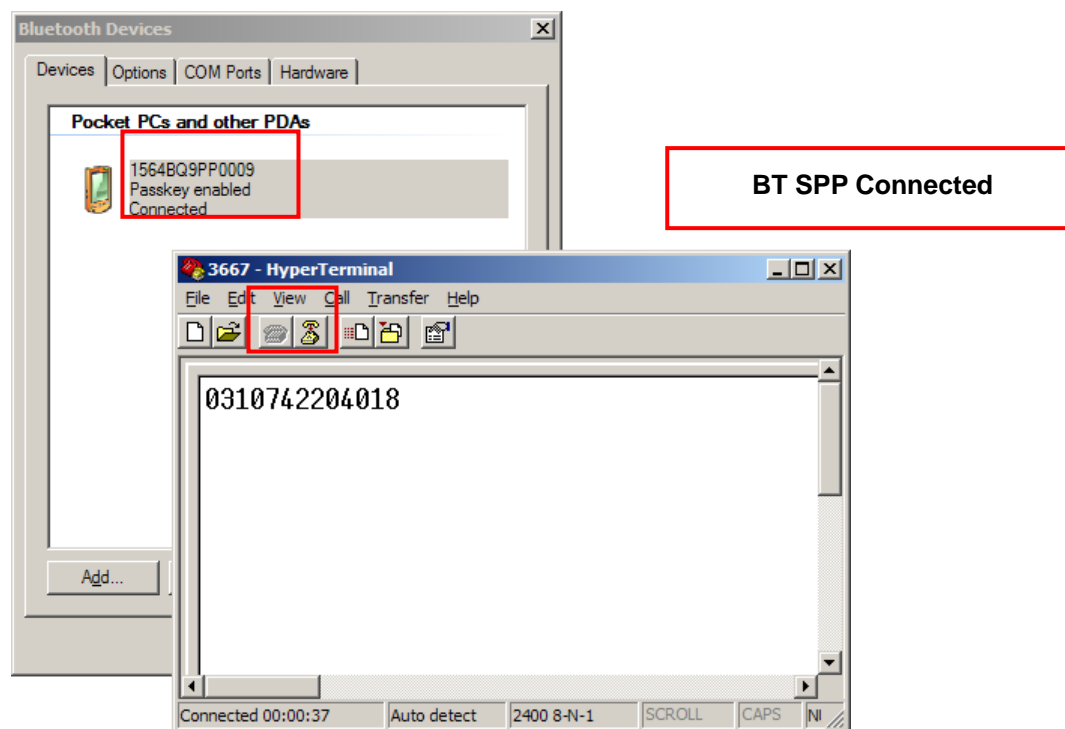
12. Run the desired application on your computer, such as HyperTerminal.exe if using BT SPP or Notepad.exe if using BT HID.

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](#).



Update



Enter Setup

Chapter 6 – Changing Symbology Settings

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

6.1 Codabar

***Enable**



Disable



6.1.1 Start/Stop Transmission

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

**Transmit Start/Stop
Characters**



***Do Not Transmit**



6.1.2 CLSI Conversion

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

Apply CLSI Editing



*Do Not Apply



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

6.1.3 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.

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

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



Enter Setup

***Enable Max./Min.
Length (1~55)...**



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



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

**Max. Length (*55) or
Fixed Length 1**



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



Read the "[Decimal Value](#)" barcode for the desired length.

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



6.2 Code 25 – Industrial 25



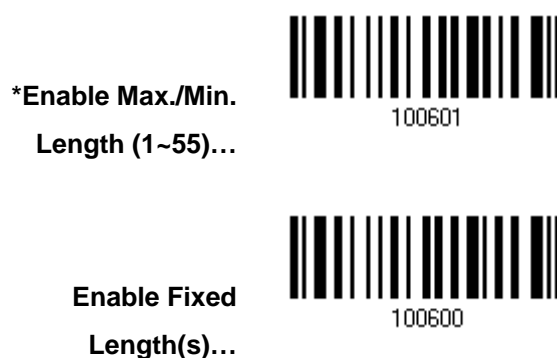
6.2.1 Code Length Qualification

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.



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



Max. Length (*55) or
Fixed Length 1



Min. Length (*4) or
Fixed Length 2



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

6.3 Code 25 – Interleaved 25

*Enable



Disable



6.3.1 Verify Check Digit

Decide whether to verify the check digit. When desired, select one of the algorithms, USS or OPCC. If incorrect, the barcode will not be accepted.



Update

***Do Not Verify**



USS Check Digit



OPCC Check Digit



6.3.2 Transmit Check Digit

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

***Transmit Interleaved
25 Check Digit**



Do Not Transmit



6.3.3 Convert to EAN-13

Decide whether to convert a 14-character barcode into EAN-13 if the following requirements are met:

- The barcode must have a leading 0 and a valid EAN-13 check digit.
- “Verify Check Digit” must be disabled.



Enter Setup

Convert to EAN-13



102101

*Do Not Convert



102100



Update

6.3.4 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.

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

***Enable Max./Min.
Length (1~55)...**



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



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

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

**Max. Length (*55) or
Fixed Length 1**



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



7. Read the "[Decimal Value](#)" barcode for the desired length.
8. Read the "Validate" barcode on the same page to complete this setting.



6.4 Code 25 – Matrix 25

Enable



100311

*Disable



100310

6.4.1 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

6.4.2 Transmit Check Digit

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

*Transmit Matrix 25
Check Digit



100435

Do Not Transmit



100434



Update

6.4.3 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.

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 (1~55)...**



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



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

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

**Max. Length (*55) or
Fixed Length 1**



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



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



6.5 Code 25 – Chinese 25

Enable



102015

*Disable



102014

6.6 Italian Pharmacode (Code 32)

Enable



100303

*Disable



100302

Note: Code 39 must be enabled first.



Update

6.7 Code 39

***Enable**



Disable



6.7.1 Verify Check Digit

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

**Verify Code 39
Check Digit**



***Do Not Verify**



6.7.2 Transmit Check Digit

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

***Transmit Code 39
Check Digit**



Do Not Transmit



Enter Setup

6.7.3 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



Note: Trioptic Code 39 and Code 39 Full ASCII cannot be enabled at the same time.

6.7.4 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.

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

*Enable Max./Min.
Length (1~55)...



Enable Fixed
Length(s)...



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

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

**Max. Length (*55) or
Fixed Length 1**



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



11. Read the "[Decimal Value](#)" barcode for the desired length.

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

6.8 Trioptic Code 39

Decide whether to decode Trioptic Code 39.

- Trioptic Code 39 is a variant of Code 39 used in the marking of computer tap cartridges. It always contains six characters.

Enable



***Disable**



Note: Trioptic Code 39 and Code 39 Full ASCII cannot be enabled at the same time.



Enter Setup

6.9 Code 93



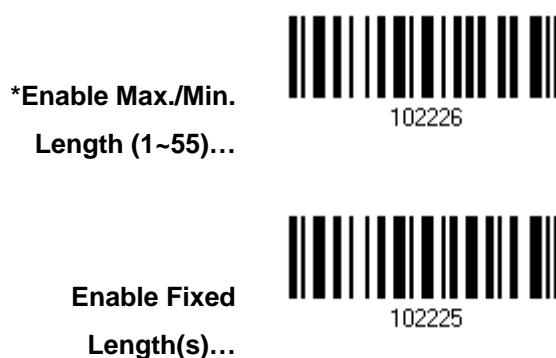
6.9.1 Code Length Qualification

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.



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

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



Max. Length (*55) or
Fixed Length 1



Min. Length (*4) or
Fixed Length 2



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

6.10 Code 128

*Enable



Disable



Enter Setup

6.11 GS1-128 (EAN-128)

Enable



*Disable



Note: GS1-128 barcodes can be decoded only when this setting is enabled.

6.11.1 Transmit Code ID

Decide whether to include the Code ID (“JC1”) in the data being transmitted.

Transmit GS1-128
Code ID



*Do Not Transmit



6.11.2 Field Separator (GS Character)

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

Enable Field
Separator...



13. Read the barcode above to enable field separator.

14. Read the [“Hexadecimal Value”](#) barcode for the desired character string.

15. 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.

6.12 ISBT Concatenation

Decide whether to decode and concatenate pairs of ISBT barcodes.

- **Disable ISBT Concatenation**

It will not concatenate pairs of ISBT barcodes it encounters.

- **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.

- **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.

Disable



Enable



***Auto-discriminate**



6.12.2 ISBT Concatenation Redundancy

Specify the concatenation redundancy (2~20 times) when ISBT concatenation is enabled.



Enter Setup

ISBT Concatenation
Redundancy 2~20
(*10)



- 1. Read the barcode above to specify the concatenation redundancy.
- 2. Read the [“Decimal Value”](#) barcode for the desired redundancy.
- 3. Read the “Validate” barcode on the same page to complete this setting.

6.13 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

6.13.1 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



Enter Setup

6.13.2 GS1 Databar Omnidirectional (RSS-14)

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



*Disable



The settings below apply to Group I symbologies only:



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

Transmit Code ID

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

***Transmit RSS-14
Code ID**



Do Not Transmit



Transmit Application ID

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

***Transmit RSS-14
Application ID**



Do Not Transmit



Enter Setup

6.13.3 GS1 Databar Expanded (RSS Extended)

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



*Disable



The settings below apply to Group II symbologies only:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Transmit Code ID

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

*Transmit
RSS Expanded Code
ID



Do Not Transmit



6.13.4 GS1 Databar Limited (RSS Limited)

Enable RSS Limited
(Group III)



*Disable



Transmit Code ID

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

*Transmit
RSS Limited Code ID



Do Not Transmit



Transmit Application ID

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

*Transmit
RSS Limited
Application ID



Do Not Transmit



Enter Setup

6.13.5 Convert to UPC/EAN

This only applies to GS1 DataBar Omnidirectional and GS1 DataBar Limited barcodes not decoded as part of a Composite barcode.

- Convert to EAN-13: It will strip the leading “010” from barcodes.
“01” is the Application ID and must be followed by a single zero (the first digit encoded).
- Convert to UPC-A: It will strip the leading “0100” from barcodes.
“01” is the Application ID and must be followed by two or more zeros (but not six zeros).

Convert to UPC/EAN



*Do Not Convert



Update

6.14 MSI

Enable



100345

*Disable



100344



Enter Setup

6.14.1 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**



Double Modulo 10



Modulo 10 & 11



6.14.2 Transmit Check Digit

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

***Last Digit Not
Transmitted**



**Both Digits
Transmitted**



**Both Digits
Not Transmitted**



Update

6.14.3 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.

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 (1~55)...**



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



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

**Max. Length (*55) or
Fixed Length 1**



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



3. Read the "[Decimal Value](#)" barcode for the desired length.



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

6.15 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**



Update

6.16 EAN-13

EAN-13

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



Disable



EAN-13 Addon 2

**Enable EAN-13
Addon 2**



***Disable**



EAN-13 Addon 5

**Enable EAN-13
Addon 5**



***Disable**



Enter Setup

6.16.1 Convert to ISBN

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

**Convert EAN-13 to
ISBN**



***Do Not Convert**



6.16.2 Convert to ISSN

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

**Convert EAN-13 to
ISSN**



***Do Not Convert**



Update

6.17 UCC Coupon Extended Code

Decide whether to decode the following barcodes as Coupon Code.

- UPC-A barcodes starting with digit “5”
- EAN-13 barcodes starting with digits “99”
- UPC-A/EAN-128 Coupon Codes

Enable



*Disable



Note: Depending on your requirements, UPC-A, EAN-13 and EAN-128 must be enabled first!



Enter Setup

6.18 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**



Update

6.18.1 Transmit System Number

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

***Transmit UPC-A
System Number**



Do Not Transmit



6.18.2 Transmit Check Digit

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

***Transmit UPC-A
Check Digit**



Do Not Transmit



Enter Setup

6.19 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**



Update

6.19.1 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



*System Number 0
Only



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.

6.19.2 Convert to UPC-A

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

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

Convert UPC-E to
UPC-A



*Do Not Convert



Enter Setup

6.19.3 Transmit System Number

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

**Transmit UPC-E
System Number**



***Do Not Transmit**



6.19.4 Transmit Check Digit

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

***Transmit UPC-E
Check Digit**



Do Not Transmit



Update

6.20 Code 11

Enable



*Disable



6.20.1 Verify Check Digit

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

Verify One
Check Digit



Verify Two
Check Digit



*Do Not Verify



Enter Setup

6.20.2 Transmit Check Digit

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

Transmit Code 11
Check Digit



*Do Not Transmit



Note: "Verify Check Digit" must be enabled first.

6.20.3 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.

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 (1~55)...



Enable Fixed
Length(s)...



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

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



**Max. Length (*55) or
Fixed Length 1**



102235

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



102236

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



Enter Setup

6.21 Composite Code

6.21.1 Composite CC-A/B

Enable Composite
CC-A/B



*Disable



6.21.2 Composite CC-C

Enable Composite
CC-C



*Disable



6.21.3 Composite TLC-39

Enable Composite
TLC-39



*Disable



Update

6.21.4 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



6.21.5 GSI-128 Emulation Mode for UCC/EAN Composite Codes

Decide whether to transmit UCC/EAN Composite Code data as if it was encoded in GS1-128 barcodes.



**Enable GS1-128
Emulation Mode**



102105

***Disable**



102104

6.22 US Postal Code

6.22.1 US POSTNET

***Enable US Postnet**



102017

Disable



102016

6.22.2 US PLANET

***Enable US Planet**



102019

Disable



102018

6.22.3 Transmit Check Digit

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



Update

***Transmit US Postal
Check Digit**



102111

Do Not Transmit



102110



Enter Setup

6.23 UK Postal Code

6.23.1 UK POSTAL

***Enable UK Postal**



Disable



6.23.2 Transmit Check Digit

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

***Transmit UK Postal
Check Digit**



Do Not Transmit



6.24 More Postal Code

6.24.1 Japan POSTAL

*Enable Japan Postal



Disable



6.24.2 Australian POSTAL

*Enable Australian
Postal



Disable



6.24.3 Dutch POSTAL

*Enable Dutch Postal



Disable



4.24.4 USPS 4CB/ONECODE/Intelligent Mail

**Enable USPS 4CB/
One Code/ Intelligent
Mail**



102029

***Disable**



102028

6.24.5 UPU FICS POSTAL

**Enable UPU FICS
Postal**



102031

***Disable**



102030



Update

6.25 2D Symbolologies

6.25.1 PDF417

***Enable PDF417**



Disable



6.25.2 MicroPDF417

Enable MicroPDF417



***Disable**



6.25.3 Data Matrix

***Enable Data Matrix**



Disable



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**



Always



Auto



Update

6.25.4 Maxicode

*Enable Maxicode



Disable



6.25.5 QR Code

*Enable QR Code



Disable



6.25.6 MicroQR

*Enable MicroQR



Disable



6.25.7 AZTEC

***Enable Aztec**



102045

Disable



102044



Update

6.26 MACRO PDF

Macro PDF is a special feature for concatenating multiple PDF barcodes into one file, known as Macro PDF417 or Macro MicroPDF417.

Note: When printing barcodes, keep each Macro PDF sequence separate, as each has a unique identifier. Do not mix barcodes from several Macro PDF sequences, even if they encode the same data. When you scan Macro PDF sequences, scan the entire Macro PDF sequence without interruption!

6.26.1 Transmit/Decode Mode

Decide how to handle Macro PDF decoding.

- **Buffer All Symbols / Transmit Macro PDF When Complete**

Transmit all decoded data from an entire Macro PDF sequence only when the entire sequence is scanned and decoded. If the decoded data exceeds the limit of 50 symbols, no transmission because the entire sequence was not scanned!

- **Transmit Any Symbol in Set / No Particular Order**

Transmit data from each Macro PDF symbol as decoded, regardless of the sequence.

- **Passthrough All Symbols**

Transmit and decode all Macro PDF symbols and perform no processing. In this mode, the host is responsible for detecting and parsing the Macro PDF sequences.

**Buffer All Symbols /
Transmit When Complete**



102186

**Transmit Any Symbol in Set /
No Particular Order**



102187

***Passthrough All Symbols**



102190



Enter Setup

6.26.2 Escape Characters

When enabled, it uses the backslash "\" as an Escape character for systems that can process transmissions containing special data sequences. It will format special data according to the Global Label Identifier (GLI) protocol, which only affects the data portion of a Macro PDF symbol transmission. The Control Header, if enabled, is always sent with GLI formatting.



6.26.3 Transmit Control Header

The control header contains the segment index and file ID. For example, the field may be "\92800000\725\120\343". The five digits after the \928 are the segment index (or block index), and \725\120\343 is the file ID.

- Enable this when selecting "Transmit Any Symbol in Set/ No Particular Order".
- Disable this when selecting "Buffer All Symbols/Transmit Macro PDF When Complete".
- This option has no effect when selecting "Passthrough All Symbols".



Chapter 7 – Defining Output Format

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

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

7.1 Letter Case

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

***Normal**



Upper Case



Lower Case



Enter Setup

7.2 Character Substitution

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

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

Key Type		Key Status
Scan Code	Only 1 scan code value is allowed. Refer to 7.2.1 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.



Update

7.2.1 Select a Set for Character Substitution

Configure Set 1



Configure Set 2



Configure Set 3



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

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

2. Read the [“Hexadecimal Value”](#) barcode for the desired character substitution. For example,

KEY TYPE = NORMAL

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

KEY TYPE = SCAN CODE

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

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



Enter Setup

KEY TYPE = NORMAL + KEY STATUS = SHIFT

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

Read “3” and “0”.

Read the “Add Shift” barcode.

Read “3” and “1”.

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



Update

7.2.2 Symbologies for Character Substitution (All 3 Sets)

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



Enter Setup

Character Substitution for Codabar

***Apply**



Do Not Apply



Character Substitution for Code 39

***Apply**



Do Not Apply



Character Substitution for Trioptic Code 39

***Apply**



Do Not Apply



Character Substitution for Code 93

***Apply**



Do Not Apply



Update



Enter Setup



Update

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



Enter Setup

Character Substitution for EAN-8 Addon 2

***Apply**



Do Not Apply



Character Substitution for EAN-8 Addon 5

***Apply**



Do Not Apply



Character Substitution for EAN-13 (No Addon)

***Apply**



Do Not Apply



Character Substitution for EAN-13 Addon 2

***Apply**



Do Not Apply



Update

Character Substitution for EAN-13 Addon 5

***Apply**



Do Not Apply



Character Substitution for Italian Pharmacode

***Apply**



Do Not Apply



Character Substitution for Industrial 25

***Apply**



Do Not Apply



Character Substitution for Interleaved 25

***Apply**



Do Not Apply



Enter Setup

Character Substitution for Matrix 25

*Apply



101251

Do Not Apply



101250

Character Substitution for Chinese 25

*Apply



102617

Do Not Apply



102616

Character Substitution for MSI

*Apply



101285

Do Not Apply



101284

Character Substitution for GS1 DataBar

*Apply



101291

Do Not Apply



101290



Update

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



Enter Setup

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 UCC Coupon Extended Code

***Apply**



102605

Do Not Apply



102604

Character Substitution for Code 11

***Apply**



102609

Do Not Apply



102608



Update

Character Substitution for Composite CC-A/B

***Apply**



102611

Do Not Apply



102610

Character Substitution for Composite CC-C

***Apply**



102613

Do Not Apply



102612

Character Substitution for Composite TLC-39

***Apply**



102615

Do Not Apply



102614

Character Substitution for US Postnet

***Apply**



102619

Do Not Apply



102618



Enter Setup

Character Substitution for US Planet

***Apply**



102621

Do Not Apply



102620

Character Substitution for UK Postal

***Apply**



102623

Do Not Apply



102622

Character Substitution for Japan Postal

***Apply**



102625

Do Not Apply



102624

Character Substitution for Australian Postal

***Apply**



102627

Do Not Apply



102626



Update

Character Substitution for Dutch Postal

*Apply



102629

Do Not Apply



102628

Character Substitution for USPS 4CB/One Code/Intelligent Mail

*Apply



102631

Do Not Apply



102630

Character Substitution for UPU FICS Postal

*Apply



102633

Do Not Apply



102632

Character Substitution for PDF417

*Apply



102635

Do Not Apply



102634



Enter Setup

Character Substitution for MicroPDF417

*Apply



Do Not Apply



Character Substitution for Data Matrix

*Apply



Do Not Apply



Character Substitution for Maxicode

*Apply



Do Not Apply



Character Substitution for QR Code

*Apply



Do Not Apply



Update

Character Substitution for MicroQR

***Apply**



102645

Do Not Apply



102644

Character Substitution for Aztec

***Apply**



102647

Do Not Apply



102646



Enter Setup

7.3 Prefix/Suffix Code

By default, there is no prefix code, and [ENTER] or [CR] (Carriage Return) is configured to be suffix code. Up to 8 characters can be configured, for example, "Barcode_", and you will have the string appear in front of the barcode read, like this – "Barcode_1234567890".

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

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

Configure Prefix



Configure Suffix



1. Read the barcode above to apply prefix code or suffix code separately, and follow steps 2~3. (Max. 8 characters each)
2. Read the "[Hexadecimal Value](#)" barcode 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.



Update

7.4 Code ID

Up to two characters for Code ID can be configured for each symbology. To make the Code ID configuration easier, the scanner provides five pre-defined Code ID sets that you can select one and make necessary changes on it.



Enter Setup

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

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

Note: "J C1" is the Code ID of GS1-128 (EAN-128) barcodes; "Je0" is the default Code ID of GS1 DataBar (RSS) barcodes.

7.4.1 Select Pre-Defined Code ID

Apply Code ID Set 1



Apply Code ID Set 2



Apply Code ID Set 3



Apply Code ID Set 4



Apply Code ID Set 5



Update



Enter Setup



Update

Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Italian Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Chinese 25	Q	M	P	S	X
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
UCC Coupon Code	G	F	I	C	C
Code 11	K	J	J	D	H
Composite CC-A/B	L	X	M	J	La
Composite CC-C	N	Y	N	O	Lc
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X



Enter Setup

Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
USPS 4 CB / One Code / Intelligent Mail	n	g	y	o	X
UPU FICS Postal	o	h	z	p	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U
QR Code	e	S	S	X	Q
MicroQR	f	T	R	Y	Q
Aztec	g	U	Q	Z	z
IATA	z	z	r	h	S
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L

7.4.2 Change ID Code

5. Read the barcode below to change code ID of a specific symbology.
 6. Read the [Hexadecimal Value](#) barcode for the desired character string. For example, read “4” and “4” for applying the character [D] for Code ID.
 7. Read the “Validate” barcode to complete this setting.
- (Barcodes begin on next page.)



Update

**Configure Code ID
for Codabar**



**Configure Code ID
for Code 39**



**Configure Code ID
for Trioptic Code 39**



**Configure Code ID
for Code 93**



**Configure Code ID
for Code 128**



**Configure Code ID
for ISBT 128**



**Configure Code ID
for EAN-8**



**Configure Code ID
for EAN-13**



Enter Setup

**Configure Code ID
for Italian
Pharmacode**



**Configure Code ID
for Industrial 25**



**Configure Code ID
for Interleaved 25**



**Configure Code ID
for Matrix 25**



**Configure Code ID
for Chinese 25**



**Configure Code ID
for MSI**



**Configure Code ID
for UPC-A**



**Configure Code ID
for UPC-E**



**Configure Code ID
for UCC Coupon**



Update

Code

Configure Code ID
for Code 11



Configure Code ID
for Composite
CC-A/B



Configure Code ID
for Composite CC-C



Configure Code ID
for Composite
TLC-39



Configure Code ID
for US Postnet



Configure Code ID
for US Planet



Configure Code ID
for UK Postal



Configure Code ID
for Japan Postal



Enter Setup

**Configure Code ID
for Australian Postal**



102576

**Configure Code ID
for Dutch Postal**



102577

**Configure Code ID
for USPS 4CB / One
Code / Intelligent Mail**



102578

**Configure Code ID
for UPU FICS Postal**



102579

**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



Update

Configure Code ID
for QR Code



Configure Code ID
for MicroQR



Configure Code ID
for Aztec



Configure Code ID
for IATA



Configure Code ID
for Macro PDF417



Configure Code ID
for Macro
MicroPDF417



7.4.3 Clear Code ID Settings

Clear All Code ID
Settings



Enter Setup

7.5 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 Trioptic Code 39

Apply



*Do Not Apply



Update

Length Code for Code 93

Apply



*Do Not Apply



Enter Setup

Length Code for Code 128

Apply



*Do Not Apply



Length Code for GS1-128 & GS1 DataBar

Apply



*Do Not Apply



Length Code for ISBT 128

Apply



*Do Not Apply



Length Code for EAN-8

Apply



*Do Not Apply



Update

Length Code for EAN-13

Apply



*Do Not Apply



Length Code for Italian Pharmacode

Apply



*Do Not Apply



Length Code for Industrial 25

Apply



*Do Not Apply



Length Code for Interleaved 25

Apply



*Do Not Apply



Enter Setup

Length Code for Matrix 25

Apply



101411

*Do Not Apply



101410

Length Code for Chinese 25

Apply



102515

*Do Not Apply



102514

Length Code for MSI

Apply



101429

*Do Not Apply



101428

Length Code for UPC-A

Apply



101427

*Do Not Apply



101426



Update

Length Code for UPC-E

Apply



101421

*Do Not Apply



101420

Length Code for UCC Coupon Extended Code

Apply



102503

*Do Not Apply



102502

Length Code for Code 11

Apply



102507

*Do Not Apply



102506

Length Code for Composite CC-A/B

Apply



102509

*Do Not Apply



102508



Enter Setup

Length Code for Composite CC-C

Apply



102511

*Do Not Apply



102510

Length Code for Composite TLC-39

Apply



102513

*Do Not Apply



102512

Length Code for US Postnet

Apply



102517

*Do Not Apply



102516

Length Code for US Planet

Apply



102519

*Do Not Apply



102518



Update

Length Code for UK Postal

Apply



102521

*Do Not Apply



102520

Length Code for Japan Postal

Apply



102523

*Do Not Apply



102522

Length Code for Australian Postal

Apply



102525

*Do Not Apply



102524

Length Code for Dutch Postal

Apply



102527

*Do Not Apply



102526



Enter Setup

Length Code for USPS 4CB/One Code/Intelligent Mail

Apply



102529

*Do Not Apply



102528

Length Code for UPU FICS Postal

Apply



102531

*Do Not Apply



102530

Length Code for PDF417

Apply



102533

*Do Not Apply



102532

Length Code for MicroPDF417

Apply



102535

*Do Not Apply



102534



Update

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



Enter Setup

Length Code for Aztec

Apply



102545

*Do Not Apply



102544



Update

7.6 Multi-Barcode Editor

The Multi-Barcode Editor allows you to decide the output sequence of a concatenation of barcodes. Up to five barcodes can be specified. When you enable this mode, it will force the scanner to apply Laser mode as the scan mode. For WWS450 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.



Enter Setup

Code Type	Symbology	Code Type	Symbology
40 (@)	ISBT 128		
41 (A)	Code 39		
42 (B)	Italian Pharmacode		
43 (C)	N/A		
44 (D)	Industrial 25	64 (d)	TLC-39 (TCIF Linked Code 39)
45 (E)	Interleaved 25	65 (e)	Trioptic Code 39
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	70 (p)	US Postnet
51 (Q)	EAN-13 with Addon 2	71 (q)	US Planet
52 (R)	EAN-13 with Addon 5	72 (r)	UK Postal
53 (S)	MSI	73 (s)	Japan Postal
54 (T)	N/A	74 (t)	Australian Postal
55 (U)	GS1-128 (EAN-128)	75 (u)	Dutch Postal
56 (V)	UPC-A	76 (v)	Composite CC-A/B
57 (W)	UPC-A with Addon 2	77 (w)	Macro PDF417
58 (X)	UPC-A with Addon 5	78 (x)	Macro MicroPDF417



Enter Setup

		79 (y)	Chinese 25
5A (Z)	N/A	7A (z)	Aztec
5B ([)	GS1 DataBar (RSS)	7B (})	Micro QR
		7C (|)	USPS 4CB / One Code / Intelligent Mail
		7D (})	UPU FICS Postal
		7E (~)	UCC Coupon Extended Code

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

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

- Matching Character setting – read the [Hexadecimal Value](#) barcode 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.
- Read twice the “F” barcode on page **Error! Bookmark not defined.** (“FF”) to complete the setting of each barcode.
- Read the “Validate” barcode to end the editing of the barcode set.



Update

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



7.7 Removal of Special Character

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

**Remove Special
Character**



1. Read the barcode above to remove the specified character.
2. Read the [Hexadecimal Value](#) barcode 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.



Update

Chapter 8 – 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.

For the WWS450 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	



Enter Setup

8.1 Activating Editing Formats

8.1.1 Activate Editing Formats

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

Editing Format 1

Enable



*Disable



Editing Format 2

Enable



*Disable



Editing Format 3

Enable



*Disable



Update

Editing Format 4

Enable



101307

*Disable



101306

Editing Format 5

Enable



101309

*Disable



101308

8.1.2 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.



Enter Setup

Yes



101201

*No

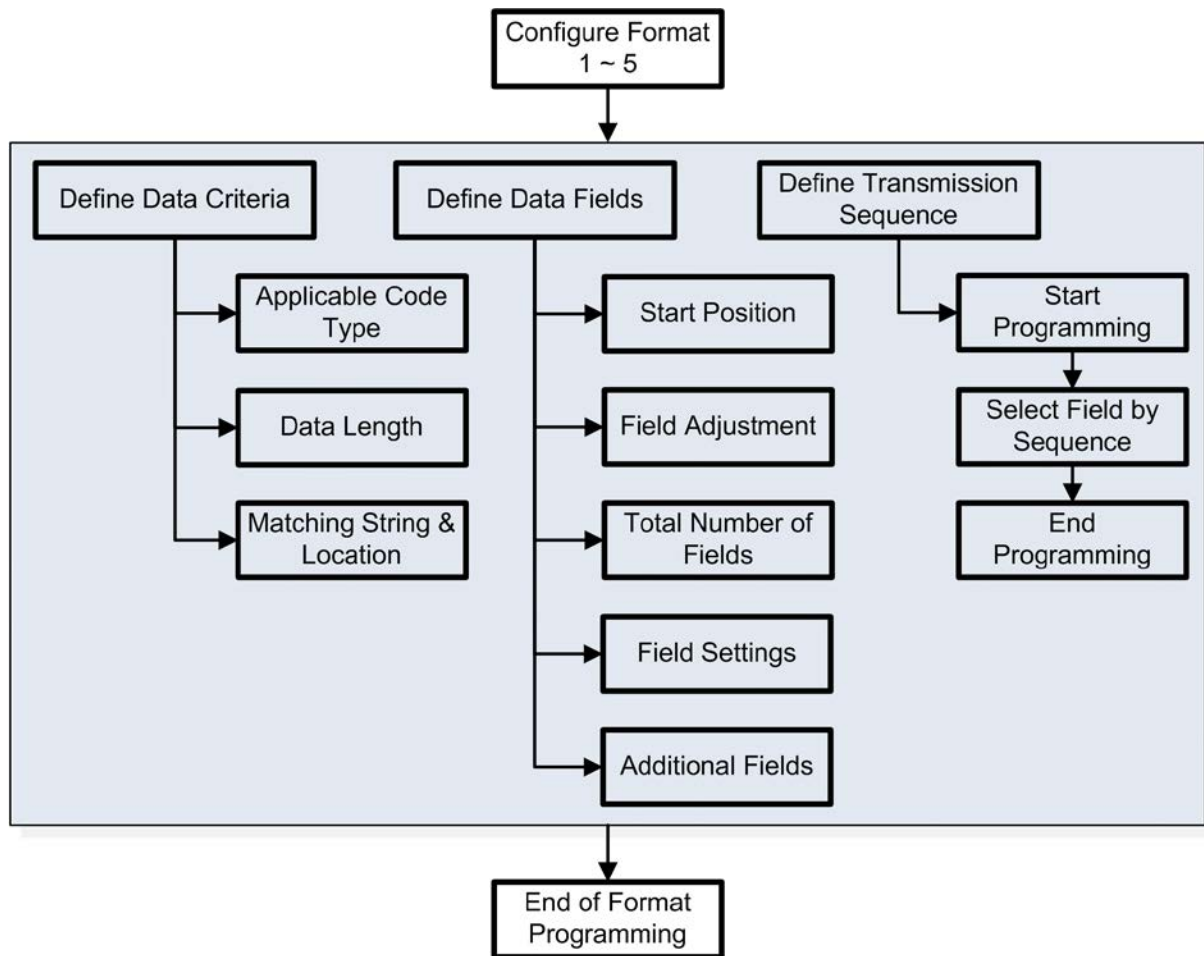


101200



Update

8.2 How to Configure Editing Formats



Enter Setup

8.2.1 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



Update

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

End Programming Format

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

**End Programming
Format**



8.2.2 Restore Default Format

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

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

**Restore Default
Format**



Enter Setup

8.3 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.

8.3.1 Applicable Code Type

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

Note: You must have at least one symbology selected.

***Apply to All**



109992

Clear All



109991



Update

Editing Format for Codabar

***Apply**



Do Not Apply



Editing Format for Code 39

***Apply**



Do Not Apply



Editing Format for Trioptic Code 39

***Apply**



Do Not Apply



Editing Format for Code 93

***Apply**



Do Not Apply



Enter Setup

Editing Format for Code 128

***Apply**



Do Not Apply



Editing Format for GS1-128 & GS1 DataBar

***Apply**



Do Not Apply



Editing Format for ISBT 128

***Apply**



Do Not Apply



Editing Format for EAN-8

***Apply**



Do Not Apply



Update

Editing Format for EAN-8 Addon 2

***Apply**



Do Not Apply



Editing Format for EAN-8 Addon 5

***Apply**



Do Not Apply



Editing Format for EAN-13

***Apply**



Do Not Apply



Editing Format for EAN-13 Addon 2

***Apply**



Enter Setup

Do Not Apply



Editing Format for EAN-13 Addon 5

*Apply



Do Not Apply



Editing Format for Italian Pharmacode

*Apply



Do Not Apply



Editing Format for Industrial 25

*Apply



Do Not Apply



Editing Format for Interleaved 25



Update

***Apply**



101509

Do Not Apply



101508

Editing Format for Matrix 25

***Apply**



101511

Do Not Apply



101510

Editing Format for Chinese 25

***Apply**



101635

Do Not Apply



101634

Editing Format for MSI

***Apply**



101545

Do Not Apply



101544



Enter Setup

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



Update

Do Not Apply



Editing Format for UPC-E Addon 2

*Apply



Do Not Apply



Editing Format for UPC-E Addon 5

*Apply



Do Not Apply



Editing Format for UCC Coupon Extended Code

*Apply



Do Not Apply



Editing Format for Code 11



Enter Setup

***Apply**



101627

Do Not Apply



101626

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 Composite TLC-39

***Apply**



101633

Do Not Apply



101632



Update

Editing Format for US Postnet

***Apply**



Do Not Apply



Editing Format for US Planet

***Apply**



Do Not Apply



Editing Format for UK Postal

***Apply**



Do Not Apply



Editing Format for Japan Postal

***Apply**



Enter Setup

Do Not Apply



Editing Format for Australian Postal

*Apply



Do Not Apply



Editing Format for Dutch Postal

*Apply



Do Not Apply



Editing Format for USPS 4CB/One Code/Intelligent Mail

*Apply



Do Not Apply



Editing Format for UPU FICS Postal



Update

***Apply**



101651

Do Not Apply



101650

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



Enter Setup

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



Update

Do Not Apply



101664

8.3.2 Data Length

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

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

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

Max. Length



101561

Min. Length



101560

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



Enter Setup

8.3.3 Matching String & Location

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

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

1. Read the barcode to specify a matching string.

Matching String...



101562

2. Read the [Hexadecimal Value](#) barcode 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 for the desired location.
6. Read the “Validate” barcode on the same page to complete this setting.



Update

8.4 Configuring Format – Define Data Field

8.4.1 Start Position

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

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

***From Head**



From Tail



8.4.2 Field Adjustment

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

***No adjustment**



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



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



Enter Setup

8.4.3 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.



Update

8.4.4 Field Settings

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

By Terminating String

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

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

By Length

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

Field 1 Setting

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

Select
Field Separator to
Divide Field 1...



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

Additional Fields

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

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

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



Update

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

Additional Field 1...



101584

Additional Field 2...



101585

Additional Field 3...



101586

Additional Field 4...



101587

Additional Field 5...



101588

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



Enter Setup

8.4.5 Pause Field Setting

Pause Field Time

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

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



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



Update

8.5 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.



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



Field 6



109906

Additional Field 1



109907

Additional Field 2



109908

Additional Field 3



109909

Additional Field 4



109910

Additional Field 5



109911

Pause Field



109912

Null Character Field



109913

- Read the “End” barcode to complete this setting.

End Programming...



109994



Update

8.6 Programming Examples

8.6.1 Example 1

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.



Enter Setup

8.6.2 Example 2

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:

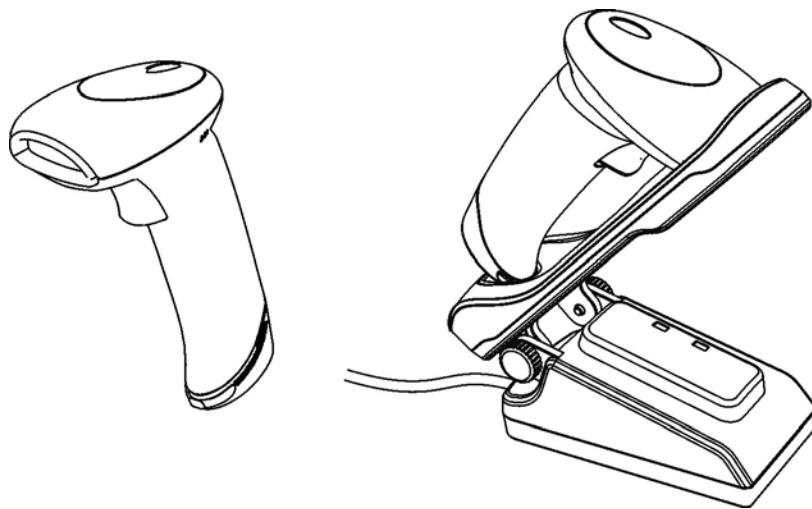
1. Read the "Enter Setup" barcode to enter the Configuration Mode.
2. Read the "Configure Format 2" barcode.
3. Read the "Three Fields" barcode.
4. Read the "Divide Field 1 by Length" barcode, and set length to 6.
Field 1 data starts from the 1st character to the 6th character.
5. Read the "Select Field 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.



Update

12. Read the “Update” barcode to exit the Configuration Mode.

Specifications



Optical Characteristics	WWS450
Scan Engine	2D Imager
Light Source	Visible red LED
RF Characteristics	
WPAN Module	Wireless PAN BT Class 2 compliance
Coverage (line-of-sight)	90 meters with WWS450 Cradle
Interface Supported	<ul style="list-style-type: none"> • Serial Port Profile (BT SPP) • Human Interface Device Profile (BT HID) • WWS450 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



Enter Setup

Electrical Characteristics		
Battery		Rechargeable Li-ion battery – 3.7 V, 800 mAh
Power Adaptor		
Input		AC 100~240 V, 50/60 Hz
Output		DC 5V, 2A (WWS450 Cradle) DC 5V 0.5A (Battery Charger)
Operating Temperature		0 °C to 40 °C
Environmental Characteristics		
Temperature	Operating	0 °C to 50 °C
	Storage	-20 °C to 60 °C
Humidity (Non-condensing)	Operating	10% to 90%
	Storage	5% to 95%
Resistance		
Impact Resistance		1.2 m, 5 drops per 6 sides
Splash / Dust Resistance		IP 30
Electrostatic Discharge		± 15 kV air discharge, ± 8 kV contact discharge
Programming Support		
Configuration via Setup Barcodes		Use setup barcodes or host serial commands.
Software		Windows®-based ScanMaster
Firmware upgradeable		Download firmware updates via the download utility.
Accessories (√ means “supported”)		
Rechargeable Li-ion Battery		√
Battery Charger		√
WWS450 Cradle Stand		√
USB Cable		√



Update

RS-232 Cable	√
Keyboard Wedge Cable	√

Note: The WWS450 Cradle stand is not only capable of charging the WWS450 scanner, but specifically designed for the scanner to communicate with a host computer wirelessly.



Enter Setup

Appendix I

Keyboard Wedge Table

	0	1	2	3	4	5	6	7	8
0		F2	SP	0	@	P	`	p	①
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) □~%: Digits of numeric keypad.

(2)

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



Update

Key Type and Status

Key Type

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

***Normal**



Scan Code



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

Add Shift



Add Left Ctrl



Add Right Ctrl



Add Left Alt



Add Right Alt



Enter Setup

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 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 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 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:



Update

1. Read the "Configure Prefix" barcode.
2. Read the "Add Left Ctrl" barcode.
3. Read the "[Hexadecimal Value](#)" barcode for "4", "1" (= "A").
4. Read the "Add Left Ctrl" barcode.
5. Read the "[Hexadecimal Value](#)" barcode on page **Error! Bookmark not defined.** for "2", "4" (= "\$").
6. Read the "Validate" barcode to complete this setting.



Enter Setup

Appendix II

Numeral Systems

Decimal System

Decimal



Validate the Values



Hexadecimal System

Hexadecimal



Enter Setup

Validate the Values



ASCII Table

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



Update



Abort

Entering PIN Code for Authentication

Use Preset Pin

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

Use Preset PIN



100155

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

Enter PIN in
Hexadecimal...



100150

Enter PIN in
Decimal...



100151

3. Read the "[Decimal Value](#)" barcode or the "[Hexadecimal Value](#)" barcode 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.



Enter Setup

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...**



Update



Abort

2. Read the “[Decimal Value](#)” barcode or the “[Hexadecimal Value](#)” barcode 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.



Enter Setup